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Message Framing Matters: Enhancing Recycling Intentions through Personal Message Framing across Brand and Influencer Channels

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ABSTRACT

As the world becomes more aligned with global sustainability initiatives, businesses, policy makers and industry leaders are challenged to find creative ways to enhance recycling behaviour associated with their products.

Ajzen's influential research in 1991 proposed that influencing consumers' intentions can lead to actual behavioral change. Additionally, message framing plays a crucial role in shaping perceptions and constructing meaning for consumers. Therefore, marketers value knowledge about which framing techniques can influence perceptions and drive behavior change most effectively.

More recent literature suggests that messages which make product transformation salient (i.e., telling consumers what can become of the things they recycle) can boost recycling behavior. Other studies suggest that messages which are enhanced with personal message frames can further enhance the effectiveness of messages. Recent literature also suggests the use of influencers as an effective channel to enhance sustainability initiatives due to their ability to emanate social proof. However, there is a lack of knowledge regarding the impact of different message frames or communication channels in the context of recycling.

This research investigates the varying effects of three personal message framing techniques (control, involvement, surprise) on recycling intention. We find that all message framing conditions are effective at improving customers' intention to recycle. More specifically, our research presents that message frames enhanced with surprise-framing are most effectively received in this in context.

In addition, we analyse the impact of various message types across different communication channels (brand-led or influencer-led). While influencers have previously proven effective at influencing attitudes and behaviours, our results reflect that they are not always the optimal channel to promote recycling initiatives. Specifically, influencer-led channels are only more effective than brand-led communication when conveying control-framed messages.

Importantly, this research also discusses the interaction effects between message and channel type when levels of environmental concern are known and unknown. Consequently we propose a framework for brands, businesses, and policy makers to apply, highlighting the order of effectiveness of different message types, depending on the context (brand-led / influencer-led and environmental concern known / unknown). This suggested framework provides a comprehensive understanding into the mechanisms of effective recycling communication and can help in developing innovative approaches that encourage positive impact within global communities.

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CHAPTER 1

INTRODUCTION

1.1. The global consumption problem

7.8 billion humans - the amount of people currently sharing the resources of our planet! As the population density continues to increase, so does global consumption and the quantities of global urban waste worldwide. However, despite an increase in global sustainability awareness, statistics still show low rates of recycling (Knickmeyer, 2020). Improving the recycling performance in order to recover qualitative materials, save resources and keep waste out of landfills therefore remains as one of the pressing challenges of our time.

1.2. A global agreement towards the SDGs

Globally, companies are actively working towards becoming more sustainable. Policy makers, alongside organizations in both the private and public sector are continually designing new processes and ways to be more sustainable (Cheng *et al,* 2011). Companies in particular, are realizing the importance of socially responsible reporting and the movement towards net-zero has prompted businesses from around the world to tailor their economic, social and corporate governance (ESG) strategies (Stern & Valero, 2021). As a result, businesses nowadays pay critical attention to their corporate social responsibility reporting in line with the UN sustainable development goals (UN, 2023). Sustainability reporting has thus become a critical component in order for businesses to attract investors and remain competitive in the market (Du, Bhattacharya & Sen, 2010).

Heightened awareness and stronger expectations regarding the environmental effects of business activities have brought numerous multinational corporations into focus with regards to their sustainability objectives (Banerjee *et al,* 2003). As a result, industry leaders such as Nike and Coca-Cola have taken proactive measures to champion the incorporation of recycled materials into their production processes. Nike's "better world" campaign exemplifies their commitment to enhancing global sustainability by utilizing entirely recycled polyester in their performance apparel (Nike, 2023). Similarly, Coca-Cola has pledged to ensure that all their plastic bottles are 100% recyclable and actively shapes their corporate messaging to promote bottle recycling (Coca-Cola, 2023).

1.3. Attitude-intention gap

Similarly, end consumers are becoming more environmentally conscious and now display a greater inclination towards adopting sustainable consumption habits compared to previous generations (BusinessWire, 2023). However, in practice, the planet is experiencing an attitude-behaviour gap where consumers' "greener" intentions do not convert into proper actions (Kollmuss & Agyeman, 2002). Though global brands such as Nike and Coca-Cola have designed great sustainability initiatives, customer recycling habits fall short, creating a hinderance towards achieving the 2030 SDGs. In the US, only 6% of all waste was recycled in 2021 (World

Economic Forum, 2021), and Coca-Cola bottles are still the number one global cause of ocean pollution (The Guardian, 2023; Laville & Taylor, 2017).

1.4. Recycling

To better understand how to motivate behaviour towards better recycling habits, it is important to understand exactly what this phenomenon means. Recycling is taking something out of a waste stream and creating something new out of it (Winterich *et al*., 2019). For an item to be classified as recycled, it needs to undergo three main processes. Recycled items first need to be collected (1) before they are washed, cleaned, and processed into a secondary material (2) and then made into new primary materials (3).

In order to create a strong circular economy where recyclable materials are able to become newly transformed products, they need to be correctly sorted and distributed. However, only 15% of all waste that gets thrown into recycling bins ever gets recycled. This is mainly because of cross contamination and incorrect waste sorting that spoils the remaining materials in a given recycling bin when waste is incorrectly disposed (npr.org, 2023). Moreover, many people still incorrectly dispose of their waste, even when presented with the options of different recycling bins (Lessel *et al*, 2015).

The application of Social Learning Theory by Bandura (1977) could provide valuable insights towards understanding the reasons behind the improper disposal of waste. The phenomenon suggests that people learn behavior from their environment through observation, imitation, and modelling. Therefore, individuals are more likely to engage in certain behaviours if they perceive them to be prevalent among others. As a result, when waste is consistently mismanaged, the issue exacerbates. This highlights the crucial role of marketing and informational messages in influencing positive behavior, and disrupting the ongoing cycle of imitating detrimental habits.

1.5. Towards a circular economy for businesses

Besides recycling being only a societal problem, it is equally important for policy makers and other stakeholders in the private and public sectors to join in on the action towards motivating better waste circulation. For businesses specifically, recycling provides the source materials that companies need for the sustainable production of their products within a circular economy.

Within the B2C market, businesses bear a responsibility towards the planet and their stakeholders to adopt robust corporate social responsibility (CSR) initiatives, particularly when their production is intended for direct consumption by end consumers (Nardella & Brammer, 2021). To ensure financial investment and maintain competitiveness in the market, it is crucial for companies, especially larger corporations, to provide transparent reporting on their annual CSR initiatives and accomplishments (Stern & Valero, 2021).

On a global scale, the United Nations, policymakers, the public, and the private sector are progressively engaging in active participation in the 2030 Agenda for Sustainable Development (Filho *et al,* 2019). Recent discourse has emphasized the significance of stakeholders collaborating to explore avenues for redesigning systems, products, and services with the aim of realizing sustainable living for all (Rosen & Kishawy, 2012). Hence, ongoing research on consumer recycling behavior holds significant importance for businesses and their marketing teams as it enables them to effectively communicate their circular initiatives to customers.

For companies utilising recycled materials in their production processes, there is a delicate balance to strike. They must convey their use of recycled materials while being mindful not to deter customers due to concerns about disgust, product quality, or company motives (Romani *et al*, 2016). On the consumption front, businesses must navigate the challenge of striving to increase their sales, while responsibly ensuring proper disposal of their products. They must also ensure a sustainable supply chain by sourcing the necessary input materials to achieve their sustainability objectives.

In conclusion, brand and marketing teams play a crucial role in effectively communicating brand messages that can shift customer mindsets towards recycling and inspire meaningful actions. To achieve this, it is essential for them to have a deep understanding of the existing literature on effective messaging strategies that encourage positive recycling behaviours. This research consults the existing literature to understand the types of messages that have previously encouraged positive behavioural changes, and further investigates specific message frames and communication channels that can inspire better global recycling rates.

CHAPTER 2

LITERATURE REVIEW

2.1. Marketing communications

The effectiveness of marketing communications in influencing consumer behaviour has been widely studied in existing academic literature (Schultz, 1992; Clow, 2010; Pickton & Hartley, 1999). Particularly, marketing teams use communicative messages to inform about brand campaigns and to raise awareness about products, services or initiatives (Schultz, 1992). By providing consumers with information, brands can educate and inform consumers about the value of a particular product or behaviour. Increased awareness, transmitted through marketing communications can help consumers to make more informed decisions and as a result, become more receptive to changing their behaviour (Mihart, 2012). Particularly, successful marketing campaigns make use of persuasive techniques, designed to influence customer attitudes and behaviours (Arens, 1996). Through carefully crafted messages, visuals and storytelling, marketers can appeal to consumers' innate emotions, needs and desires (Saleem & Abideen, 2011). Moreover, by activating the phycological emotions within an audience, message providers can motivate consumers to embrace new behaviours (Achar *et al*, 2016).

2.2. Nudges

Existing literature has investigated the positive effect of behavioural interventions (nudges) as a driver of behavioural change (Andor & Fels, 2018, Johnson, & Goldstein, 2003; Venema, 2020). A nudge can be described as a subtle and non-coercive intervention designed to influence people's behaviour and decision making without removing their freedom of choice (Thaler & Sunstein, 2003). Nudging interventions are often presented as small changes in the presentation of choices or the decision making environment that can have a significant impact on individuals' decisions (Hertwig, & Grüne-Yanoff, 2017). The key characteristic of a nudge is that it alters the way in which choices are presented and structured towards the receiver (Lehner, Mont & Heiskanen, 2016). By making certain options more salient, changing default choices, or presenting social norms and feedback, nudges aim to guide individuals toward making choices that are in their best interest or align with desired outcomes (Marchiori, Adriaanse & De Ridder, 2017). Nudges are thus implemented to help individuals overcome cognitive biases and routine behaviour that they are previously primed to do. These behavioural interventions have proven to be particularly effective in the context of marketing and environmental conservation to promote behaviours such as conserving energy, reducing consumption and better waste management (Dolan & Metcalfe, 2015; Kurz, 2018; de Visser-Amundson & Kleijnen, 2020).

A study by Dolan & Metcalfe (2015) found that research participants conserved around 4% more energy when informed about their own consumption in relation to their neighbours. By simply adding slight enhancements to the way in which information is presented, individuals can be guided towards making better decisions.

2.3. Theory of planned behaviour

The Theory of Planned Behavior (TPB) by Ajzen (1991) has been widely cited in the academic literature as a foundational framework to predict human behaviour. This theory posits that behavioural intentions can account for a considerable proportion of variance in actual behavior (Ajzen, 1991). More simply, this means that an individuals' behaviour is impacted by their initial intentions towards the behaviour. In addition, attitude, subjective norms, and perceived behavioural control interact to influence a person's intentions, which in turn, drives their actual behaviour (Ajzen, 1991). Therefore, marketers should design strategies that highlight these three elements (attitude, subjective norms, perceived behavioural control) when tasked to drive changes in behaviours.

Specifically, attitudes are an individual's overall perception of a particular behaviour, which are influenced by the personal evaluation of the outcome (Axelrod & Lehman, 1993). Thus, communications should firstly aim to ensure positive attitudes towards the behaviour in question. In addition, subjective norms represent the individual's perception of the social expectations and pressure to conform in relation to an action (Herath, & Rao, 2009). Thus, strong social norms alluring to a specific behaviour increases the likelihood that an individual will intend to perform the behaviour (more on social norms in section 2.10.). Finally, when individuals have a strong belief in their ability to successfully perform a behaviour, they are more likely to take part (Ajzen, 1985). This implies that marketers are challenged to find innovative ways to communicate individual efficacy in an attempt to encourage better consumer behaviour.

2.4. Message framing

Message framing is a technique used in social marketing to shape perceptions and construct meaning. It is based on the idea that the audience's response to a message depends on how the message is composed and subsequently interpreted by the person receiving it (Pelletier *et al*, 2008). Specifically, authors Segev, Fernandes, & Wang, (2015) measured the impact of gain vs loss frame messaging on customers' responses to green advertising and found a main effect of message framing on advertising persuasiveness. Specifically, their results prove that gain framed messages are more effective in eliciting favourable responses and increased purchase intention (Segev, Fernandes, & Wang, 2015). Thus, by altering the way in which information is presented (highlighting either the advantages of engaging in a behaviour, or focusing on the losses experienced from failing to engage in a behaviour), marketers can impact consumers' behaviours. The literature regarding gain vs. loss framed messages has been widely extended across different contexts to uncover that message types vary in effectiveness, depending on the context of the promoted behaviour. For example, gain-framed

messages are more effective when behaviour is perceived as low-risk (Unger & Steul-Fischer, 2020). Conversely, loss framed messages are persuasive when behaviour emphasises the importance of avoiding negative consequences or harm (Maheswaran & Meyers-Levy, 1990).

More generally, literature has expanded on these foundational message framing techniques to uncover that behavioural changes are also effected by other psychological message frames and moderating factors that can impact the persuasiveness of the communication (Giorgi, 2017). For instance, Winterich *et al*., (2019) argue that inspiration has a mediating role when communicating information to encourage recycling.

There exists a broad scope of studies in the academic literature that assess how different combinations of audience factors, behaviour complexity, and moderating factors (such as cultural influences) operate alongside different message framing techniques (Mertens *et al*, 2022, Cheng *et al,* 2011; Rothman & Salovey, 1997). The purpose of these studies are to design contextual frameworks that advise about the most effective message framing techniques to use across varied contexts.

However, considering the fast paced changes in consumer choice architecture, especially with regard to the constant changing world of information available; it is empirical to continue researching how best to communicate pressing social and environmental messages in the most effective way. Thus, more detailed findings about the effectiveness of different message frames can be useful, especially regarding recycling –a perpetual global concern.

2.5. Recycling communication: Product Transformation Salience

In more recent literature focused specifically on recycling, Winterich *et al* (2019) introduce strong evidence to tackle the recycling issue through a concept they define as *Product Transformation Salience (PTS)*. This concept uses transformative messaging as a way to help customers think about how recyclables become new products by informing them of what can become of the products that they recycle (Winterich *et al*, 2019). PTS was found to inspire customers to positively change their recycling behaviour when they can visualize what becomes of the things that they throw away.

Human responses are predominantly driven by intangible concerns, leading to a tendency to overlook issues that are not readily visible or closely related to immediate experiences (Griskevicius, 2012). This means that when consumers judge a future environmental payoff to be distant, it becomes less desirable in the present (Hardisty & Weber, 2009). One example is the concept of global warming, which may seem abstract and distant from people's everyday lives. As a result, individuals may feel less motivated to take actions in support of the cause, even though those actions can have a significant long-term effect on the planet and future livelihoods. Marketers are thus challenged to communicate far-fetched global sustainability issues in the most tangible way possible.

As a result, Winterich *et al* (2019) specifically uncovered that customers who experience recycling messages which visually show the material being transformed, are more likely to recycle - compared to when only shown a generic recycling message. By simply informing consumers that recycling gives products new life, the likelihood of consumer recycling increases.

The implications of these findings for businesses, is that they should position their product marketing activities by highlighting the **transformation** of their products into something new - as this inspires continued recycling behaviour amongst consumers.

By integrating these novel insights with established psychological message framing tactics, significant progress can be achieved in the realm of sustainable marketing research. By combining contemporary and traditional approaches, new findings can contribute even more to the existing body of knowledge, resulting in actionable recommendations for businesses seeking to promote sustainability initiatives.

2.6. Psychological factors

Prior research has extensively examined various aspects of communication across diverse contexts and channels. This body of literature investigates the transmission, reception, interpretation, and comprehension of information by consumers (Petty *et al* 1986; Swani et al, 2017). In particular, it highlights the significant role of psychological factors in shaping both emotional and cognitive processing. Cognitive processes involve mental activities such as attention perception, learning, and problem solving, and influence individuals' interpretation of communicated information (Howard, 1977). When individuals have better cognitive engagement with a marketing message, it increases their processing of the communication stimuli - which can lead to stronger intentions towards a suggested action (Petty *et al*, 1986).

Several studies have explored the impact of message framing on evoked cognitive processing. Steg & Vlek (2009) highlight three key motivators of sustainable behavior change: weighing costs and benefits, moral and normative factors, and affective factors. Moreover, in the context of communications, different types of message frames that capture attention (Petty, 1979), enhance personal relevance (Petty *et al*, 1981), or foster emotional engagement (Giorgi, 2017) can effectively enhance the level of cognitive processing – leading to a deeper cognitive engagement with the message content.

Moreover, when individuals perceive messages as personally relevant, it enhances their connections between the message content and their own needs, values and goals, which consequently increases the perceived importance of the suggested action (Giorgi, 2017). In light of this, the research further evaluates various psychological message framing themes that can be specifically tailored to resonate with the recipients, and increase their cognitive processing of the stimuli. Emphasising personal message framing aspects is expected to strengthen individuals' motivation to act upon the communication.

2.7. Message framing themes

Existing academic literature examines the impact of different message framing themes on enhancing individuals' cognitive processing of communication stimuli. As a result, marketers are encouraged to strategically select message framing techniques that encourage sustainable choices (Ungemach *et al*. 2018). Within this body of research, three prominent message themes have emerged: perceived control, involvement, and surprise (White *et al*, 2019; Griskevicius *et al,* 2010, Sung *et al*, 2016). These message framing themes can enhance cognitive processing by capturing attention, evoking emotional responses, and stimulating curiosity. Scholars have thus introduced the significance of these themes in influencing individuals' engagement with the message content and deepening their cognitive involvement.

2.7.1. Control framing

Control framing directs attention to an individual's control or autonomy within a given situation. Marketing communications that adopt this theme emphasize personal agency, decision-making power, and the capacity to take charge of one's actions (White *et al*, 2019). By allowing individuals to perceive themselves as causal agents of behavioural outcomes, it offers them a perception of empowerment and enhances their perceived ability to effect change. Research studies have demonstrated that this theme can be effective in motivating consumer action, because emphasising freedom of choice and empowerment leads to higher cognitive engagement (White *et al*, 2019). Messages framed with a sense of control suggest that a desired outcome is within the individual's control, which can enhance their motivation to take action.

2.7.2. Involvement framing

Messages that highlight involvement framing aim to establish a personal connection and evoke emotional engagement between the individual and the message content (Tsai, 2007). These types of messages appeal to the personal values and aspirations of the recipients, aiming to evoke emotional responses and subsequently, increase cognitive message processing (Griskevicius, Tybur & Bergh, 2010).

