Green Strings vs Purse Strings – Role of Eco-Emotions in Pro-Environmental Consumer Behaviour

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Abstract

How likely a specific cluster of negative mixed emotions elicited in the context of environmental/ecological degradation influence consumer's purchase choice preferences? Emotions play a central role in marketing and advertising. In contemporary Advertising and Marketing research, the role of mixed negative emotions or emotions related to the environment, and their effects on purchase choice behaviour is relatively unexplored. Historically, studies have primarily delved into the effect of attitudes or emotions on consumer preferences (likeability of ads) and willingness to pay (WTP), instead of actual purchase behaviour. However, there can be a significant gap between WTP and actual behaviour, despite strong environmental attitudes. Hence, marketing segmentation, and construction of advertising stimuli, needs a deeper dive to understand the differential effects of mixed emotions on purchase choice behaviour.

In this paper, the potential direct behavioural effect of 'mixed integral eco-emotions' (specific emotions evoked by viewing a video about environment/ecological degradation that is related to the decision at hand), on individual purchase choice behaviour is explored.

An incentivized revealed preference discrete choice experiment has been chosen as my framework for this study. The discrete purchase decision is made between two products with primary and secondary attributes, including a given price and various environmentally relevant characteristics. The basic methodological approach was that of a two-part economic or consumer response experiment in which participants are exposed to a specific kind of stimulus (video clips focusing on environmental concerns in the stimulated condition) eliciting certain emotions, following which they rated their emotions on a Likert scale, and partook in a binary choice experiment.

Mixed emotions were elicited from participants, with Sadness, Anger and Guilt being dominant emotions. There was a significant difference in conversion to pro-environmental purchase choice behaviour between neutral and stimulated conditions across three price point /product categories. This study also found out an important caveat with respect to the effect of Eco-Emotions stimuli on pro-environmental behaviour, related to price difference between an environmentally friendly option and a non-environment friendly option. Additionally, the role of other factors such as

environmental attitudes, antecedents to emotions, risk attitudes and construal level were also studied.

The much-required direction for filling the knowledge-gap in terms of application of models of human behaviour for predicting pro-environmental consumption behaviour and the effect of mixed emotions on Eco-Friendly purchases decision making has been established in the present study. It has been identified that conventional approaches of studying discrete emotions, environmental attitudes and norms are not sufficient, when it comes to understanding the 'intention-to-action' gap for pro-environmental segments of consumers.

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List of Abbreviations:

ES – Earth System

PEB – Pro-Environmental Behaviour

PB – Planetary Boundaries

Eco Emo – Eco-Emotions

Hi – High

Lo – Low

WTP – Willingness To Pay

GDP – Gross Domestic Product

TPB – Theory of Planned Behaviour

PCE – Perceived Consumer Effectiveness

ESP – Environmentally Sustainable Product

CBT - Cognitive Behavioural Therapy

ATF - Appraisal Tendency Framework

DCE – Discrete Choice Technique

BDM - Becker-DeGroot-Marschak

Chapter 1

1 Introduction

1.1 Motivation and Overview

Overconsumption or excessive consumption has been cited as a significant factor contributing to environmental degradation, such as water pollution, climate change, and landfills with the dumping of non-biodegradable materials. As such, much attention has been focused on minimizing consumption towards mitigating deleterious environmental issues and developing a meaningful approach from an ecological perspective (Hertwich, 2011; Kilbourne & Pickett, 2008; Lofdahl, C. L., 2002; Shultz & Holbrook, 1999). However, though the concept of minimizing consumption towards contributing to environmental sustainability is a possible mechanism, the associated unfavorable impact in lowering public consumption from the economic viewpoint is not so practical and a viable option. The economic cycle of Gross Domestic Product (GDP) and its direct relationship with per capita consumption signifies the prosperity of a nation with its span of broad activities, such as the production and distribution of goods and services, leading to the growth and development of countries around the globe (Bonacich E, 1994; Kunz, G. I., Garner, M. B., & Karpova, E., 2007; Wright, G. C., 2014). Furthermore, merely reducing consumption of existing goods and services is not a good enough measure to bring down the environmental impact as much as altering the pattern or nature of goods that are purchased for consumption, as evident from past and continuing research (Brosdahl & Carpenter, 2010; Gardner, G. T., & Stern, P. C, 2008; Ivanova et al., 2016). Reengineering and product improvement, as well as process redesign leading to extended product life or reusability/recyclability, have been found, in previous research work, to be significant contributors to the reduction of negative environmental consequences (Laurenti et al., 2016). I, therefore, argue that changing consumer behaviour towards encouraging or motivating consumers to choose more environmentally sustainable options in their repetitive purchase decisions in meeting their consumption needs can be a proactive strategy to promote environmental conservation without compromising on the socio-economic parameters. To do so, one of the critical steps is the understanding of consumer purchase behaviour in the context of pro-environmental behaviour (PEB).