Another means by which involvement framing can shape sustainable behaviours is through “social desirability”. People often get involved with sustainable initiatives in order to create a positive image in the eyes of others (Green and Peloza, 2014), and they endorse high-involvement sustainable options (e.g., hybrid vehicles) to convey social status (Griskevicius et al, 2010). By generating a sense of relevance or personal investment in the suggested behaviour, these message frames can enhance motivation and willingness to participate in sustainable actions.

2.7.3. Surprise framing

Finally, surprise message framing involves presenting unexpected or novel information within a communicative message (Mclntyre & Sobel, 2017). Consumers are more inclined to engage in pro-

environmental actions when they derive some hedonic pleasure or positive affect from the behavior (Corral-Verdugo et al. 2009). Consequently, surprise framed messages aim to capture attention and evoke curiosity by enhancing feelings of novelty (Sung *et al*, 2016).

The effectiveness of messages using this framing theme stems from the ability to disrupt individuals' preconceived expectations and existing mental schemas (Werner & Cornelissen, 2014). This cognitive disruption can lead to increased engagement and cognitive processing of the message content (Sung *et al*, 2016).

In particular, when individuals encounter surprising information, it stands out from the ordinary and subsequently draws their attention. By presenting unexpected information, surprise-framed messages can enhance curiosity, thus, motivating individuals to seek more information and engage in deeper cognitive processing (Sung *et al*, 2016).

Unexpected information has also proven to be more memorable when compared to routine or predictable information (Tuchman, 1973). Thus, when individuals encounter information that deviates from their initial expectations, it can create a lasting impression in their memory and potentially lead to behavioural changes.

2.8. Message framing within recycling communication

Although various message framing themes discussed in the literature have demonstrated effectiveness in stimulating deeper cognitive processing and as a result, improved intentions towards the communicated behaviour, their effectiveness can still vary across different contexts. The specific behavior being promoted, communication context, and the characteristics of the target audience can all influence the efficacy of message framing techniques within different contexts.

While prior studies have demonstrated the effectiveness of different message frames to encourage sustainable consumer actions, there is little evidence that tests these message framing themes specifically within the context of recycling – more specifically, when combined with new literature suggesting to make the product transformation information salient. This literature gap highlights the need for further research on the topic and guides the direction of the current study.

2.9. Social learning

Consumers are often impacted by the presence, behaviours, and expectations of others (Abrahamse & Steg, 2013). In line with the TPB (section 2.3.), which posits the importance of subjective norms in shaping consumer behaviour, marketers are also challenged to shape social expectations and communicate general best practices in order to impact how people conform to ideas and communicated actions.

Social learning (observational learning) suggests that "individuals learn new behaviours by observing and imitating the actions of others" (Bandura, 1977). In particular, people are more likely to replicate observed behaviours from others when the behaviours is perceived as rewarding or beneficial (Goldstein *et al*, 2008). Rewards can be intrinsic or extrinsic. Intrinsic rewards are more personal, for instance individuals engaging in a behaviour because they find it personally fulfilling, interesting or enjoyable (Deci & Ryan, 2008). On the other hand, extrinsic rewards are external rewards that are provided by others or the environment, and can be used as a way to reinforce desired behaviour (Goldstein *et al*, 2008). Common examples of extrinsic rewards are tangible incentives. In addition, rewards have been proven to influence sustainable behaviours such as waste disposal and clean-up (Baltes & Hayward, 1976), energy usage (Abrahamse *et al*. 2005), and transportation choices (Everett *et al*, 1974). Consequently, social approval and paise are also a valuable type of extrinsic reward that can motivate individuals to change their behaviour (Ryan, Mims, & Koestner, 1983). Social learning theory thus emphasises the role of social interactions and the impact of role models towards shaping individual and group behaviour.

2.10 Social proof and recycling

An extension of social learning theory is the psycological phenomenon of social proof. Social proof influences individual behavior as people observe and take cues from others on how to behave or make decisions in specific situations (Abrahamse & Steg, 2013). This phenomenon is based on the assumption that "if others are doing it, it must be the correct thing to do" (Green & Peloza, 2014). More specifically, normative social influence is driven by the desire to conform to social norms and gain social acceptance (Nolan *et al*, 2008). For instance, a person may adopt certain eating trends (vegan, vegetarian etc.), or participate in activities to align with the perceived expectations of society (Lindquist, 2013). With regards to recycling, social proof can motivate individuals to adopt better recycling behaviours by showcasing the popularity of the action within society.

Moreover, social proof can be amplified through social media platforms where individuals can share their recycling efforts and consequently, inspire others to do the same. When individuals encounter social media posts showcasing others' recycling habits, it can create a ripple effect, motivating increased participation and contribution towards the initiative.

The practical manifestation of this effect can be observed in popular media, highlighted by the global recognition of the German environmental activist, Greta Thunberg (Zhanda et al, 2021). Thunberg's substantial audience following clearly demonstrates how influential figures can guide others towards adopting certain ideas and behaviours. However, despite the prominence of influencers, there is little prior academic research that investigates the specific effectiveness of utilizing influencers to promote recycling messages.

2.11. Influencers as a communication channel

Influencers are individuals who have established dedicated and engaged followings on social media platforms through their expertise and content (Lin *et al*., 2018). Thus, they often belong to aspirational groups or embody aspirational qualities that their followers seek to emulate (Sokolova & Kefi, 2019). When followers encounter influencers as role models, it is more likely that they adopt the opinions and behaviours of the influencer in a subconscious attempt towards belonging to a desirable social group (Vrontis, 2021). As a result, empirical evidence suggests that brands should incorporate influencer marketing into their marketing mix strategies (Syrdal *et al*, 2023; Jarrar *et al*, 2020; Sudha & Sheena, 2017). By leveraging the potential of influencers to convey social proof and desirability, brands can establish trust and engagement with their audiences, leading to better brand equity (Sokolova & Kefi, 2019).

Some academic literature suggests that using influencers as a communication channel can be more effective than brand-led channels in specific contexts (Syrdal *et al*, 2023). This effect is due to the interactive nature of social media that enables influencers to establish personal interactions with their followers (Lamberton & Stephen, 2016). At the same time, brand-led advertisements are increasingly perceived as biased or experienced as a "promotion-push", which can result in decreased cognitive engagement with the message (Youn & Kim, 2019) .

While influencers have proven to be effective in stimulating behavioural changes among their audiences, further research is needed to understand their specific effectiveness in promoting recycling behaviours. In a recycling context, it is worth exploring whether influencer message channels are more effective at inspiring attitudinal changes. These insights further guide the direction of the current research study.

CHAPTER 3

RESEARCH OBJECTIVES AND HYPOTHESES

3.1. Problem Statement

The production of plastic bottles remains one of the largest causes of pollution in the fast-moving consumer goods industry globally (Laville & Taylor, 2017). Fortunately, in recent years the leading global plastic manufacturers (e.g., Coca-Cola) are taking well defined actions towards these sustainability concerns. Subsequently, plastic bottle manufactures need to find ways to encourage bottle recycling in order to meet their sustainability goals and to secure continued production within their circular systems. These initiatives are also important for these companies so that they can adhere to tax laws and tighter governmental regulations regarding their corporate social responsibility.

Fundamentally, marketing communication is used to educate consumers about brand initiatives, and has been proven to help brands nudge behavioural changes in customer actions, often leading to higher sales (Hertwig & Grüne-Yanoff, 2017). Literature postulates that different message frames such as those which emphasise *control (*White *et al,* 2019*), involvement (*Griskevicius *et al,* 2010*)* and *surprise (*Sung *et al*, 2016*),* can positively influence consumers attitudes, leading to increased behavioural intentions about the communicated action (Ajzen, 1991). These effects are explained by the evoked cognitive engagement and processing that is enhanced when different types of message frames capture attention, enhance personal relevance, or foster emotional engagement (Wang, 2006, Hansen & Hansen, 1972, Achar *et al*, 2016).

In addition, as the world becomes more interconnected, social media influencers also act as an important vehicle of communication and persuasion (Jarrar *et al*, 2020). Influencers play a significant role in shaping people's behaviours and opinions through their online presence and following. Through the principle of social proof, individuals who follow social media influencers may feel compelled to mimic their behavior, adopt their preferences, or align with their viewpoints. Thus, brands that make use of influencers to transport their campaign messages could see positive results.

Since the world's largest plastics producers are increasingly challenged to find ways that encourage positive consumption and correct disposal of their products, these brands should consider different message frames and their effectiveness when conveyed through different communication channels (for example influencers) to successfully plan and execute global communication campaigns.

More recent research proves that customers respond favourably to marketing communications that make product transformation salient (Winterich *et al,* 2019). More simply, this means that when consumers can visualize what can happen to their recyclables, they are more likely to recycle. However, there is currently limited knowledge regarding the impact of different message frames or communication channels on recycling

intention, specifically when communicating product transformation. As a result, this research aims to address this knowledge gap through findings that will inform marketing managers on the most effective message framing to use in both brand and influencer communication channels - specifically when communicating product transformation messages in an attempt to encourage better consumer recycling habits.

3.2. Research Objective 1

The aim of this study is to investigate whether product transformation messages that are enhanced with elements of personal message framing (control, involvement, surprise) are more effective in improving recycle intentions, compared to product transformation messages that do not contain a personal message frame.

The effectiveness of product transformation salience in increasing recycling behavior has been established in the existing literature. However, to further enhance recycling intentions, it is important to explore methods that can optimize the impact of product transformation salience messages. The literature review indicates that personally framed messages, compared to generic messages, evoke emotional responses and generate greater cognitive involvement. This increased cognitive involvement facilitates stronger cognitive processing, resulting in improved message reception, processing, and retention. Consequently, individuals are more likely to engage in favourable behaviours relating to the communicated action. Based on these findings, this research proposes the hypothesis that all personal message framing conditions (control, involvement, surprise) will be more effective in enhancing recycling intentions compared to the baseline case with no personal message frame. This is because personal message framing techniques enhance cognitive processing, leading to improved memorability and thus, overall effectiveness.

3.2.1. Hypothesis 1

Product transformation messages that are enhanced with personal message frames (control, involvement, surprise) are more effective at increasing intention to recycle than generic product transformation communications without personalized enhancements.

3.3. Research Objective 2

To determine which types of personal message frames (control, involvement, surprise) are most effective towards increasing consumers' intentions to recycle.

The existing literature proposes that recycling campaigns should communicate product transformation as it has proven to be effective in increasing recycling intentions. Moreover, as discussed in the literature review in chapter 2, the effectiveness of different message framing themes depends on a range of factors, in particular, the behaviour being promoted.

While hypothesis 1 suggests all three personal message framing techniques to be more effective than recycling messages that do not contain personal message framing enhancements, the existing literature emphasizes certain elements specific to the surprise framing condition, hinting at its potential to be the most effective for recycling campaigns which incorporate product transformation salience.

Academic research posits that surprise framed messages capture attention and stimulate curiosity (Sung *et al*, 2016). When applied to a recycling message that involves product transformation salience, surprise framing should thus generate curiosity about the changes during the product's transformation process, and as a result, increase an individual's motivation to explore and adapt their recycling behavior.

The novelty of the concept, when product transformation is made salient, suggests that surprise-framed messages could be highly effective in this context. The surprise framing condition is expected to reinforce the initial curiosity sparked by the transformative message, prompting individuals to re-evaluate their assumptions and beliefs about recycling more effectively than the other framing conditions. The double reinforcement of surprise through the transformative message and the framing condition should thus strengthen the cognitive processing and make the message even more memorable. These effects are highlighted in the literature which alludes to the attention-capturing and curiosity-stimulating properties of surprise frames messages.

This rationale informs the second hypothesis, which relates to messages framed with surprise-enhancing elements.

3.3.1. Hypothesis 2

Product transformation communication which contains the surprise framing condition is the most effective at improving consumer intention to recycle.

3.4. Research Objective 3

To investigate the differential effectiveness of the specific message framing types across brand and influencer communication channels.

The literature review in chapter 2 informs that individuals look to others to shape how they act in various contexts. These effects are explained through social proof and social imitation theory. Here it is presented that when a behaviour is considered socially desirable, individuals are more likely to change their attitudes or actions in an attempt to fit in with societal norms.

Recognition and social acceptance are extrinsic rewards that strongly motivate changed behaviour within individuals, and can be effectively communicated through influencers and other aspirational groups. Through curated content and personal narratives, influencers are able to effectively convey social proof and desirability

(Venema, 2020). As a result, literature posits the effectiveness of using influencer marketing for brands who aim to impactfully influence their target audiences.

Moreover, empirical research suggests that audiences are becoming more aware of brand-led promotional schemes, and posit an increased ability to recognize advertisements (Youn & Kim, 2019). As a result, consumers are more likely to direct their attention away during the moments of ad-interaction. Consequently, these findings imply that people are increasingly becoming less receptive to brand-led advertising and are more likely to be impacted through influencer-led channels. These insights lead to the third hypothesis relating to the presence of an influencer when conveying information in the context of recycling.

3.4.1. Hypothesis 3

The use of influencers as a medium to communicate product transformation is more effective at improving customer recycle intentions compared to brand-led communication.

CHAPTER 4

RESEARCH METHODOLOGY

4.1. Research design

This section will provide a comprehensive overview of the approach, strategies and methods used to create a study which tests the above hypotheses.

4.2. Preliminary research study

During the preliminary research study, the existing body of literature and past studies were reviewed to gain insight about the context and theoretical background of the study. This information search began more broadly, focusing on understanding different message framing techniques that are effective at impacting general consumer behaviour. In parallel, the researcher also searched for proven strategies, tactics and behavioural nudges targeted more specifically towards *sustainable* consumer actions. This secondary research was collected by analysing various articles within published journals, accessed through the LUISS online library. The literature search was specifically filtered to select both traditional and recent, peer-reviewed articles that guide insights about consumer behavioural intentions, message framing, marketing communication channels, and customer responses to brand communications. To understand the most recent impact of plastic pollution and company initiatives towards the SDGs, a more general Google search was conducted, collecting information primarily from company specific websites, governmental publications and industry reports.

Two studies specifically gave an impactful direction towards formulating the current research. Winterich *et al.*, (2019) introduces the concept of "product transformation salience" whereby the authors prove that customers are more likely to recycle when they can envision recyclables turning into new products. Additionally, White *et al.*'s (2019) SHIFT framework offers an extensive review of the academic literature from both marketing and behavioural science, exploring the most effective techniques for driving sustainable consumer behaviours.

Upon deeper analysis into the existing literature (Chapter 2), the researcher learned that though there is lots of evidence supporting changed behaviour through social proof, there is very little existing literature that investigates whether online influencers are an effective channel for encouraging widespread sustainable consumer behaviour, especially with regards to recycling.

The current study expands on these findings by combining existing literature relating to recycling communication, message framing techniques and message channels. Together these insights contributed towards designing the research objectives, hypotheses and variables in the study.

Finally, targeted secondary research was conducted to collect the main items for the dependant variable of the study (recycling intention), while also learning which external variables could potentially mediate or moderate the responses (for example, environmental concern, attitude towards recycling and recycle frequency).

4.3. Primary research

To the extent of the researchers' knowledge, there exists no prior research in academic literature that measures the specific hypotheses of this study and therefore, primary research needed to be conducted.

In order to contribute to the existing body of literature in a meaningful way which allows brand managers, industry professionals and marketing managers to implement findings, the research objectives required conclusive evidence. As a result, primary research was collected through quantitative methods which involve an empirical assessment of numerical data to test the specific hypotheses and provide conclusive results. Alternatively, a qualitative, exploratory research study could have been designed, however these results would only provide insights and interpretations that do not contain a clear framework of conclusive evidence for receivers to implement. Thus, it was decided that exploratory research was not suited for the specific research questions of this study.

More specifically, casual research allows the researcher to establish the impact that variables have on each other, providing conclusive evidence to the research (Myers, Well & Lorch, 2010). Since this study aims to understand the impact of different message frames and different message channels on recycle intention, a quantitative, causal study is chosen as an appropriate data collection method. Finally, the study involved testing of different stimuli through an online experiment to collect conclusive evidence about the cause-and-effect relationship between the variables of the study.

4.4. Experimental design

In this study, a four by two between-subjects experimental design was used to investigate the effects of different communication stimuli on participants' intention to recycle. The study design involved four levels of the first independent variable (message framing) and two levels of the second independent variable (message channel), resulting in eight experimental conditions. Each participant was randomly assigned to one of the eight conditions and exposed to the corresponding stimulus. The randomization was automated through Qualtrics, which ensured that the different stimuli conditions were evenly distributed amongst respondents. In this way, each respondent had the same probability of being exposed to one of the eight stimuli conditions. This automatic randomization ensured that internal validity threats, such as selection bias, were minimized.

To ensure internal validity of the research design, the dependant variable was measured by developing a structured and controlled measurement instrument (questionnaire) that assessed participant's perceptions after being shown the stimuli. By using a between-subjects design, the researcher aimed to minimize the potential

for participants to become aware of the experimental manipulation which could have influenced their responses. This approach allowed the researcher to examine the unique effects of each experimental condition on the participant's intention to recycle (dependant variable), and to draw conclusions about the causal relationships between the independent and dependant variables.

Though this kind of experiment provides the researcher with good control of the experiment and better internal validity compared to a field study, the researcher was also aware that this type of experimental design could have low external validity (Schram, 2005). As a result, the stimuli was developed in line with the current marketing communications of a global brand (Coca Cola) to increase the external validity of the experiment.

4.5. Stimuli Development

The stimuli of this study were designed and created to manipulate the effects of message framing and message channel on participants recycling intentions. To achieve this, the researcher developed four message framing conditions that varied the way in which a product transformation message was presented. Each framing condition was enhanced with text elements that were congruent with the framing condition. The four framing conditions were (1) baseline condition; (2) perceived control condition; (3) involvement condition; (4) surprise condition. Note that the perceived control condition in this study refers to one of the specific framing conditions that are enhanced with elements that highlight the consumers "control" over the transformation process through recycling. This is different from the Baseline condition which in many other studies is often referred to as the control condition.

4.5.1. Message framing conditions:

The literature review in Chapter 2 revealed that behavioural nudges can be an effective way to change consumer recycling habits. These nudges can be presented through the way in which information is presented (Lehner, Mont & Heiskanen, 2016). At the same time, the literature review also presents evidence that product transformation salience increases recycling (Winterich *et al*, 2019). While some research has been conducted in this area, it is suggested that there are several next steps that could be explored to potentially leverage product transformation salience. Following these insights, the researcher decided to use product transformation as the foundational message in the stimuli development and to further investigate whether the positive effect of a product transformation message can be enhanced even more under different message framing conditions. Key findings from past research suggests that psychological factors of perceived control, involvement and surprise can influence the salience of product transformation for consumers (White *et al,* 2019, Griskevicius *et al,* 2010, Sung *et al*, 2016). Thus, research supports that these message framing conditions could influence consumer responses when presented a transformative message. The researcher aims to test these insights in the context of sustainability, and more specifically, recycling intention. The messages read:

Baseline: Bottles undergo plastic transformation. By recycling this bottle, it ensures the transformation of plastics into stylish, durable fashion garments. Join the movement towards the solution.

Perceived control: Take control of plastic transformation. By recycling this bottle, you have control of the transformation of plastics into stylish, durable fashion garments. Join the movement and shape the solution.

Involvement: Get involved in plastic transformation. By recycling this bottle, you are actively involved in the transformation of plastics into stylish, durable fashion garments. Join the movement and be a part of the solution.

Surprise: Be shaken-up by plastic transformation. By recycling this bottle, you will be surprised by the transformation of plastics into stylish, durable fashion garments. Join the movement and be amazed by the solution.

When developing the text for each message framing condition, the researcher started with the baseline case – a generic product transformation message that includes purely an informative message highlighting the fact that bottles can be recycled to become something new, specifically "stylish, durable fashion garments". The baseline condition was necessary to ensure that the results were impacted only by the experimental manipulation and not any other external factors (Babin & Zikmund, 2016). Using the baseline condition as a foundation, specific words were adjusted to create the message enhancements for each of the framing conditions. Based on the literature discussed in Chapter 2, the surprise message framing condition was expected to have the most positive impact on recycle intention compared to the baseline, control and involvement conditions.

4.5.2. Message channel conditions

Literature informs that educational campaigns have also been effective in motivating changed behaviour (Nolan *et al*, 2008). These types of campaigns can be presented through various media types such as social media, flyers, or advertisements to raise awareness about the benefits and effects of recycling. Moreover, it is also suggested that social norms impact recycling behaviour across different contexts (Wan, 2017). Social norms dictate what is considered acceptable behaviour in given social contexts and can be socially embedded through opinion leaders, influencers and other aspirational groups (Griskevicius *et al,* 2010).

Based on these findings, the researcher decided to design the experimental analysis within two message channels. One, where the brand is the communicator of the message through a general advertisement, and another when an influencer communicates the message via social media (Instagram). Though little prior research exists about the impact of influencers on recycling behaviour, some literature does suggest that using influencers as a channel to communicate valued behaviours within a community can positively motivate

changed behaviour. The researcher decided to use these two communication channels to convey the each of the four message framing conditions (eight conditions in total).

4.5.3. Stimuli design elements and biases

The researcher used a globally known and well recognized company (Coca-Cola) as the brand around which the stimuli was created. Coca-Cola was chosen specifically due to the fact that globally, many people recognize this brand and have at some stage in their life needed to dispose of a plastic Coca-Cola bottle. Moreover, as the leading bottle pollutant globally, research that relates specifically to the Coca-Cola brand is more reliable, specifically for management and decision makers working within this, or similar companies.

On the other hand, since Coca-Cola is a well-established brand with a strong market presence, the researcher did account for potential biases that could occur in the experiment. Specifically, participants' perceptions towards the brand's sustainability initiatives in the past could influence the extent to which they believe in the message conveyed in the stimuli. Participants could have thus responded to the message, purely based on past experiences that have primed their expectations as to whether the brand will live up to its promises. As a consequence, the researcher developed a fictitious transformative scenario for the experiment to reduce the potential biases from consumers who may have already seen recycling messages from Coca-Cola. This new, fictional scenario informs that Coca-Cola bottles can become "stylish, durable fashion garments".

The supporting visuals throughout all stimuli were kept consistent, in line with the requirements of a true experiment (Montgomery, 2017). For the brand-led channel stimuli, the design replicated the colours, font and overall design of an existing Coca-Cola advertisement to enhance the ecological validity and realism of the stimuli (see Annexure A). Additional elements were then added to the design to better align the advertisement with the transformative message. The researcher added the graphic of a jacket behind the Coca-Cola bottle, with a white arrow pointing from the bottle to the jacket to emphasise the transformation. These graphical elements remained present throughout all the stimuli to avoid any confounding effects.

For the influencer-led message channel, the researcher aimed to control for confounding variables as far as possible, while still adapting to the different channel of communication. To create the influencer-led stimuli, the researcher ensured that the elements that were present in the brand-led channel were also present in the influencer channel. As a result, the influencer-led stimuli also contained the graphics of a Coca-Cola bottle, a white arrow and a jacket. However, this channel also included the presence of an influencer and other generic elements that are native to a standard Instagram post (likes, date, comment field, call to action buttons, hashtags etc.). The influencer-led stimuli was designed to resemble a post that a respondent would naturally experience on the platform. A fictitious influencer was used in these stimuli to avoid response bias arising from participants who may recognise and have pre-defined ideas about a specific influencer.

The text was kept consistent across the message channels for each message framing condition to ensure that the variation in the dependant variable was purely based on the presence of an influencer or not. However, the researcher did make minor adjustments to the text in the influencer led channel to fit the context a social media post by adding personal pronouns to the text. In this way, the stimuli became more suited to the tone of voice on social media that is more personal.

Additionally, research suggests that influencers can be a powerful communication channel for brands because these individuals often act as thought leaders and are an aspirational frame of reference towards their followers (Sudha & Sheena, 2017; Jarrar *et al*, 2020). Social proof, conveyed through online influencers can therefore motivate behaviour change. Consequently, an additional sentence "I am wearing this new jacket, made completely from recycled Coca-Cola bottles" was added to the stimuli of the influencer-led channel to ensure to ensure alignment of social proof related to the channel.

Below is an example of the text used in the influencer-led condition:

> *Perceived control framing:* I'm taking control of plastic transformation! By recycling plastic bottles, we can take control of the transformation of plastics into stylish, durable fashion garments. I am wearing this new jacket, made completely from recycled Coca-Cola bottles. Join the movement and shape the solution.

Overall, the text of each of final stimuli was designed consistently. Each stimuli had a heading, an informative text about the transformation, and a final call to action. Each of these texts were kept as completely the same, with the only difference being specific words that emphasise a specific framing condition. The length of text and line spacing was also held constant to prevent any confounds relating to the visual display.

Collectively, all the design features aimed to increase internal and external validity of the stimuli and improve the generalizability of the findings. The eight stimuli conditions for the between-subjects experiment were designed by the researcher using Canva (refer to Annexure B).

4.6. Experimental validity

Experimental validity is required when conducting causal research (Field & Hole, 2002). This means that the study should accurately and reliably measure the variables of interest, enabling the researcher to draw meaningful conclusions from the collected data (Slack & Draugalis, 2001). The researcher thus paid close attention to several validity aspects within this study to ensure results that are trustworthy and generalizable.

With regard to the topic of the study, the researcher acknowledges that consumers may respond differently, depending on their intrinsic environmental concern. Subsequently, the research design included a measure of *environmental concern* as a potential covariate of the experiment.

The researcher further acknowledges that participants could have had subconscious pre-conceptions about the Coca-Cola brand, which could potentially influence their responses. To prevent potential respondent biases as a result of prior brand interaction, the instruction text mentioned that participants should read the information on the advertisement and respond to the questions based only on the information provided. This procedure was included so that responses are less likely to be influenced by the brand and more focused on the advertising message.

To further improve the internal validity of the experiment, the advertising stimuli was designed to replicate the "look and feel" of a prior Coca-Cola ad (see Annexures A and B). The researcher ensured that all design features remain consistent across the stimuli, taking care to only manipulate the experimental variable(s), to further minimize the effects of extraneous variables.

Finally, the study contained baseline conditions for each independent variable which allow the researcher to compare the results of the experiential groups against these baseline groups and to identify the specific effects of the interventions (message type and channel type), further increasing the validity and reliability of the experiment.

4.7. Measurement instrument

To collect data from participants, the researcher used an electronic questionnaire, created in Qualtrics. This data collection process was chosen as it allows respondents to remain anonymous. Due to the topic of the study, it was important that participants could hide their identity – for ethical purposes and, to prevent response biases (such as social desirability bias) relating to the recycling topic (Grimm, 2010). Additionally, electronic questionnaires provide a convenient and accessible way for participants to respond to the survey. Using an electronic questionnaire allowed the researcher to collect information from a larger and more diverse sample because participants could complete the questionnaire remotely. Electronic questionnaires further minimise systematic sampling errors associated with manual data entry, and are a reliable way to randomize the different stimuli presented to participants (Babin & Zikmund, 2016). The researcher was also able to include validation checks that ensured participants complete all questions in the survey to enhance data accuracy.

4.8. Structure of the electronic questionnaire

Introduction: The questionnaire started with an introductory paragraph that introduced participants to the study and invited them to take part. Participants were informed that the research "investigates the impact of people's reactions to marketing communications" so that they were aware of the types of questions they could expect. The researcher took care not to prime the participants by ensuring that there was no specific mention of recycling in the introduction, as a procedure to ensure against socially desirable responses. The introduction also included an estimated time that the questionnaire would take to complete and respondents were assured their answers would be kept anonymous and confidential (refer to Annexure C for the full questionnaire).

Condition exposure: As soon as participants began the questionnaire, they were randomly exposed to one of the eight conditions and asked to read through the advertisement. The participants were thereafter introduced to the scaled variable questions and asked to indicate the extent to which they agree with the statements after viewing the advertisement.

Dependant variable: To measure participants' recycle intention, the survey included three items by Wan *et al,* (2017) that measured the construct (these items were placed directly after the stimuli to measure the direct impact of the advertisement on recycle intention). Specifically, the items used to measure the dependant variable (recycle intention) were measured on a 7-point, Likert Scale ranging from "Strongly agree" to "Strongly disagree" and were adapted from (Wan *et al*, 2017). The 7-point scale was chosen to ensure that the collected data was able to capture precise variations in responses without overwhelming participants with an excessive number of choices (Finstad, 2010). Respondents were thus able to express their opinions with greater precision, allowing the researcher to collect a more detailed understanding of their attitudes toward the dependant variable.

Extraneous variables: The next section of the survey measured participants' environmental concern through four, 7-point Likert Scale items, adapted from Kilbourne & Pickett (2008), measured in the same way as the dependant variable. These questions were followed by a section asking participants to express their attitudes towards recycling. Attitudes were measured by asking respondents to express their response to four statements on a 5-point bi-polar scale adapted from Arli *et al* (2019). Two of these statements were reverse-scored to mitigate response biases, such as acquiescence or response sets, and to ensure that participants were paying attention and not simply providing uniform responses (Baumgartner & Steenkamp, 2006). It was necessary to collect this data, as these variables could potentially impact the cause-and-effect relationship of the experiment. For instance, respondents with a low/ high environmental concern may have intrinsic biases towards the communication which could impact how they process and respond to recycling campaigns.

Demographics: The survey ended with five demographic questions, asking participants to indicate their *recycle frequency* (5-point scale), *gender, year of birth, nationality*, and *employment status*. This data was necessary to create a sample profile of the respondents.

4.9. Validity and reliability of measurement instrument

To ensure that the research findings are credible and trustworthy, the researcher ensured that the measurement instrument was reliable and valid in its design.

4.9.1. Reliability

Reliability is the consistency and stability of the instrument in measuring the intended construct over time and across different conditions (Churchill, 1979). Due to time and resource constraints, the researcher was unable

to conduct a large enough pilot study to assess the internal consistency of the questionnaire items, however the researcher did test for reliability of the final results from participants before beginning the data analysis. The Cronbach's alpha was used as a reliability check and yielded a value of 0.912 for the dependant variable, indicating a very high level of internal consistency (Annexure D). The value of the Cronbach's alpha thus suggested that the questionnaire items measured recycle intention in a consistent and reliable manner.

4.9.2. Validity

The validity of the measurement instrument refers to the degree to which the instrument accurately measures what it is intended to measure (Churchill, 1979).

Content Validity: The researcher ensured content validity by conducting a comprehensive review of the relevant literature and identified the main recurring, pre-defined scale items that were present across a range of credible sources within the current body of literature (Arli *et al*, 2019; Kilbourne & Pickett, 2008; Wan *et al,* 2017). The final questionnaire items were double checked with the study supervisor, to ensure that the items adequately captured the intended constructs. Through a thorough review of relevant literature, theoretical frameworks and an expert review, the researcher ensured that the questionnaire items fully encompassed the key dimensions of the measured constructs.

Face validity: Face validity refers to the subjective judgment of whether the questionnaire items appear to measure what they are intended to measure (Holden, 2010). This process involved assessing the clarity, relevance, and comprehension of the questionnaire items through the perspective of potential respondents. The researcher ensured face validity by pre-testing a pilot version of the questionnaire with a small group of participants who provided feedback on the clarity of the items. Feedback from the initial pilot respondents was that it was not clear whether the questions relating to recycle intention were to be answered based on seeing the advertisement, or more generally. The researcher then made adjustments to the wording of the question to emphasise that these items should be answered in relation to the information in the ad.

Construct validity: The researcher ensured that the scores obtained from the questionnaire items align with the underlying theoretical constructs they are indented to measure. Thus, all constructs measured in the questionnaire were taken from pre-defined, pre-tested scales available in existing literature. In some cases, the items were slightly adapted, changing only a few words to better relate to the context of the current study. The researcher made sure not to affect the intrinsic meaning of these items during the adaptation. By using pre-defined, pre-tested scale items (referenced in section 4.8.) to measure the constructs of the study, convergent validity is secured as items automatically resemble existing, established measures of the same construct.

4.9.3. Scale sensitivity

When developing the measurement instrument, the researcher chose to use a 7-point Likert scale to measure the dependant variable. By implementing this scale, it ensured that the measurement instrument was able to detect meaningful nuances and differences in recycling intention between participants without overloading the respondents with choices. The research objectives of the study were also reliant on the results of only three items used to measure the dependant variable, making it essential that the researcher was able to detect small changes and subtle variations between responses pertaining to the construct. Additionally, due the variation in treatment conditions, a 7-point scale ensured that the questionnaire was sensitive enough to identify treatment effects.

All in all, the reliability and validity of the measurement instrument were thoroughly assessed by the researcher. The high internal consistency and strong associations with relevant constructs from existing measures indicate that the instrument is reliable and valid for measuring the recycle intention. These insights mean that the results can be confidently interpreted and generalized.

4.10. Sampling Plan

The sampling plan presents the researcher's procedure to select and obtain the participants of the research study. This section outlines how the sample was selected and elaborates on the sampling technique and procedure.

Target population: The target population in this study included a broad scope of individuals across all ages, genders, nationalities and occupation statuses. By accepting a wider range of respondents, the researcher could ensure that the findings are more internationally generalizable. This was a viable approach since the topic (recycling) is a globally recognized concern and recycling messages are generally targeted towards broad demographic audiences. The researcher therefore did not restrict the target population to any specific criteria.

Sample size: The researcher required that the sample size of this study be at least 400 participants (50 per condition) to secure reliable and meaningful results. The researcher further confirmed that this number adheres to the general guidelines within the marketing field and provides a reasonable number of data points for analysing the research objectives (Field & Hole, 2002).

Sampling technique and procedure: Since it would be impossible for the researcher to obtain a complete sample frame of all consumers globally, non-probability sampling was used (Babin & Zikmund, 2016). This method of selecting participants does not involve random selection, meaning that each person in the target population did not have an equal chance of being selected. However, due to the difficulty and impracticality of obtaining a representative sample from the target population, non-probability sampling was a suitable

technique for the study. The researcher does, however, acknowledge the limitations relating to the generalizability of the findings to the larger population by using this method.

The study made use of a combination of convenience sampling and snowball sampling for practical reasons due to time and financial constraints. The researcher began using convenience sampling by selecting participants who were readily available and easily accessible in their close network. These participants were targeted via the researcher's own social media platforms such as LinkedIn, Instagram & WhatsApp. The researcher used these social media platforms to distribute a shareable link to the electronic questionnaire, and potential respondents could then decide to participate in the study by following the link.

Though convenience sampling is efficient and easy to implement, the researcher was aware of potential biases that could arise since the targeted individuals may not represent the full diversity of the target population. In attempt to maximize the diversity of the respondents, the researcher targeted WhatsApp groups containing international students from past studies abroad in an attempt to attract participants with different nationalities and mindsets. In parallel to this, the researcher implemented snowball sampling by asking specific respondents in their close network to share the questionnaire with their friends and family. The researcher intentionally targeted individuals from diverse nationalities, ages and backgrounds to assist in the distribution of the shareable link to the survey until at least 350 respondents were reached.

In the final steps of the sampling, the researcher decided to recruit 50 participants via the online research platform – Prolific. This decision was made to further diversify the pool of respondents and reduce biases. The parameters were set to include participants from Europe and the UK (considering that majority of the prior responses were from Norwegians and South Africans due to the researcher's personal ties within these countries). The researcher also set the distribution to be evenly spread between male and female respondents who were each remunerated with EUR O,30 for completing the survey via the Prolific platform. The survey was active for 15 days and closed after 475 questionnaire responses were collected.

4.11. Data analysis

This section highlights the techniques and procedures used to analyse the collected data to develop meaningful insights, interpretations and discussions about the results. After collecting responses from 475 respondents on Qualtrics, the researcher exported the data into SPSS for further analysis.

4.11.1. Data preparation

Data cleaning: Before running any analyses on the data, the researcher made sure to clean the data by removing all incomplete respondents from the dataset. Preview responses were also removed during this process as they were the researcher's personal checks to test the measurement instrument. As a result, the responses from 416 participants remained suitable to be used in the study.

Regarding demographics, the question related to "nationality" was an open-ended question and the researcher manually reviewed and adapted these answers to fit into specific national categories for analysis. For example, South African participants often answered "SA; RSA; and South Africa" – these cases were adjusted by the researcher to all display the nationality "South African".

Finally, the two reverse-coded items within the *attitude towards recycling* construct were recoded to ensure that the original scoring direction was reversed for the relevant items.

Pre-processing techniques: The researcher the computed average variables for the dependant variable (recycle intention) and the potential covariate (environmental concern). The computation of these averages was to create composite scores that represent the overall level of the construct for each participant - simplifying the data interpretation by condensing multiple items into a single representation of the construct.

In line with the requirements of a two-way Analysis of Covariance (ANCOVA), the researcher needed to ensure that the collected data from the independent variables were represented categorically. To achieve this, the researcher assigned each respondent to a channel type and a message type, based on the advertising condition that they were exposed to. To measure the independent variable: "*channel type"*, participants were assigned a 1 for those who were exposed to the brand-led communication, and assigned a 2 if exposed to the influencer-led condition. In addition, participants were also assigned a value relating to the independent variable: "*message type"* that they were exposed to. The message type values were assigned as followed: 1 – Baseline; 2 – Control; 3 –Involvement; 4- Surprise. This assignment enabled the researcher to systematically explore and analyse the main, and combined effects of channel type and message type on the dependant variable, allowing for a comprehensive examination of the research questions at hand.

4.11.2. Data analysis software and technique

The researcher used a two-way ANCOVA as the primary statistical technique in this study. This technique best suited to the research objectives which allow the researcher to determine both the main and interaction effects of the two independent variables (message type and channel type) on the dependant variable (recycle intention), while also accounting for the potential environmental concern covariate. When running the ANCOVA analysis through SPSS, the researcher selected the R-E-G-W-Q post hoc test as this test offers good control of type-one errors when sample sizes are similar – it also offers good power (the ability to test a significant difference when it is actually there). The researcher selected a significance level of 0.05 (95% confidence interval) and opted for the Bonferroni confidence interval adjustment when setting up the test.

All in all, the resulting output of this statistical technique allows the researcher to identify (in)significant results that could support or reject the suggested hypotheses. The researcher identified significant results when the "p-value" of the variables test statistic was smaller than 0.05.

CHAPTER 5

RESULTS

5.1. Introduction

The objective of this study was to examine the effectiveness of product transformation messages that incorporate different types of personal message framing (control, involvement, surprise) in enhancing recycling intentions, compared to product transformation messages without personal message framing. Additionally, the researcher sought to identify the specific types of personal message frames that had the greatest positive impact on recycling intention, and to test the effectiveness of these messages across brand and influencer communication channels. As a result, experimental research was conducted to test the following hypotheses:

Hypothesis 1*: Product transformation messages that are enhanced with personal message frames (control, involvement, surprise) are more effective at increasing intention to recycle than generic product transformation communications without personalized enhancements.*

Hypothesis 2: *Product transformation communication which contains the surprise framing condition is the most effective at improving consumer intention to recycle.*

Hypothesis 3: *The use of influencers as a medium to communicate product transformation is more effective at improving customer recycle intentions compared to brand-led communication.*

The researcher also examined the influence of environmental concern to account for a potential covariate effect within the results.

The preceding chapter explains the methodology employed in the experimental research, while this chapter presents the results. The researcher begins by highlighting demographic information regarding the sample population. These insights provide a comprehensive overview of the sample characteristics, before presenting the inferential analyses. In the inferential analysis, the researcher presents the results derived from statistical testing to examine relationships, determine significance, and uncover any associations or patterns that exist within the data. These insights guide the researcher in to make conclusions about the research objectives and hypotheses.

5.2. Descriptive results

5.2.1. Sample size

The researcher collected responses from 475 subjects, however, after applying the data cleaning procedures (detailed in section 4.11.1.) only 416 responses were eligible for the final analysis. Of the 416 recorded

responses, between 49 and 55 subjects viewed each of the eight stimuli conditions. Table 1 below, presents an overview of the number of survey responses collected per each of the eight stimuli conditions.

Sample size per stimuli (n = 416)		
Message Type	**Channel Type**	**N**
Base	Brand	53
	Influencer	50
Control	Brand	52
	Influencer	51
Involvment	Brand	55
	Influencer	55
Surprize	Brand	51
	Influencer	49
Total		416

Table 1: Sample and cell sizes
(Source: SPSS)

5.2.2. Sample Profile

The demographic information about the sample highlight important characteristics of the participants involved in the study. As the study was conducted electronically, it had the advantage of reaching individuals from diverse countries. Consequently, the sample consists of respondents from 36 different nationalities (see Annexure E for a detailed list of nationalities represented, as well as the frequency of each).

The pie chart below (Figure 1) represents how the different nationalities were distributed across the sample. Six main nationalities accounted for nearly 80% of the overall sample. Among these, South Africans constituted the largest portion, comprising 44% of the overall sample. The following nationalities were also well-represented: British (9%), Italian (7%), Norwegian (7%), German (6%), and French (5%).

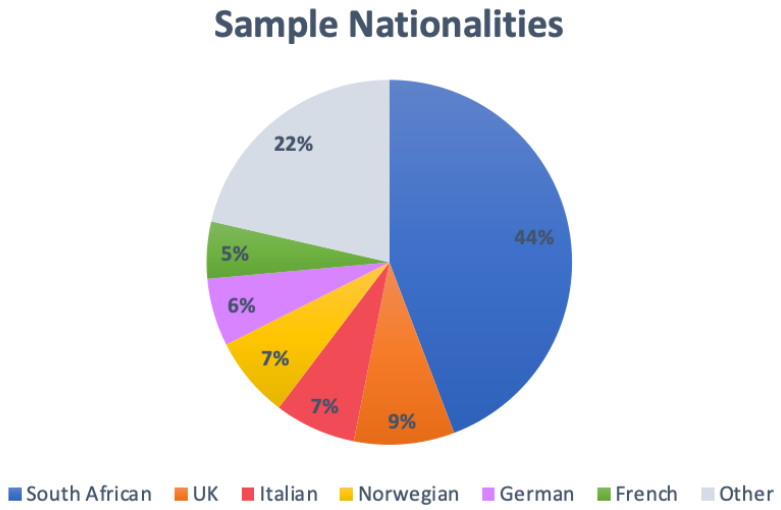

Figure 1: Sample Nationalities
(Source: Own elaboration)

In addition, Table 2 displays the frequency, counts and percentages for gender, age, and status of the sample subjects.

Sample profile (n = 416)			
	F	%	Cum %
Gender			
Male	151	36,3	36,3
Female	261	**63,7**	99
Unknown	4	1	100
Status			
Student	161	38,7	38,7
Working	196	47,1	**85,8**
Unemployed / Retired	43	10,3	96,2
Other	16	3,8	100
Age Group			
18-24	126	**30,3**	30,3
25-34	135	**32,5**	62,7
35-44	35	8,4	71,2
45-54	24	5,8	76,9
55+	96	**23,1**	100

Table 2: Sample profile
(Source: Own elaboration)

As presented in Table 2, the majority of the overall sample consisted of females, who accounted for 63.7% of the participants. Moreover, a substantial portion (85.8%) of the sample comprised individuals who were either students or employed, suggesting that they demonstrated some level of academic or professional background prior to completing the questionnaire. In terms of age distribution, the researcher observed that approximately one-third of the sample fell within the 18-24 age range, while another third belonged to the 25-35 age bracket. A smaller proportion (14.2%) represented individuals in the two middle-aged categories, specifically between 35 and 54 years old. Interestingly, a larger segment of the sample consisted of individuals aged 55 and above (23.1%).

5.2.3. Sample recycling habits

Table 3 presents the frequencies and percentages of the respondents' recycling frequency in the overall sample. As depicted in the table and the accompanying pie chart (Figure 2), the participants in the sample demonstrated commendable recycling practices. In total, 69.5% of the sample reported recycling "always" or "often," indicating a strong commitment to recycling. Conversely, only 2.9% of the respondents indicated that they never recycle. These insights inform that the results of the study should be considered in light of people who have a pre-existing recycling habits.

Recycling frequency (n = 416)		
	F	%
Always	130	31,3
Often	159	38,2
Sometimes	93	22,4
Rarely	22	5,3
Never	12	2,9
Total	416	100

Table 3: Sample descriptive: Recycling frequency
(Source: Adapted from SPSS)

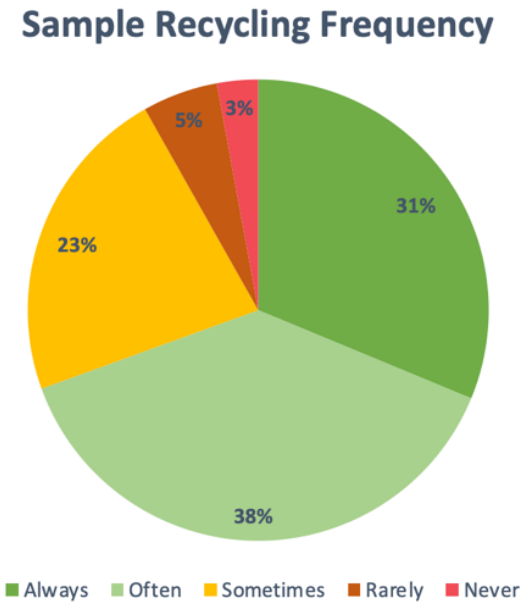

Figure 2: Sample descriptive: Recycling frequency
(Source: Own elaboration)

5.2.4. Descriptive results for composite variables

Table 4 presents the mean scores and standard deviations for each of the composite variables used in the questionnaire (intention to recycle, environmental concern, attitude towards recycling). The results indicate that the sample displayed a high mean score for the environmental concern variable, with a value of 5.99. Similarly, the overall intention to recycle was relatively high, with a mean score of 5.0833 on the 7-point scale.

Further analysis reveals a negatively skewed distribution for the intention to recycle and environmental concern variables, as indicated by the negative skewness coefficient. This implies that the majority of the values were concentrated on the right side of the scale, indicating a higher frequency of favourable responses. Conversely, the attitude towards recycling composite variable demonstrated a positive skewness coefficient, suggesting a right-skewed distribution. In this case, the tail of the distribution extends more to the right, while the majority of the values are concentrated on the left side. This indicates that, overall, participants displayed a lower attitude towards recycling. Note that these interpretations are solely based on the skewness coefficients, and the specific significance of the findings across different groups will be addressed in the inferential analysis of this study.

These findings offer a general understanding that, following exposure to the stimuli, the sample displayed positive intentions to recycle overall. In addition, the sample exhibited a strong level of environmental concern, however, demonstrated overall negative attitudes towards recycling. These results initially suggest that, despite individuals holding negative attitudes towards recycling, the use of such stimuli conditions may still prove effective in enhancing recycling intentions. In the subsequent section, the researcher delves deeper into the significance of these findings and the effect across different groups within the study.

Descriptive Statistics

	N	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Std. Error
Intention to recycle (Ave)	416	5.0833	1.49573	-.666	.120
Environmental Concern (Ave)	416	5.9964	1.05582	-1.727	.120
Attitude towards recycling (Ave)	416	3.1647	.42468	1.344	.120
Valid N (listwise)	416				

Table 4: Mean scores for composite variables of the study (Source, SPSS)

5.3. Inferential analysis

To determine whether the hypotheses should be rejected or accepted, the study initially conducted a 2-way ANOVA to examine the effects of the two independent variables (message type and message channel) on the dependent variable (recycle intention). This analysis aimed to investigate the main effects of each independent variable as well as the potential interaction between them. In addition, the researcher performed an ANCOVA to further account for the effects of environmental concern as a potential co-variate. By employing these statistical approaches, the researcher sought to gain a deeper understanding of how these variables contribute towards variations in recycling intention.

This section presents the key findings obtained from the two-way ANOVA, and subsequent ANCOVA analyses, highlighting significant main effects and exploring any observed interaction effects that guide the researcher in addressing the research objectives.

5.4. ANOVA results

Before inferring the effects of each of the independent variables, the researcher analysed the overall two-way ANOVA output to determine whether significant main and/or interaction effects were present. The results of between-subjects effects (Table 5) indicate significant main effects of both channel type and message type. More importantly, there was a significant interaction effect between channel and message type on the dependant variable ($p < 0.05$).

These results indicate, firstly, that the type of message framing used when communicating product transformation messages has a significant effect on intention to recycle. Secondly, the channel through which the message is communicated also has a significant effect on recycling intention. Finally, there was an interaction effect between the message and channel type – signalling to the researcher that one channel may be more effective than the other depending on the message frame used, and vice versa. These effects are considered significant as indicated by a p-value that is below 0.05 (Field, 2013).

In addition, Table 5 also informs that 22,9% of the variance in the dependant variable can be attributed to message type, while only 1,2% of the variance in the dependant variable is explained by channel type. This information is indicated by the Partial Eta Squared and provides an initial indication of the strong effect of message type on recycle intention.

Nonetheless, this information tells the researcher that there are significant effects, but they do not inform about the magnitude or direction of the effects. Thus, further analysis was conducted to analyse each of the findings.

Dependent Variable: INT_AVG

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	266.389[a]	7	38.056	23.452	<.001	.287
Intercept	10744.150	1	10744.150	6621.217	<.001	.942
Channel_Type	8.024	1	8.024	4.945	.027	.012
Message_Type	197.154	3	65.718	40.500	<.001	.229
Channel_Type * Message_Type	60.234	3	20.078	12.373	<.001	.083
Error	662.056	408	1.623			
Total	11678.000	416				
Corrected Total	928.444	415				

a. R Squared = .287 (Adjusted R Squared = .275)

Table 5: Tests of Between- Subjects Effects (Source, SPSS)

5.4.1. ANOVA Main effect: Message Type

Following on the overall findings, the researcher conducted further analysis into the main effects of each of the independent variables, starting with message type. Hypothesis 1 suggests that all message framing conditions should improve intention to recycle more than the baseline case with no personal message frame.

Table 6 (below) provides an overview of the mean scores of recycle intention based on the four different message types. The researcher already knows that message type has a significant effect on average recycle intention; however, it is now clearer that all message framing types have a more positive effect on average recycle intention, compared to the baseline condition. This deduction is made after noticing the low mean score of the base condition, compared to the higher mean recycle intention scores of the three message framing conditions. **Therefore, hypothesis 1, which expects all personal framing conditions to be more effective at improving recycle intention, is supported.**

Estimates

Dependent Variable: INT_AVG

Message_Type	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Base	3.952	.126	3.706	4.199
Control	5.321	.126	5.074	5.567
Involvment	5.230	.121	4.992	5.469
Surprize	5.841	.127	5.590	6.091

Table 6: Mean scores of recycle intention based on message type (Source, SPSS)

In addition, Table 6 highlights that the surprise message type has the highest overall mean for recycle intention (5.841) – this indicates that messages which were enhanced with the surprise message frame condition were more effective at increasing recycling intention compared to all other message framing conditions. Conversely, messages that contained only product transformation information, with no personal message frame enhancements (baseline condition), resulted in the lowest mean recycle intentions (3.952).

These findings support hypothesis 2 which states: "Product transformation communication which contains the *surprise* framing condition is the most effective in improving consumer intention to recycle".

The pairwise comparison (Table 7, below) further supports the above findings. Initially, the researcher is aware that there is a significant difference between message types on recycle intention (Table 5), however the pairwise comparison table indicates where these differences are at the individual levels of message type. Table 7 presents that all pairwise comparisons are significant (p-value < 0.05) except between *control* and *involvement*. This means that the means of these groups are not statistically different from each other based

on the observed data. However this does not affect the initial findings which suggest that surprise message framing is the most effective (all pairwise comparisons for surprise are significant).

Pairwise Comparisons

Dependent Variable: INT_AVG

(I) Message_Type	(J) Message_Type	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
Base	Control	-1.368*	.178	<.001	-1.839	-.897
	Involvment	-1.278*	.175	<.001	-1.741	-.815
	Surprize	-1.888*	.179	<.001	-2.363	-1.414
Control	Base	1.368*	.178	<.001	.897	1.839
	Involvment	.090	.175	1.000	-.373	.553
	Surprize	-.520*	.179	.023	-.994	-.046
Involvment	Base	1.278*	.175	<.001	.815	1.741
	Control	-.090	.175	1.000	-.553	.373
	Surprize	-.610*	.176	.003	-1.077	-.144
Surprize	Base	1.888*	.179	<.001	1.414	2.363
	Control	.520*	.179	.023	.046	.994
	Involvment	.610*	.176	.003	.144	1.077

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Table 7: Message type – Pairwise comparisons (Source, SPSS)

5.4.2. ANOVA Main effect: Message channel

The next step in the data analysis process was to investigate the main effect of channel type on recycling intention. The researcher knows from before (section 5.4.) that channel type has a significant effect on the dependant variable, and will now further analyse the output to understand the mechanics of this effect.

Table 8 (below) indicates that the average recycle intention of participants who were exposed to a brand-led condition (5.225) is higher than the mean recycle intention of those who were exposed to the influencer-led communication channel (4.947). This means that when considering only the main effects of the channel type on intention to recycle, the brand-led channel of communication is more effective than influencer-led channels. However, these insights do not account for interaction effects of the message channel and assesses purely the overall independent effect of channel type on the dependant variable.

Estimates

Dependent Variable: INT_AVG

Channel_Type	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Brand	5.225	.088	5.053	5.397
Influencer	4.947	.089	4.772	5.122

Table 8: Mean scores of recycle intention based on message channel (Source, SPSS)

5.4.3. ANOVA Interaction effect: Message x Channel type

By examining the interaction effects of the two-way ANOVA, the researcher is able to explore the complex interplay between message type and channel type on the dependant variable, recycle intention. Interaction effects provide valuable insights about the combined influence of variables on the outcome of interest. The researcher therefore conducted further exploration and interpretation of the observed interaction effects from the SPSS output.

The researcher already knows that there is a significant difference in means due to the interaction between message type and message channel (refer to section 5.4.). The next step was then to analyse where these differences exist by comparing the different combinations of interactions between the message type and channel type.

In the channel type by message type pairwise comparison below (Table 9), it is evident that the interaction effects between message type and channel type are only significant ($p < 0.05$) between two message framing conditions (control and involvement) and channel type. This means that for the baseline and surprise message types, there is no interaction effect with channel type.

Pairwise Comparisons

Dependent Variable: INT_AVG

Message_Type	(I) Channel_Type	(J) Channel_Type	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
						Lower Bound	Upper Bound
Base	Brand	Influencer	.158	.251	.529	-.336	.652
	Influencer	Brand	-.158	.251	.529	-.652	.336
Control	Brand	Influencer	-.705*	.251	.005	-1.199	-.212
	Influencer	Brand	.705*	.251	.005	.212	1.199
Involvment	Brand	Influencer	1.406*	.243	<.001	.929	1.884
	Influencer	Brand	-1.406*	.243	<.001	-1.884	-.929
Surprize	Brand	Influencer	.253	.255	.321	-.248	.754
	Influencer	Brand	-.253	.255	.321	-.754	.248

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Table 9: Channel type by Message type pairwise comparisons (Source, SPSS)

Table 6 presented the baseline message type to have the smallest effect on recycle intention and the surprise message type to have the highest positive impact on recycle intention. To add to these insights, the insignificant pairwise comparisons in Table 9 indicate that baseline and surprise message framing conditions are not impacted by channel type.

This means that for both brand-led and influencer-led communication channels, the surprise message frame remains most effective, while the baseline message type is least effective in improving recycling intentions.

5.5. Subsequent analyses of interaction effect

Since Table 9 (above) informs that only control and involvement message conditions have a significant interaction effect with channel type, the researcher decided to run another ANOVA that included only these message types, in order to get a clearer overview of the interaction.

All steps to produce the output remained the same as the main study, however, for the subsequent analysis the researcher excluded the surprise and baseline message type conditions. This exclusion resulted in an ANOVA analysis that measured only the main and interaction effects of two message types (control and involvement) and channel type, on the dependant variable (recycle intention).

In this case, both channel type and message type did not present any significant main effects on mean recycle intention. However, as expected, there was a significant interaction effect ($p < 0.05$) between the channel type and the two message types on the mean intention to recycle (see Table 10).

Tests of Between-Subjects Effects

Dependent Variable: INT_AVG

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	67.575[a]	3	22.525	12.079	<.001	.148
Intercept	5921.155	1	5921.155	3175.229	<.001	.938
Channel_Type	6.531	1	6.531	3.502	.063	.016
Message_Type	.433	1	.433	.232	.630	.001
Channel_Type * Message_Type	59.275	1	59.275	31.787	<.001	.132
Error	389.742	209	1.865			
Total	6378.111	213				
Corrected Total	457.318	212				

a. R Squared = .148 (Adjusted R Squared = .136)

Table 10: Subsequent AVOVA output including only two message types (Source, SPSS)

Since the subsequent analysis proves a significant interaction effect, the researcher continued the analysis to uncover the nature of the interaction in order to provide nuanced insights into the relationships between the variables of interest. Table 11 presents the mean recycle intention scores for each of the combination sets of

independent variables (message type and message channel). The results from this table present that **involvement message framing** (M = 5.933) is **more effective** than control message framing (M = 4.968) within the **brand-led channel**. However, for the **influencer-led channel**, a **control message** frame (M = 5.673) is **more effective** than an involvement message frame (M = 4.527).

The above interaction effect provides additional insight regarding Hypothesis 3 which suggests: "The use of influencers as a medium to communicate product transformation is more effective at improving customer recycle intentions compared to brand-led communication". The results present that the influencer led-channel can be more effective than the brand-led channel, but only in when a control message frame is used. **Hypothesis 3 is thus only partially supported by the results.**

4. Channel_Type * Message_Type

Dependent Variable: INT_AVG

Channel_Type	Message_Type	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Brand	Control	4.968	.189	4.595	5.341
	Involvment	5.933	.184	5.570	6.296
Influencer	Control	5.673	.191	5.296	6.050
	Involvment	4.527	.184	4.164	4.890

Table 11: Interaction effects of control & involvement message type by channel type (Source, SPSS)

5.6. Profile Plots

After identifying the statistically significant relationships between the variables of the study, the researcher included profile plots as a visual tool to illustrate the patterns and trends presented in the data. The inclusion of these plots is to enhance the understanding of the observed effects discussed previously.

Figure 3, below, presents the main effect of message type on the mean levels of recycle intention. All pairwise comparisons in the ANOVA output for message type were significant ($p < 0.05$) except for the control, involvement pair. This means that the researcher could not make deductions about whether the control or involvement condition are more effective across all message channels. However, due to these two message conditions being significant within all other pairs, it meant that the researcher could confirm the initial findings in the research. The findings suggest that the surprise message frame is the most effective message approach to improve recycle intention when compared to other message framing conditions (control and involvement) and the baseline message condition containing only product transformation information without any personal framing enhancements. Conversely, the baseline message condition proved to be the least effective at

improving intention to recycle – as represented by the lowest mean score in the plot (figure 3). The plot below presents the significant overall main effect of message type, independent of the message channel chosen.

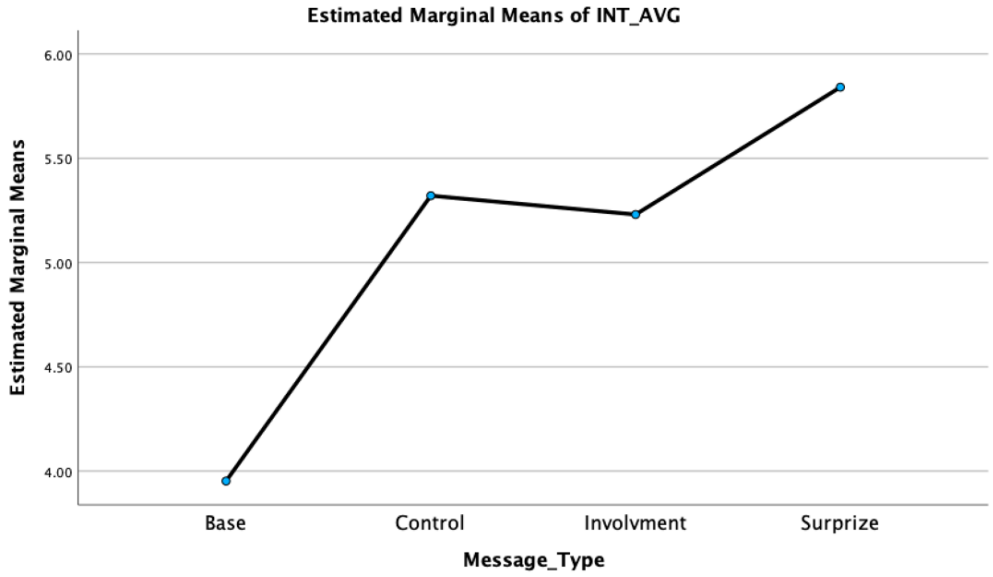

Figure 3: Plot of the main effect of message type on estimated recycle intention (Source, SPSS)

Figure 4 plots the main effect of channel type (independent of message) on the dependant variable. Here, the graph visually displays the findings that the brand-led channel is more effective than the influencer-led channel – presented through higher mean recycle intention scores presented by those who were not exposed to the presence of an influencer. The researcher is able to interpret this plot at its face value due to the significant ANOVA findings of the main effect of message type ($p < 0.05$).

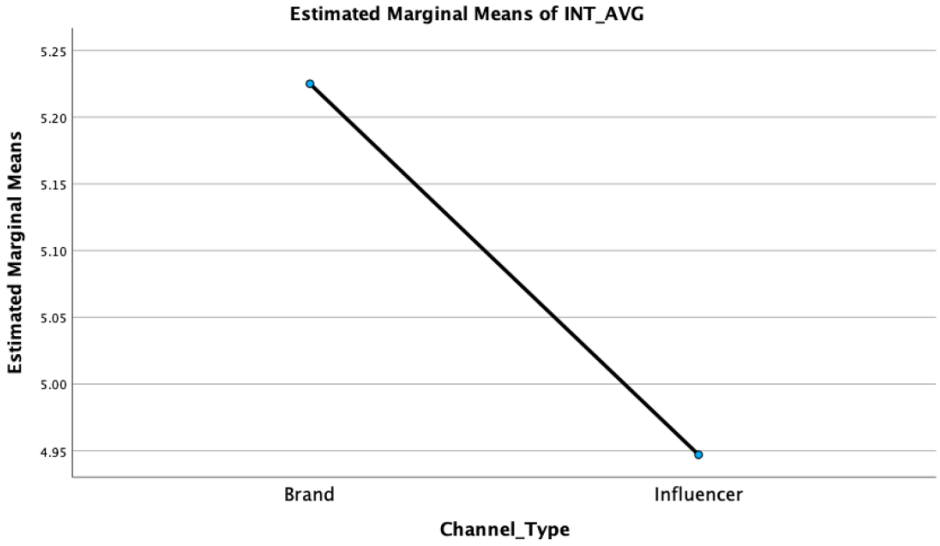

Figure 4: Plot of the main effect of channel type on estimated recycle intention (Source, SPSS)

However, the researcher also acknowledged a significant interaction effect ($p < 0.05$) between the message types (control, involvement) and channel type in the ANOVA table, and thus, the profile plot in figure 5 provides a visual insight into these interacting relationships. Though figure 4 suggests that the brand channel is more effective at improving recycle intention, when further evaluating the channel in combination with the message type – the researcher uncovered a different result due to the interaction. Figure 5 below visually displays insights into this relationship, informing that the brand channel is actually less effective when the advertised message contains control framed enhancements. This implies that in cases when product transformative communication is communicated by an influencer, and communicators need to decide between control or involvement message frames, control framed messages should be used.

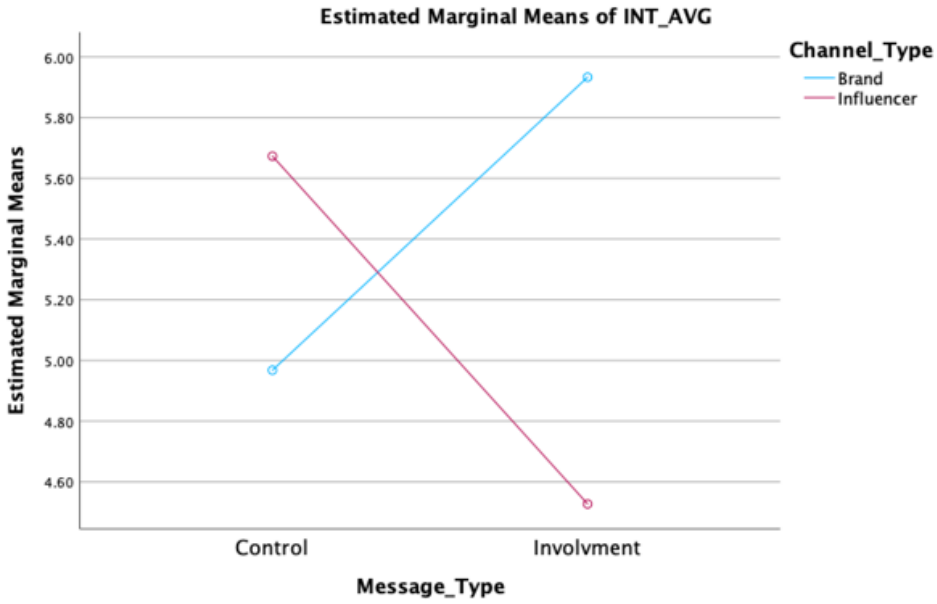

Figure 5: Plot of the significant interaction effect between message type (control, involvement) and message channel on estimated recycling intention (Source, SPSS)

5.7. ANCOVA Analysis

In light of the above findings, the researcher also acknowledges that the level of environmental concern between the participants may have impacted the results. For instance, even though the initial ANOVA did find favourable effects of message type and channel type in improving recycling intention, these findings may be as a result of the sample's predefined concerns about the environment in general. The researcher thus decided to control for the environmental concern by adding this variable as covariate in the statistical analysis. To account for this potential covariate, the researcher conducted an ANCOVA. This technique investigates the difference between the mean recycle intentions across different channel and message types, while controlling for the differences in environmental concern.

5.7.1. Homogeneity of regression assumption

Before conducting the ANCOVA, the researcher needed to test the homogeneity of regression assumption. This means that the co-variate (environmental concern) is required to have an equal regression co-efficient associated across all groups of the independent variables. More simply, the correlation between the covariate and the dependent variable should be the same for all groups and thus, the effect of environmental concern on recycling intention should not differ across the groups being compared.

Table 12 below represents the Test of Between-Subjects Effects when environmental concern is included as a covariate. The output is based on a custom model applied to test the interactions – in line with the homogeneity of regression assumption. This output presents that message type by environmental concern; channel type by environmental concern; and the interaction between message type, channel type and environmental concern, are not significant ($p > 0.05$). This means that the researcher can fail to reject the null hypothesis that there is no message type by environmental concern effect on recycling intention – similarly, for channel type by environmental concern; and also the interaction. Therefore, the homogeneity of regression assumption holds (we fail to reject it).

It is worth noting that the consistent homogeneous result is to be expected, as the assumption of regression homogeneity is already upheld through the randomization process when the survey was distributed.

Tests of Between-Subjects Effects

Dependent Variable: INT_AVG

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	331.755[a]	12	27.646	18.672	<.001	.357
Intercept	10553.429	1	10553.429	7127.715	<.001	.946
Channel_Type	7.483	1	7.483	5.054	.025	.012
Message_Type	207.736	3	69.245	46.768	<.001	.258
EnvCon_Effect	79.800	1	79.800	53.896	<.001	.118
Channel_Type * Message_Type * EnvCon_Effect	6.553	3	2.184	1.475	.221	.011
Message_Type * EnvCon_Effect	7.318	3	2.439	1.647	.178	.012
Channel_Type * EnvCon_Effect	.146	1	.146	.099	.753	.000
Error	596.689	403	1.481			
Total	11678.000	416				
Corrected Total	928.444	415				

a. R Squared = .357 (Adjusted R Squared = .338)

Table 12: Homogeneity of regression assumption: Test of Between – Subjects Effects (Source, SPSS)

Since the assumption holds, the researcher then proceeded with the ANCOVA (full factorial model). By this, the researcher was able to test the main hypothesis in question: do the differences between channel type (or message type) and recycling intention still manifest in the data if environmental concern is controlled for? This analysis also allowed the researcher to check the assumption of homogeneity of variances.

5.7.2. Homogeneity of variances assumption

The homogeneity of variances assumption requires the variances of the dependent variable to be equal across all groups, regardless of the covariate level. In line with this assumption, the output from Levene's test of Equality of Error Variances (Table 13) reflects that the variances are not statistically significant from each other ($p > 0.05$), proving that the assumption of homogeneity of variances holds.

Levene's Test of Equality of Error Variances[a]

Dependent Variable: INT_AVG

F	df1	df2	Sig.
.604	7	408	.752

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + EnvCon_Effect + Channel_Type + Message_Type + Channel_Type * Message_Type

Table 13: Levene's Test: Homogeneity of Variances assumption (Source, SPSS)

5.7.3. ANCOVA: Main effects

The focus of the ANCOVA analysis is to determine whether there is a statistically significant difference in mean recycling intentions based on channel type and message type, while considering the influence of environmental concern. The SPSS output (Table 14) indicates that both channel type and message type continue to exert significant effects on recycling intentions, even after accounting for environmental concern ($p < 0.05$). The interaction effect between channel and message type also remains significant ($p < 0.05$). In addition, the Partial Eta Squared for message type improves when controlling for environmental concern. This signifies that, with the influence of environmental concern taken into account, message type now explains 27.5% of the variability in intention to recycle (compared to 22.9% previously).

Tests of Between-Subjects Effects

Dependent Variable: INT_AVG

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	376.127[a]	8	47.016	34.646	<.001	.405
Intercept	10743.205	1	10743.205	7916.614	<.001	.951
EnvCon_Effect	109.738	1	109.738	80.865	<.001	.166
Channel_Type	5.430	1	5.430	4.001	.046	.010
Message_Type	209.665	3	69.888	51.500	<.001	.275
Channel_Type * Message_Type	56.968	3	18.989	13.993	<.001	.093
Error	552.318	407	1.357			
Total	11678.000	416				
Corrected Total	928.444	415				

a. R Squared = .405 (Adjusted R Squared = .393)

Table 14: ANCOVA: Between-Subjects Effects (Source, SPSS)

Tables 15 and 16 (below) present the adjusted means for each independent variable condition. This adjustment is achieved through the application of an ANCOVA, which re-estimates the means to compensate for the influence of the covariate (environmental concern), providing an unbiased measure. Note that these means do not represent the actual values observed in the real world. Rather, they represent hypothetical means that would emerge in the absence of the covariate's effects. By employing an ANCOVA, the researcher ensures that all groups are placed on an equal footing regarding environmental concern, allowing for a fair comparison. Since the differences between the means remain statistically significant (Table 14, above), it can be concluded that channel and message types continue to exert influence on recycling intentions, even after controlling for environmental concern.

When controlling for the co-variate, the overall conclusions about channel type and message type remain consistent with those of the two-way ANOVA. Although there are minor decimal adjustments to the means, the main effects persist (Table 15 and 16, below). Notably, for channel type, the brand-led channel continues to demonstrate the most positive effect on recycling intention (mean = 5.200[a]). For the message type, the baseline message remains least effective (mean = 3.899 [a]) while surprise framed messages remain the most effective (mean = 5.816 [a]) at enhancing recycling intention among those evaluated**. These findings again support both hypothesis 1 and hypothesis 2** which predict (1) all personal framing conditions to be more effective at improving recycling intention compared to the baseline condition, and (2) the surprise framing condition should be the most effective at improving intention to recycle.

1. Channel_Type

Dependent Variable: INT_AVG

Channel_Type	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Brand	5.200[a]	.080	5.042	5.358
Influencer	4.971[a]	.081	4.811	5.132

a. Covariates appearing in the model are evaluated at the following values: REGR factor score 1 for analysis 1 = .0000000.

Table 15: ANCOVA main effect: Adjusted means - Channel type (Source, SPSS)

2. Message_Type

Dependent Variable: INT_AVG

Message_Type	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Base	3.899[a]	.115	3.673	4.125
Control	5.383[a]	.115	5.157	5.609
Involvment	5.245[a]	.111	5.027	5.463
Surprize	5.816[a]	.117	5.587	6.045

a. Covariates appearing in the model are evaluated at the following values: REGR factor score 1 for analysis 1 = .0000000.

Table 16: ANCOVA main effect: Adjusted means – Message type (Source, SPSS)

Both the ANOVA and ANCOVA analyses reveal significant main effects for message type, channel type, and the interaction between the two. Table 17 displays the means (ANOVA) and adjusted means (ANCOVA) of the main effects side by side, to further support the above conclusions about the relative effectiveness of the independent variables.

Main effects ANOVA Means and adjusted means: Recycling Intention		
	Adjusted means (Environmental Concern)	2- way ANOVA means
Channel Type		
Brand Led	5,200	5,225
Influencer	4,971	4,947
Message Type		
Base	3,899	3,952
Control	5,383	5,321
Involvment	5,245	5,230
Surprize	5,816	5,841

Table 17: ANOVA and ANCOVA adjusted means

(Source, SPSS)

**In the table above, the cells highlighted in green represent the most effective conditions for each independent variable (message type and channel type), whereas the orange cells highlight the message type which was the least effective at improving recycling intentions (for both the ANOVA and ANCOVA).*

5.7.4. ANCOVA: Interaction effect

A notable finding emerges when examining the significant ($p < 0.05$) adjusted interaction effect between message type and channel type, while taking into account environmental concern. Specifically, for the brand-led channel, the involvement message type presents a higher mean recycling intention score than the surprise message type (Table 18, below). This contrasts with the initial findings before considering the covariate, where surprise was identified as the most effective. On the other hand, for the influencer channel, the researcher observes an increase in the means of the control message type, making it comparable to the surprise message type in terms of mean recycling intention. These findings highlight the influence of the environmental concern covariate, which introduces additional variations in the mean scores when the message type and channel type interact. Next, the researcher analyses the significance of these interactions.

4. Channel_Type * Message_Type

Estimates

Dependent Variable: INT_AVG

Channel_Type	Message_Type	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Brand	Base	4.002[a]	.160	3.687	4.317
	Control	5.020[a]	.162	4.702	5.338
	Involvment	5.907[a]	.157	5.598	6.216
	Surprize	5.872[a]	.164	5.550	6.193
Influencer	Base	3.793[a]	.165	3.469	4.118
	Control	5.746[a]	.163	5.425	6.067
	Involvment	4.581[a]	.157	4.272	4.890
	Surprize	5.765[a]	.167	5.438	6.092

a. Covariates appearing in the model are evaluated at the following values: ENVIRCON_AVE = 5.9964.

Table 18: ANCOVA: Adjusted means of the interaction effect (Source, SPSS)

The pairwise comparison (Table 19, below), reveals that, for the brand-led channel, there is no significant difference in means between surprise and involvement framed messages after adjusting for environmental concern ($p > 0.05$). This indicates that the impact of message framing on recycling intentions is similar for both surprise and involvement messages in the brand-led channel. Similarly, for the influencer channel, there is no significant difference in means between surprise-framed messages and control-framed messages ($p > 0.05$). This suggests that the choice between using surprise or control framed message types in the influencer channel does not significantly influence recycling intentions, when accounting for environmental concern.

Pairwise Comparisons

Dependent Variable: INT_AVG

Channel_Type	(I) Message_Type	(J) Message_Type	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
						Lower Bound	Upper Bound
Brand	Base	Control	-1.018*	.228	<.001	-1.622	-.415
		Involvment	-1.905*	.224	<.001	-2.500	-1.310
		Surprize	-1.870*	.229	<.001	-2.476	-1.264
	Control	Base	1.018*	.228	<.001	.415	1.622
		Involvment	-.887*	.226	<.001	-1.485	-.289
		Surprize	-.852*	.230	.001	-1.462	-.241
	Involvment	Base	1.905*	.224	<.001	1.310	2.500
		Control	.887*	.226	<.001	.289	1.485
		Surprize	.035	.227	1.000	-.566	.636
	Surprize	Base	1.870*	.229	<.001	1.264	2.476
		Control	.852*	.230	.001	.241	1.462
		Involvment	-.035	.227	1.000	-.636	.566
Influencer	Base	Control	-1.953*	.233	<.001	-2.569	-1.336
		Involvment	-.788*	.228	.004	-1.393	-.183
		Surprize	-1.972*	.235	<.001	-2.594	-1.350
	Control	Base	1.953*	.233	<.001	1.336	2.569
		Involvment	1.165*	.227	<.001	.564	1.765
		Surprize	-.019	.233	1.000	-.637	.599
	Involvment	Base	.788*	.228	.004	.183	1.393
		Control	-1.165*	.227	<.001	-1.765	-.564
		Surprize	-1.184*	.229	<.001	-1.791	-.577
	Surprize	Base	1.972*	.235	<.001	1.350	2.594
		Control	.019	.233	1.000	-.599	.637
		Involvment	1.184*	.229	<.001	.577	1.791

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Table 19: ANCOVA: Significance of pairwise interactions (Source, SPSS)

The implications of the interaction when accounting for environmental concern are displayed visually in Figure 6 below. The line plot highlights the dynamics between the two channel types when accounting for the covariate. In the case of the brand-led channel, messages framed with either involvement or surprise yield the most favourable results, with no significant difference between their means. On the other hand, for the influencer channel, messages framed with control and surprise enhancements exhibit the most positive impact on recycling intention, also with no significant difference between the two means.

These results again partially support hypothesis 3 which presumes the influencer channel to be more effective across all message types. The results present that there are situations when the influencer led-channel can be more effective than the brand-led channel, specifically when control framed messages are used (figure 6, below).

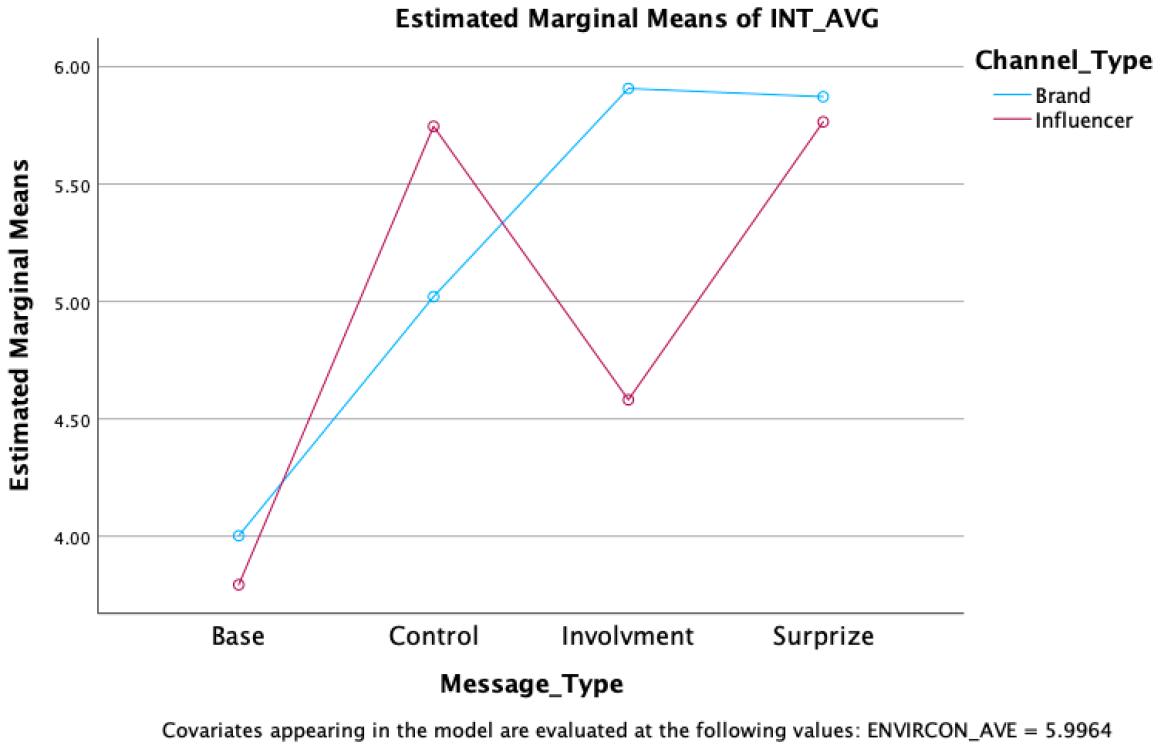

Figure 6: Line plot of ANCOVA interaction effects (Source, SPSS)

5.8. Conclusions

After presenting the sample description, the results of the ANOVA, ANCOVA and supporting profile plots, the results contribute towards a better understanding of recycling intention in relation to various communication channels and message types. These insights provide the researcher with a comprehensive perspective on the relationships under investigation while also considering the impact of environmental concern as a covariate.

All in all, the results support Hypothesis 1 and 2, which predict that (1) all message framing conditions are more effective than the baseline condition, and (2) the surprise message frame condition is the most effective in improving recycle intention. More importantly, the interaction effect presents that the brand-led channel is more effective than the influencer-led channel for message frame conditions: baseline, involvement and surprise, whereas the influencer-led channel is more effective when communicating control framed messages. These findings hold, even when accounting for the environmental concern covariate.

Hypothesis 3 suggests that the influencer channel should be more effective at improving recycling intentions compared to the brand channel. While the main effect of channel type suggests that the brand-led channel is more effective overall, the interaction analysis provides partial support for hypothesis 3. The results reflect

that control-framed message types are better received through the influencer channel, compared to the brand-led channel (irrespective of environmental concern).

Importantly, when accounting for environmental concern, the researcher observed a shift in the effectiveness of various message types within both channels (specifically for the interaction effect). In the influencer-led channel, control message frames demonstrated equal effectiveness compared to surprise-enhanced messages. Similarly, in the brand-led channel, involvement-framed messages were able to achieve the same impact as surprise-framed messages. These findings highlight the influence of environmental concern on the relative effectiveness of different message types across the channel types.

Finally, these results highlight the need to consider the combination of channel type and message type when aiming to effectively influence recycling intentions. The next chapter will highlight the broader managerial implications and practical applications of the research findings.

CHAPTER 6

IMPLICATIONS, LIMITATIONS AND FUTURE RESEARCH

6.1. Introduction

The findings of the previous chapter highlight a significant influence of message type and message channel on individuals' intention to recycle. More importantly, the interaction between different channel-and message types also presented varying effects on recycling intentions. When accounting for consumers' pre-existing levels of environmental concern, the analysis further presented enhanced effects throughout the different interactions.

In light of these insights, this chapter offers conclusive remarks and actionable recommendations for marketers seeking to develop impactful campaigns that promote improved consumer recycling. These conclusions also hold relevance for researchers in the field of sustainable marketing by providing valuable directions for further investigation.

6.2. Discussion of findings

The aim of this study is to investigate whether product transformation messages that are enhanced with elements of personal message framing (control, involvement, surprise) are more effective in improving recycle intentions, compared to product transformation messages that do not contain a personal message frame. Secondly, the study set out to determine which types of personal message frames are most effective within this context, and finally, the research also aimed to investigate the differential effectiveness of the specific message framing types across brand and influencer communication channels.

6.3. Independent effects

Overall, the research found main effects within both channel type, and message type on recycling intention, with and without accounting for consumers pre-existing level of environmental concern. Before considering the interaction effects, the researcher will explain the overall impact of channel type and message type independently. These insights are helpful towards guiding further research that may wish to investigate deeper into one of these directions. Additionally, the insights also highlight the overall independent effectiveness for marketers who may not want to combine the two independent variables in specific contexts. For example, marketers may find it more enlightening to know which message framing types work best overall to use in different communication contexts like billboards or at conferences. Similarly, they may already have their recycling message defined, and may be considering whether using influencers would enhance the effectiveness even more. In these types of situations, the independent implications of channel type and message type hold, no matter the levels of environmental concern and thus, conclusive actions are suggested.

6.3.1. Message framing implication

The results in section 5.4.1. were in support of the first research hypothesis that expected **all personal message framing conditions** (control, involvement, and surprise) **to be more effective** than the baseline message condition that did not have personal message enhancements. This supports the first research objective that aimed to understand whether personal message frames are effective at further enhancing recycling intentions. Notably, the researcher found that 22,9% of the variance in recycling intention can be explained by the message type used. This proves to marketers and researchers that the message framing conditions used in this study can exert a notable influence on consumers' recycling intentions, and subsequent behaviours.

In line with the second research objective this research further evaluated which types of personal message frames are most effective within the context. Results found that the overall mean recycling intention score was significantly higher for research participants who were exposed to the surprise framed message condition. This informs marketers that, when faced with the challenge to design the communications in their recycling campaigns, they should **include text elements which emphasise surprise** and stimulate curiosity within the reader as this affect their intentions to act towards the communicated action.

6.3.2. Channel type implications

This study showed that using brand vs influencer led channels of communication also has an effect on research participants' recycling intentions. Results found more favourable recycling intention scores when brands communicated recycling messages, compared to when influencers communicated the same message on their personal platforms. This meant that, in contrast to hypothesis 3 which expected influencers to be more effective, **brands are actually better off without including influencers into their marketing campaigns when communicating recycling initiatives.** However, these findings are broadly related to the pure effect of the channel type in general. Upon further analysis, this research study found an important interaction effect when channel and message types are combined, emphasising that there are in fact message framing contexts that are more effectively carried out by influencers than brands. This interaction effect is further influenced by consumers' predefined levels of environmental concern which further affects how they receive and react to the combined interaction.

6.4. Interaction effect

Before discussing the significant interaction effect between message type and channel type, the researcher highlights that there are varied implications depending on whether the co-variate is considered or not.

Firstly, the researcher acknowledges that recycling communications generally have a wide scope, and thus are often communicated to broad audiences. As a result, it is likely that communicators do not have detailed insights about the levels of environmental concern of their audiences. This is particularly relevant for

multinational corporations like Coca-Cola who are challenged to design recycling campaigns that can be used globally. These marketers require more generalisable guidelines that are relevant across different levels of environmental concern. Consequently, these findings first highlight the initial interaction effect between channel and message type from the 2-way ANOVA, without accounting for the environmental concern co-variate. The researcher then continues to highlight additional insights that can be added from the ANCOVA, when communicators have better insights about the levels of environmental concern of their target audiences.

6.4.1. Interaction effect without environmental concern co-variate

In the ANOVA analysis, the researcher aimed to identify significant interaction effects between the channel- and message-type combinations.

It was initially identified that the surprise message frames had the best overall effect within both message channels and that the baseline message was the least effective within both channel types. Thus, the surprise and baseline message frames were not impacted by the channel used (see Table 9). This insight informs that marketers should always aim to use surprise framing throughout brand-and influencer-led channels as an initial strategy.

However, the researcher realises that there may be situations when surprise framing may not be suited to the context of brands' tone of voice, and perhaps managers want to consider other message types such as control and involvement.

In line with this analysis, the researcher discovered an interesting, significant interaction within the control and involvement message types. The results informed that, within these message framing conditions, **brand-led channels** are best used to **convey involvement framed** recycling messages, while the **influencer channel** is more effective when communications are enhanced with elements of **control framing.**

These findings address the third research objective that aimed to investigate the differential effectiveness of the message framing types across brand and influencer communication channels.

6.4.2. Interaction effect with environmental concern co-variate

The initial interaction effects became even more pronounced when the study controlled for environmental concern. These findings have additional implications for communications within both brand-led and influencer-led channels.

In the brand-led channel, when environmental concern is accounted for, the results showed a significant increase in the mean recycling intentions for involvement-framed messages. This increase was substantial enough that there was no significant difference in effectiveness between surprise-framed and involvement-framed conditions within the brand-led channel. Similarly, in the influencer-led channel, conditions that

incorporated control enhancements became equally effective as surprise framing. These outcomes provide communicators with **more flexibility** in choosing the appropriate message framing when environmental concern is known. As a result, marketers **can opt to use either surprise or involvement framed messages** in their **brand-led** communications, and for **influencer-led** communications, they can **choose between control and surprise message framing** as the most effective strategies to enhance the impact of their recycling initiatives.

6.5. A practical managerial framework

All in all, when the level of environmental concern is unknown, communication teams should prioritize surprise-framed messages as they are more effective across influencer and brand channels. Alternatively, brands should prioritize enhancing involvement framing before control framed messages in their brand-led communication, while ensuring that their influencer collaborations rather emphasise control elements before involvement frames.

When taking environmental concern into account, additional message frames become equally effective, giving marketers more flexibility to choose message frames that align with their brand identity, personality, and tone of voice. For instance, when targeting specific ad audiences with high levels of environmental concern, communicators can experiment with brand-led communication using message types that highlight involvement or surprise, as both have a similarly positive impact on recycle intention. Similarly, brands looking to utilize influencer marketing in their communication strategies can partner with influencers who are more aligned with control or surprise-framed communications in this context.

For all scenarios, messages lacking personal message framing enhancements (generic product transformation messages) are the least effective in motivating recycling intentions. Therefore, communication teams should consistently strive to enhance their recycling campaigns with personalized message framing enhancements.

By leveraging both brand-led and influencer-led communication strategies, marketers can maximize their impact and engagement in promoting consumer recycling intentions. Therefore, this study proposes a primary framework (Table 20, below) for marketers and researchers to utilize to enhance consumer recycling intentions through effective recycling communication campaigns.

Environmental concern NOT known:					
Brand Communication	**Best option:**	Surprise	Influencer Communication	**Best option:**	Surprise
	Second option:	Involvement		**Second option:**	Control
	Third option:	Control		**Third option:**	Involvement
	Last option:	Base		**Last option:**	Base

Table 20 (Part 1): Suggested Framework – Environmental Concern unknown

*In the framework above, the researcher presents the order of effectiveness of each message type across different contexts. When marketers do not know the environmental concern of the audience (blue table), they should always focus on surprise framed messages first. Alternatively, depending on whether they use the brand or influencer channel, they should use either involvement or control framed messages. The control and involvement cells are marked in red to emphasise the order change between the brand and influencer channel.

Environmental concern known:					
Brand Communication	**Best option:**	Surprise or Involvment	Influencer Communication	**Best option:**	Surprise or Control
	Second option:	Control		**Second option:**	Control
	Last option:	Base		**Last option:**	Base

Table 20 (Part 2): Suggested Framework - Environmental Concern known

*When marketers know the environmental concern of the audience (green table), they have more options to choose from. For brand-led communication they can **choose** either surprise or involvement message frames. For influencer communication, they can choose either surprise or control framed communication. In these cases, the top choices are equally as effective, and the base condition is always the least effective.

6.6. Theoretical contributions and future research

Overall, the results demonstrate that all the message conditions had positive effects on recycle intentions as highlighted by the negatively skewed distribution of the dependant variable. This supports the initial findings by Winterich et al. (2019) which posit the importance of highlighting product transformation in recycling campaigns. However, this research further contributes to the literature by showing that product transformative messages, enhanced with personal message frames, are even more effective at improving recycle intentions. More specifically, we highlight three message framing conditions (control, involvement, surprise) that

successfully enhance recycling intentions more than a generic product transformation message and discuss the varied effectiveness of these conditions across different contexts.

In light of the ongoing digital transformation and the surging popularity of influencers, recent literature highlights the importance of integrating influencer marketing strategies into brand communications. With the advent of social media platforms and the widespread use of digital technologies, influencers have emerged as powerful voices capable of shaping consumer opinions and driving engagement. There is a lack of research examining the impact of influencer techniques in leading communication efforts to promote recycling. This study aimed to address this gap and provide initial insights into whether influencers should be incorporated in these types of marketing initiatives.

Overall, the findings suggest that the brand-led communication channel was more effective in this study. This could be attributed to the trust established in popular brands and the subsequent expectation for brands to effectively address global sustainability issues. While influencers have proven effective at influencing attitudes and behaviours in various contexts, this channel may not be the most suitable form of communication for recycling initiatives. Further research in this area is recommended. However, we still offer guidance on how influencers can be effectively utilized when brands choose to include influencer marketing in their recycling campaigns.

This study thus lays a foundation for future research to investigate how to best use influencers in the context of sustainable marketing campaigns.

Researchers should also consider the increasing digital landscape that consumers encounter daily and continue to investigate changes in customer perspectives on influencer marketing as familiarity with different communication channels grow. It is also worth considering that older audiences, especially in this study where around 20% of the sample was above 50 years old, may perceive influencer marketing as a relatively novel concept. As a result, this audience may have found the brand-led communication more impactful due to traditional thought patterns and preferences. Exploring the impact of age and generational differences on the effectiveness of influencer marketing would be a valuable avenue for future research.

6.7. Limitations

Due to pragmatic reasons relating to time, budget and resources, the stimuli used in this research were created by the researcher, and could thus contain inherent design flaws – especially regarding the influencer-led stimuli which presented photoshopped edits that would otherwise not be present in a realistic influencer post. These limitations may explain why some of the message framing conditions were better received through the brand-led communication and not as predicted in the influencer-led channel. Future researchers could thus consider working with real influencers to develop more realistic stimuli. Moreover, future researchers can consider including diverse types of influencers to analyse the nuances involved when influencers vary in content, niche

and audience. Different levels of trust, familiarity and perceived authenticity of the influencer could be a direction to analyse when measuring the impact of influencers in combination with the different message framing techniques suggested in this research.

Furthermore, it is important to note that this study focused only on recycling intentions. To assess the true impact of these message and channel types towards promoting behavioural changes, researchers could expand the investigation across different contexts, such as field studies, using real-behavior rather than intention measures. By examining the effectiveness of the stimuli in driving actual behavioural changes, researchers can gain a more comprehensive understanding of the message impact.

Moreover, it is important to highlight that a significant portion of the study participants were from South Africa, accounting for 44% of the sample. While the researcher made efforts to include a diverse range of perspectives to ensure the generalizability of the findings, it is acknowledged that the results may have been influenced to a great extent by the South African perspective on recycling communications. The overall sample also demonstrated good pre-existing recycling habits, which could explain the consistently high mean recycling intentions observed across all conditions. For future research, it may be beneficial for researchers to target specific geographical areas that differ in their existing recycling behaviours. This approach would allow for a more comprehensive understanding of the impact of message framing techniques on diverse groups of people and enable researchers to draw more nuanced conclusions.

Regardless, this study offers foundational insights into potential communication strategies that marketers, policy makers, and NGOs can employ to initiate a shift in people's thinking and message processing. It should also be highlighted that the three message framing conditions employed in this study are not exhaustive or exclusive. Thus, further researchers could conduct similar studies with different message framing conditions or explore the integration of new message channels. For instance, incorporating AI-generated communication could be a promising avenue for investigation.

By extending this foundational research, researchers can provide a more comprehensive understanding into the mechanisms of effective recycling communication and can help in developing innovative approaches that encourage positive impact within global communities.

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ANNEXURES

Annexure A: Original Coca-Cola advertisement

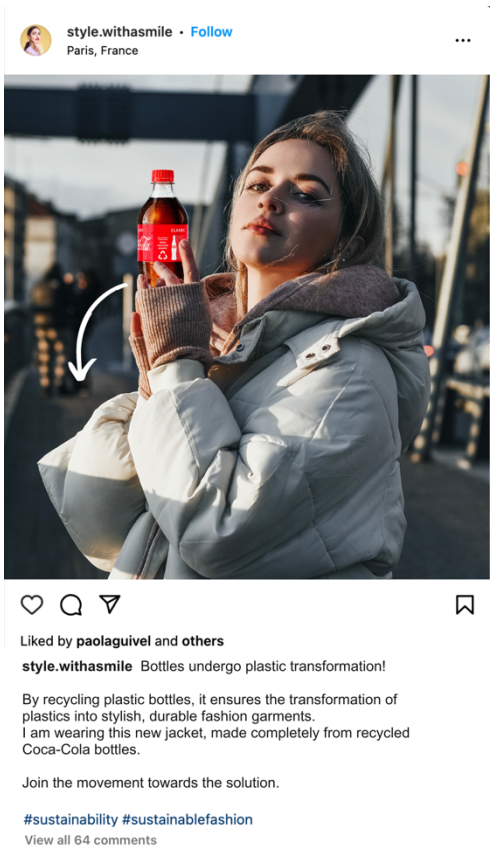
Annexure B: Stimuli Conditions

Brand-led: Baseline condition

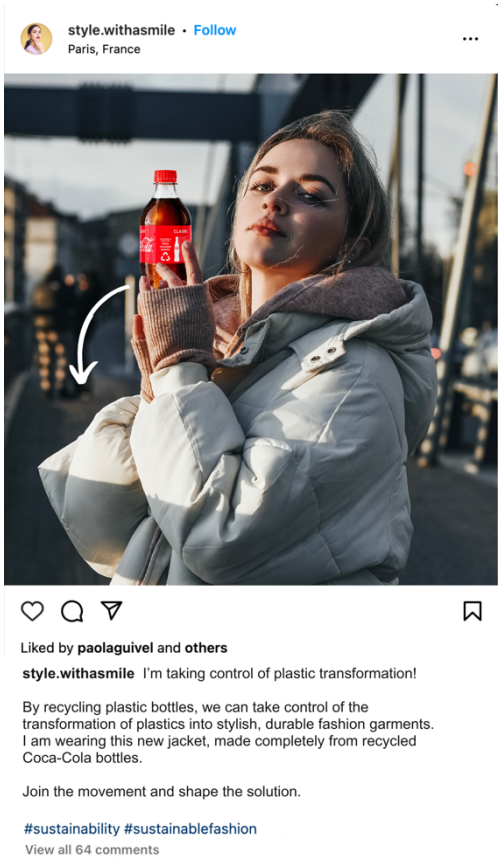
Brand-led: Control

Brand-led: Involvement

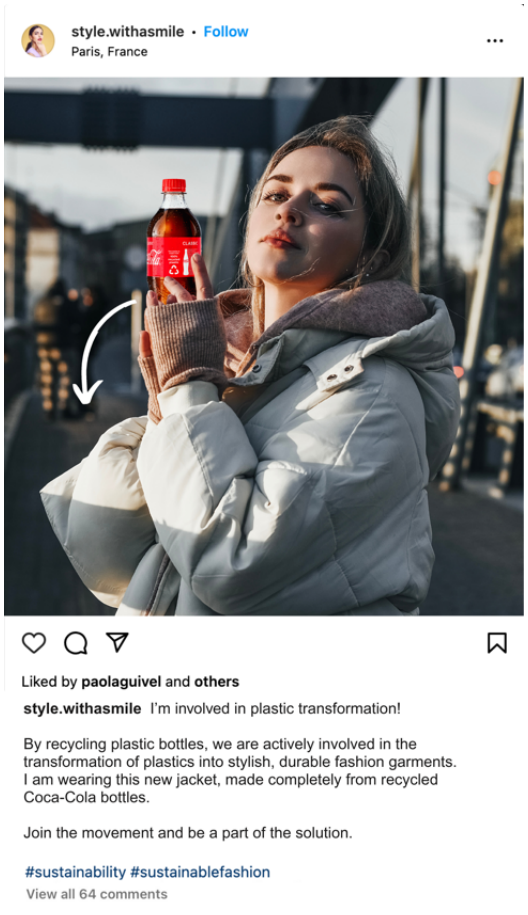
Brand-led: Surprise



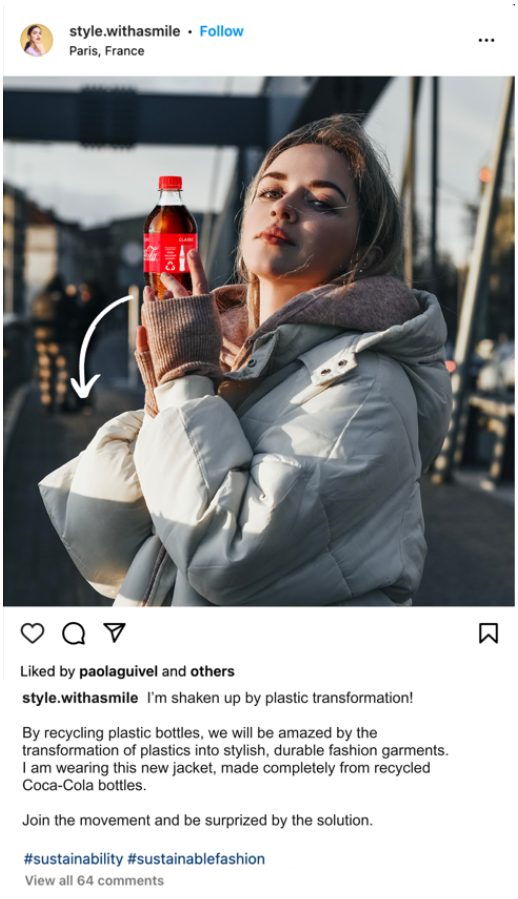
Influencer-led: Baseline condition



Influencer-led: Control



Influencer-led: Involvement



Influencer-led: Surprise

Annexure C: Questionnaire administered through Qualtrics

Dear Participant, I am collecting research that investigates the impact of people's reactions to marketing communications.

Please answer the following questions as honestly as possible. Your answers will remain anonymous and confidential - to be used only for academic purposes.

The questionnaire will take around 2 minutes to complete.

Please read through the following advertisement:

Stimuli (randomly distributed)

Please select your answer to each of the statements as honestly as possible after seeing the ad above.

I intend to recycle plastic bottles in the next four weeks

I will recycle plastic bottles next time I have it for disposal

I am willing to participate towards recycling plastic bottles in the future.

Questions answered on a 7-point Likert-scale (strongly disagree, disagree, somewhat disagree, neutral, somewhat agree, agree, strongly agree)

Source: Wan *et al* (Adapted)

Indicate your opinion about the following statements:

I am very concerned about the environment

I would be willing to reduce my consumption to help protect the environment

Major social changes are necessary to protect the natural environment

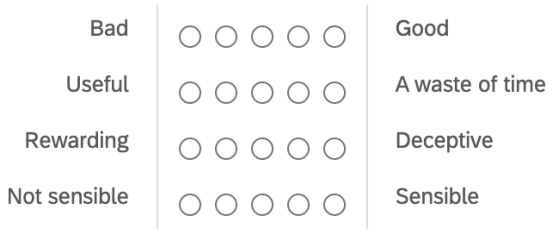
Anti-pollution laws should be enforced more strongly

Questions answered on a 7-point Likert-scale (strongly disagree, disagree, somewhat disagree, neutral, somewhat agree, agree, strongly agree)

Source: Kilbourne & Pickett (original items)

Please describe your attitude about current recycling schemes as honestly as possible.

Recycling is:



Questions answered on a 5-point bipolar scale

How often do you recycle?

- **Never**
- **Rarely**
- **Sometimes**
- **Often**
- **Always**

What is your gender?

- **Male**
- **Female**
- **Prefer not to say**

In what year were you born? _____

What is your Nationality? _____

Choose the most relevant to your current situation:

- **Student**
- **Working**
- **Unemployed / Retired**
- **Other**

If you were recruited via Prolific to complete this survey, please enter the code to mark your completion of the survey: C1JQHWTZ

We thank you for your time spent taking this survey.

Your response has been recorded.

Annexure D: Cronbach's alpha for dependant variable (Source: SPSS)

Reliability Statistics

Cronbach's Alpha	N of Items
.912	3

Annexure E: Sample descriptive – Nationalities

Sample Nationalities			
	F	%	Cum %
South African	185	44,4	44,4
UK	37	8,9	53,3
Italian	30	7,2	60,5
Norwegian	30	7,2	67,7
German	25	6	73,7
French	21	5	78,7
Dutch	16	3,8	
Spanish	7	1,7	
Finnish	5	1,2	
Zimbabwean	5	1,2	
American	4	1	
Australian	4	1	
Croatian	4	1	
Czech	4	1	
Namibian	4	1	
Polish	4	1	
South african	4	1	
Indian	3	0,7	
Nigerian	3	0,7	
Greek	2	0,5	
Iranian	2	0,5	
Irish	2	0,5	
Russian	2	0,5	
Vietnamese	2	0,5	
Austrian	1	0,2	
Canadian	1	0,2	
Chinese	1	0,2	
Estonian	1	0,2	
Malawian	1	0,2	
Moldova	1	0,2	
New Zealand	1	0,2	
Peruvian	1	0,2	
Swiss	1	0,2	
Ukrainian	1	0,2	
Zambian	1	0,2	
Total	416	100	

Message framing matters: Enhancing recycling intentions through personal message framing across brand and influencer channels

SUMMARY

Introduction

As the population density continues to increase, so does global consumption – leading to escalated quantities of global urban waste worldwide. Enhancing recycling performance is crucial to recover valuable source materials, conserve resources, and reduce landfill waste, however, despite growing sustainability awareness, recycling rates remain low (Knickmeyer, 2020).

Consequently, companies worldwide are actively pursuing sustainability initiatives, driven by a global agreement towards the UN Sustainable Development Goals (SDGs). Specifically, global industry leaders like Nike and Coca-Cola have begun to incorporate recycled materials into their production processes, demonstrating their commitment to global sustainability (Coca-Cola, 2023; Nike, 2023)

However, while consumers today have a stronger inclination towards sustainable consumption, practically, there is an attitude-intention gap as intentions to adopt greener habits do not always translate into proper actions. Importantly, plastic bottles remain one of the top global contributors to ocean pollution (The Guardian, 2023), explaining how these persistent issues relating to insufficient recycling habits hinder the achievement of the 2030 SDGs.

Proper recycling involves collecting, cleaning, and processing waste into new materials. However, only a small percentage of waste thrown into recycling bins is actually recycled due to contamination and incorrect sorting (npr.org, 2023). Social Learning Theory, as introduced by Bandura (1977), suggests that people learn from the behavior of others through observation and imitation. Consequently, marketing and informational messages can influence positive recycling behavior and break the cycle of imitating detrimental habits.

Motivating better waste circulation requires the involvement of policy makers and business leaders in the private and public sectors. Particularly for businesses, robust corporate social responsibility initiatives, and transparent reporting are necessary to secure investments and maintain competitiveness. However, companies must strike a balance by promoting their use of recycled materials without deterring customers. They also need to responsibly manage product disposal while maintaining their supply chains. As a result, research on consumer recycling behavior can help businesses effectively communicate their circular initiatives to customers.

Brand and marketing teams can therefore play a significant role in shifting customer mindsets toward recycling through effective communication. As a result, this research aims to identify various message frames and communication channels that inspire better global recycling rates.

Literature review

Traditional theories: Marketing communications play a vital role in informing consumers about brands, products and initiatives, leading to increased awareness and informed decision-making (Schultz, 1992). Academic literature further elaborates that effective marketing campaigns make use of persuasive techniques that appeal to consumers' emotions, needs, and desires, and can motivate them to embrace new behaviors. Therefore, by leveraging psychological emotions, marketers can inspire positive behavior change.

Nudges, subtle and non-coercive interventions, have been studied as effective drivers of behavioral change (Thaler & Sunstein, 2003). By altering the way choices are presented and structured, nudges can guide individuals toward choices that align with desired outcomes. These interventions have proven successful in marketing and environmental conservation, promoting behaviors such as energy conservation and better waste management.

Additionally, the Theory of Planned Behavior (TPB) predicts human behavior based on behavioral intentions Ajzen (1991). This theory also posits that attitudes, subjective norms, and perceived behavioral control interact to influence intentions and subsequently drive behavior. Consequently, marketers should focus on shaping positive attitudes toward the behavior, emphasizing social norms that encourage the behavior, and communicating individual efficacy to increase the likelihood of behavior adoption.

Message framing: Message framing is a technique used in social marketing to shape perceptions and construct meaning. It is based on the idea that the audience's response to a message depends on how the message is composed and subsequently interpreted by the person receiving it (Pelletier *et al*, 2008). It has also been found that the effectiveness of message framing depends on the context of the promoted behavior, for example, gain-framed messages are more effective when behavior is perceived as low-risk, whereas loss-framed messages are more persuasive when behavior emphasizes the importance of avoiding negative consequences (Unger & Steul-Fischer, 2020; Maheswaran & Meyers-Levy, 1990). Therefore, by strategically selecting message-framing techniques, marketers can impact consumers' behaviors and encourage sustainable choices.

Product Transformation Salience: In recent literature focused specifically on recycling, Winterich *et al* (2019) introduce strong evidence to tackle the recycling issue through a concept they define as *Product Transformation Salience (PTS)*. This concept uses transformative messaging to inform customers of what can become of the products that they recycle (Winterich *et al*, 2019). PTS was found to inspire customers to positively change their recycling behavior when they can "visualize what becomes of the things that they throw away". This approach helps bridge the gap between intangible environmental concerns and individuals' present lives, making sustainability issues more tangible and actionable. As a result, businesses should position their product marketing activities by highlighting the **transformation** of their products into something new - as this inspires continued recycling behavior amongst consumers.

Personal message framing: Prior research suggests that psychological factors can help to shape individuals' emotional and cognitive processing. Consequently, when individuals have better cognitive engagement with a marketing message, it increases their processing of the communication stimuli - which can lead to stronger intentions toward a suggested action (Petty *et al*, 1986). Moreover, when individuals perceive messages as personally relevant, it enhances their connections between the message content and their own needs, increasing the perceived importance of the communication (Giorgi, 2017). Therefore, enhancing communications with personal message frames can strengthen individuals' motivation to act upon communication.

The literature further suggests three personal message-framing themes; control framing, involvement framing, and surprise framing which could deepen cognitive involvement with the message content.

Control framing highlights personal agency and directs attention to an individual's control or autonomy within a given situation. Allowing individuals to perceive themselves as causal agents of behavioral outcomes, offers them a perception of empowerment and enhances their perceived ability to effect change (White *et al*, 2019).

Involvement framing establishes a personal connection between the individual and the message content (Tsai, 2007), and appeals to the personal aspirations of the recipient. Highlighting how people can get involved in sustainable initiatives can guide them toward the action by playing on their innate desires to reflect a positive self-image to others.

Finally, surprise-framed messages disrupt individuals' expectations by capturing attention and promoting curiosity through unexpected or novel information. This cognitive disruption can lead to increased engagement and cognitive processing of the message content (Sung *et al*, 2016).

While various message-framing themes have demonstrated effectiveness in stimulating cognitive processing and improving intentions toward sustainable behaviors, their efficacy can vary across different contexts. Specifically regarding recycling communication, further research is needed to explore the effectiveness of different message-framing themes, especially when combined with the concept of Product Transformation Salience.

Social Proof and Influencers: Consumers are often impacted by the presence, behaviors, and expectations of others (Abrahamse & Steg, 2013). In line with the Theory of Planned Behaviour, which posits the importance of subjective norms in shaping consumer behavior, marketers are challenged to communicate best practices that motivate people to adopt sustainable habits.

The psychological phenomenon of social proof informs how people adapt their behavior in line with the cues and observations taken from others in their surroundings (Abrahamse & Steg, 2013). Social proof can thus motivate individuals to adopt better recycling behaviors by showcasing the popularity of the action within

society. This conforming effect is amplified through social media platforms where individuals can share their recycling efforts and consequently, inspire others to do the same.

Similarly, when followers encounter influencers (who have dedicated and engaged followings on social media) as role models, it is more likely that they adopt the opinions and behaviors of the influencer in a subconscious attempt towards belonging to a desirable social group (Vrontis, 2021). By leveraging the potential of influencers to convey social proof and desirability, brands can establish trust and engagement via the personal interactions that influencers establish with their followers. As a result, brands are suggested to incorporate influencer marketing into their marketing mix strategies (Syrdal *et al*, 2023; Jarrar *et al*, 2020; Sudha & Sheena, 2017). However, while influencers have proven to be effective in stimulating behavioural changes among their audiences, further research is needed to understand their specific effectiveness in promoting recycling behaviors.

Concluding insights: Since the world's largest plastics producers are increasingly challenged to find ways that encourage positive consumption and correct disposal of their products, these brands should consider different message frames and their effectiveness when conveyed through various communication channels (for example influencers). Through gaining a deeper understanding about which message types work best across each channel, marketers can successfully plan and execute global communication campaigns.

However, there is currently limited knowledge regarding the impact of different message frames or communication channels on recycling intention, specifically when communications aim to make product transformation salient. As a result, this research aims to address this knowledge gap through findings that will inform marketing managers on the most effective message framing to use in both brand and influencer communication channels - in an attempt to encourage better consumer recycling habits.

Research objectives and Hypotheses

The objective of this study was to examine the effectiveness of product transformation messages that incorporate different types of personal message framing (control, involvement, surprise) in enhancing recycling intentions, compared to product transformation messages without personal message framing. Additionally, the research seeks to identify the specific types of personal message frames that had the greatest positive impact on recycling intention, and to test the effectiveness of these messages across brand and influencer communication channels. As a result, experimental research was conducted to test the following hypotheses:

Hypothesis 1: Product transformation messages that are enhanced with personal message frames (control, involvement, surprise) are more effective at increasing intention to recycle than generic product transformation communications without personalized enhancements.

Hypothesis 2: Product transformation communication which contains the surprise framing condition is the most effective at improving consumer intention to recycle.

Hypothesis 3: The use of influencers as a medium to communicate product transformation is more effective at improving customer recycling intentions compared to brand-led communication.

The research also examines the influence of environmental concern as a potential covariate within the results. For more theoretical details leading up to the suggested hypotheses, see Chapter 3 of the main study.

Research Methodology

This section will briefly summarise the research methodology that was used in this study. Please refer to Chapter 4 for a more detailed explanation of the details and nuances relating to the research design.

***Research design*:** To contribute to the existing body of literature in a meaningful way which allows brand managers, industry professionals and marketing managers to implement findings, the research objectives required conclusive evidence. As a result, primary research was collected through quantitative methods which involve an empirical assessment of numerical data to test the specific hypotheses and provide conclusive results.

Since this study aims to understand the impact of different message frames and different message channels on recycle intention, a quantitative, causal study is chosen as an appropriate data collection method. The study involved testing of different stimuli through an online experiment to collect conclusive evidence about the cause-and-effect relationship between the variables of the study.

Experimental design: In this study, a four by two between-subjects experimental design was used to investigate the effects of different communication stimuli on participants' intention to recycle. The study design involved four levels of the first independent variable (message framing) and two levels of the second independent variable (message channel), resulting in eight experimental conditions. Each participant was randomly assigned to one of the eight conditions and exposed to the corresponding stimulus. The randomization was automated through Qualtrics, which ensured that the different stimuli conditions were evenly distributed amongst respondents. This automatic randomization ensured that **internal validity** threats, such as selection bias, were minimized.

To further ensure internal validity of the research design, the dependant variable was measured through a structured and controlled measurement instrument (questionnaire) that assessed participant's perceptions after being shown the stimuli. Using a between-subjects design allowed the researcher to examine the unique effects of each experimental condition on the participant's intention to recycle (dependant variable), and to draw conclusions about the causal relationships between the independent and dependant variables.

Though this kind of experiment provides the researcher with good control of the experiment and better internal validity compared to a field study, the researcher was also aware that this type of experimental design could have low external validity (Schram, 2005). As a result, the stimuli were developed in line with the current marketing communications of a global brand (Coca-Cola) to increase the external validity of the experiment.

Stimuli: The stimuli used within this study were designed to manipulate the effects of message framing and message channel on participants' recycling intentions. To achieve this, the researcher developed four message framing conditions that varied the way in which a product transformation message was presented. The baseline transformation message was "*Bottles undergo plastic transformation. By recycling this bottle, it ensures the transformation of plastics into stylish, durable fashion garments. Join the movement towards the solution"*. Each framing condition was then enhanced with text elements that were congruent with the framing condition. The four framing conditions were (1) baseline condition; (2) perceived control condition; (3) involvement condition; (4) surprise condition.

In addition, the experimental analysis was designed within two message channels. One, where the brand is the communicator of the message through a general advertisement, and another when an influencer communicates the message via social media (Instagram). Consequently, each communication channel was used to convey the each of the four message-framing conditions (eight conditions in total).

The supporting visuals throughout all stimuli were kept consistent, in line with the requirements of a true experiment. For the brand-led channel stimuli, the design replicated the colours, font and overall design of an existing Coca-Cola advertisement to enhance the ecological validity and realism of the stimuli. The researcher added the graphic of a jacket behind the Coca-Cola bottle, with a white arrow pointing from the bottle to the jacket to emphasise the transformation. These graphical elements remained present throughout all the stimuli to avoid any confounding effects.

To create the influencer-led stimuli, the researcher ensured that the elements that were present in the brand-led channel were also present in the influencer channel. However, this channel also included the presence of an influencer and other generic elements to resemble a post that a respondent would naturally experience on Instagram. The text was kept consistent across the message channels for each message framing condition to ensure that the variation in the dependant variable was purely based on the presence of an influencer or not.

Measurement instrument: The research made use of an electronic questionnaire created in Qualtrics to collect data from participants. By using an electronic questionnaire, it allowed the researcher to collect information from a larger and more diverse sample because participants could complete the questionnaire remotely.

The questionnaire started with an introduction section that informed participants about the study's purpose without priming them about recycling. Thereafter, participants were randomly exposed to one of the eight

stimuli conditions and asked to indicate the extent to which they agree with the statements after viewing the advertisement.

To measure participants' recycle intention (dependant variable), the survey included three items by Wan *et al,* (2017), measured on a 7-point, Likert Scale ranging from "Strongly agree" to "Strongly disagree". The 7-point scale was chosen to ensure that the collected data was able to capture precise variations in responses.

The next section of the survey measured participants' environmental concern through four statement questions. These items were adapted from Kilbourne & Pickett (2008) and measured in the same way as the dependant variable. These questions were followed by a section asking participants to express their attitudes towards recycling and some demographic questions relating to recycle frequency, gender, age, nationality, and employment status. This data was collected to create a sample profile of the respondents.

Validity and reliability: To ensure that the research findings are credible and trustworthy, the researcher ensured that the measurement instrument was reliable and valid in its design. The Cronbach's alpha was used as a reliability check and yielded a value of 0.912 for the dependant variable, indicating a very high level of internal consistency. The value of the Cronbach's alpha thus suggested that the questionnaire items measured recycle intention in a consistent and reliable manner.

In addition, the researcher ensured content, construct and face validity measures to ensure that the measurement instrument accurately measured what it indented to measure. Through a thorough review of relevant literature, theoretical frameworks and an expert review, the researcher ensured that the questionnaire items fully encompassed the key dimensions of the measured constructs – thus, validating the content validity requirement. Moreover, the researcher ensured face validity by pre-testing a pilot version of the questionnaire with a small group of participants who provided feedback on the clarity of the items. Finally, by using pre-defined, pre-tested scale items to measure the constructs of the study, convergent validity is secured as items automatically resemble existing, established measures of the same construct.

Sampling plan: The sampling plan involved targeting a broad range of individuals across different demographics to ensure generalizability. The researcher therefore did not restrict the target population to any specific criteria.

Since it would be impossible for the researcher to obtain a complete sample frame of all consumers globally, non-probability sampling was employed through a combination of convenience sampling and snowball sampling. The researcher required that the sample size of this study be at least 400 participants (50 per condition) to secure reliable and meaningful results.

Data analysis: Data analysis involved cleaning and preparing the data, including removing incomplete responses, recoding items and computing average variables for the dependant variable (recycle intention) and

the potential covariate (environmental concern). The researcher selected a significance level of 0.05 (95% confidence interval) and opted for the Bonferroni confidence interval adjustment when setting up the test. Significant results were identified when the "p-value" of the variables test statistic was smaller than 0.05.

Results

Descriptive results: Responses were collected from 475 subjects, of which 416 were eligible for the final analysis. The final sample consisted of respondents from 36 different nationalities, however a large majority were South African (44%). Moreover, the sample was mostly female, working individuals, between age 18 - 34 or above 55 years old. The participants in this study also demonstrated commendable recycling habits with around 70% of the sample reporting that they frequently recycle.

Overall, the mean results for the composite variables further indicate that the sample had a high level of environmental concern and intention to recycle (5.99 and 5.08 respectively - on a 7-point scale), with a lower attitude towards recycling (right skewed distribution). These findings offer a general understanding that, following exposure to the stimuli, the sample displayed positive intentions to recycle overall. These results initially suggest that, despite individuals holding negative attitudes towards recycling, the use of such stimuli conditions may still prove effective in enhancing recycling intentions.

Inferential results: The study initially conducted a 2-way ANOVA to examine the effects of the two independent variables (message type and message channel) on the dependent variable (recycle intention). This analysis aimed to investigate the main effects of each independent variable as well as the potential interaction between them. In addition, the researcher performed an ANCOVA to further account for the effects of environmental concern as a potential co-variate.

The results from the ANOVA (and subsequent ANCOVA) indicate, firstly, that the type of message framing used when communicating product transformation messages has a significant effect on intention to recycle. Secondly, the channel through which the message is communicated also has a significant effect on recycling intention. Finally, there was an interaction effect between the message and channel type – signalling to the researcher that one channel may be more effective than the other depending on the message frame used, and vice versa. These effects are considered significant as indicated by a p-value that is below 0.05.

Upon further analysis into the specifics relating to the main effects and interaction effects, the research supports Hypothesis 1 and 2, which predict that (1) all message framing conditions are more effective than the baseline condition, and (2) the surprise message frame condition is the most effective at improving recycle intention. More importantly, the interaction effect presents that the brand-led channel is more effective than the influencer-led channel for message frame conditions: baseline, involvement, and surprise, whereas the

influencer-led channel is more effective when communicating control framed messages. These findings hold, even when accounting for the environmental concern covariate.

Hypothesis 3 suggests that the influencer channel should be more effective at improving recycling intentions compared to the brand channel. While the main effect of channel type suggests that the brand-led channel is more effective overall, the interaction analysis provides partial support for hypothesis 3. The results reflect that control-framed message types are in fact better received through the influencer channel, compared to the brand-led channel (irrespective of environmental concern).

Importantly, when accounting for the environmental concern co-variate, a significant interaction effect is highlighted. As a result, there is a shift in the effectiveness of message types within both channels. In the influencer-led channel, control message frames demonstrated equal effectiveness as surprise-enhanced messages. Similarly, in the brand-led channel, involvement-framed messages were able to achieve the same impact as surprise-framed messages. These findings highlight the influence of environmental concern on the relative effectiveness of different message types across the channel types when these variables interact.

Managerial implications

The results of the study highlight a significant influence of message type and message channel on individuals' intention to recycle. More importantly, the interaction between different channel-and message types also presented varying effects on recycling intentions. When accounting for consumers' pre-existing levels of environmental concern, the analysis further presented enhanced effects on the interaction.

Before considering the interaction effects, the overall impact of channel type and message type is explained independently. These insights highlight the overall independent effectiveness of channel type and message type for marketers who may not want to combine the two independent variables in specific contexts. For example, marketers may be interested in knowing which message framing works best (independently of channel type) to use in other contexts such as on billboards or at conferences. Similarly, brands who have defined message texts may be interested in understanding whether using influencers would enhance the effectiveness even more. In these types of situations, the independent implications of channel type and message type hold, no matter the levels of environmental concern.

Message framing main effect: The results were in support of the first research hypothesis that expected all personal message framing conditions to be more effective than the baseline message condition. This supports the first research objective that aimed to understand whether personal message frames are effective at further enhancing recycling intentions. **Therefore, communication teams should consistently strive to include personalized message framing enhancements into their recycling campaigns.**

In line with the second research objective, results found that the overall mean recycling intention score was significantly higher for research participants who were exposed to the **surprise framed** message condition. This informs marketers to strive to **include text elements which emphasise surprise** and stimulate curiosity within the reader - as this message framing technique has the best overall effect (when considering only message type).

Channel type main effect: Results found more favourable recycling intention scores when brands communicated recycling messages, compared to when influencers communicated the same message. This meant that, in contrast to hypothesis 3 which expected influencers to be more effective, brands are actually better off without including influencers into their marketing campaigns when communicating recycling initiatives.

However, these findings are broadly related to the pure effect of the channel type. Upon further analysis, this research found an important interaction effect when channel and message types are combined, emphasising that there are in fact message framing contexts that are more effectively carried out by influencers than brands.

Interaction effect: The study results present varied implications when combining channel and message types, depending on whether the environmental concern co-variate was considered or not. Since recycling communications are generally communicated to wide global audiences, this study presents a framework for marketing teams to use depending on the context. For example, when communicators do not have detailed insights about the environmental concern of their audiences and require more generalisable guidelines, they should apply message framing strategy detailed in the **blue** framework below. However, if marketing ads are set up to be targeted towards defined audiences with high levels of environmental concerns, they should consider designing a communication strategy in line with the **green** framework below.

Suggested framework: This study proposes a primary framework for marketers to apply when designing recycling campaigns. By following the guidelines suggested below, managers can enhance consumer recycling intentions and improve campaign objectives.

Environmental concern NOT known:					
Brand Communication	**Best option:**	Surprise	Influencer Communication	**Best option:**	Surprise
	Second option:	Involvement		**Second option:**	Control
	Third option:	Control		**Third option:**	Involvement
	Last option:	Base		**Last option:**	Base

In the framework above, the research presents the order of effectiveness of each message type across different contexts. When marketers do not know the environmental concern of the audience (blue table), they should

always focus on surprise framed messages first. Alternatively, depending on whether they use the brand or influencer channel, they should use either involvement or control framed messages. The control and involvement cells are marked in red to emphasise the order change between the brand and influencer channel.

Environmental concern known:					
Brand Communication	**Best option:**	Surprise or Involvment	Influencer Communication	**Best option:**	Surprise or Control
	Second option:	Control		**Second option:**	Control
	Last option:	Base		**Last option:**	Base

When marketers know the environmental concern of the audience (green table), they have more options to choose from. For brand-led communication they can **choose** either surprise or involvement message frames. For influencer communication, they can choose either surprise or control framed communication. In these cases, the top choices are equally as effective, and the base condition is always the least effective.

Theoretical contributions

Overall, the results demonstrate that all the message conditions had positive effects on recycle intentions as highlighted by the negatively skewed distribution of the dependant variable. This supports the initial findings by Winterich *et al* (2019) which posit the importance of highlighting product transformation in recycling campaigns. However, this research further contributes to the literature by showing that product transformative messages, enhanced with personal message frames, are even more effective at improving recycle intentions. More specifically, we highlight three message framing conditions (control, involvement, surprise) that successfully enhance recycling intentions more than a generic product transformation message and discuss the varied effectiveness of these conditions across different contexts.

In addition, this study also addresses the knowledge gap regarding the impact of influencers in communicating recycling campaigns. While influencers have proven effective at influencing attitudes and behaviours in various contexts, our results reflect that they are not always the optimal channel to promote recycling initiatives. Further research in this area is recommended. However, we still offer guidance on how influencers can be effectively utilized when brands choose to include influencer marketing in their recycling campaigns. This study lays a foundation for future research to investigate the best ways to use influencers when marketing sustainable strategies.

Final remarks

By integrating novel insights with established psychological message framing tactics, significant progress is achieved in the realm of sustainable marketing research. By extending this foundational research, researchers can provide a more comprehensive understanding into the mechanisms of effective recycling communication and can help in developing innovative approaches that encourage positive impact within global communities.