With the rapid dissolution of planetary boundaries (PB) (See Figure1 below) and the joint pursuit of both the government and corporate sectors in aiming for net zero carbon goals for the overall benefit of society, there has been an ever-increasing need to understand, and mitigate risks of the planetary boundaries crossing the tipping point (Steffen et al., 2015). According to Steffen et al. (2015), "PBs are scientifically based levels of human perturbation of the Earth System (ES) beyond which ES functioning may be substantially altered. Transgression of the PBs thus creates a substantial risk of destabilizing the Holocene[1] state of the ES in which modern societies have evolved". The framework is not meant to dictate how societies should develop per se but is a good indicator of identifying a safe operating space for humanity on Earth, making a valid case to decision-makers in charting a desirable course for societal development.
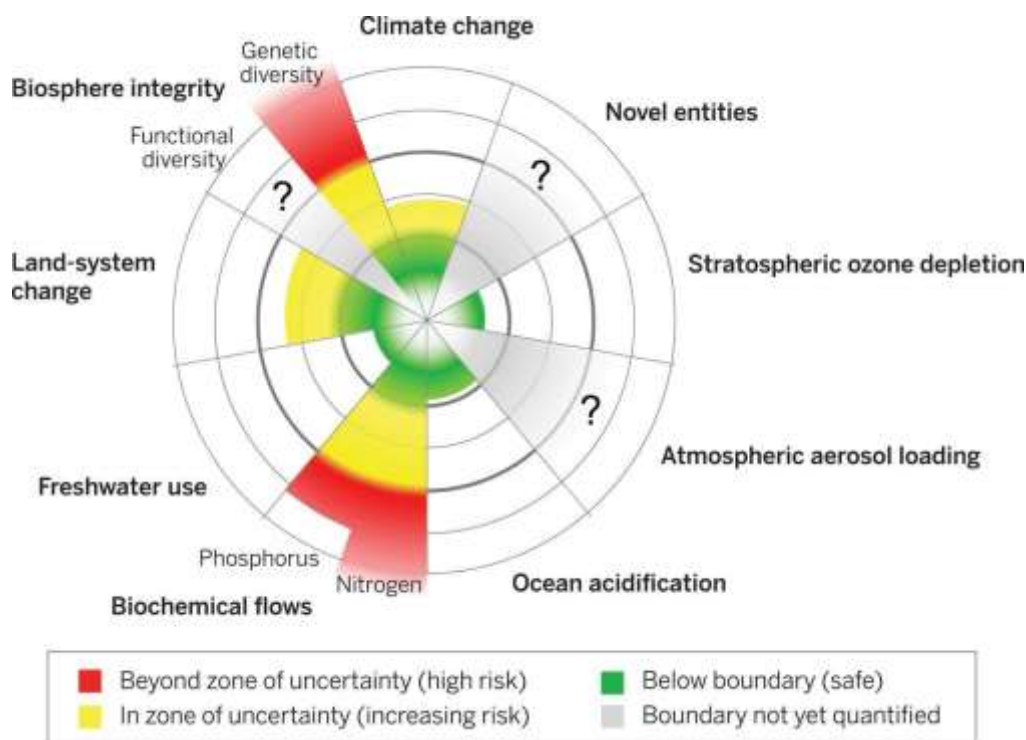
Figure 1: Planetary Boundaries *(Steffen et al., 2015)*

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[1] **Holocene** - The Holocene is the name given to the last 11,700 years* of the Earth's history — the time since the end of the last major glacial epoch, or "ice age." Since then, there have been small-scale climate shifts — notably the "Little Ice Age" between about 1200 and 1700 A.D. — but generally, the Holocene has been a relatively warm period between ice ages. (Vidas et al., 2015)

Given that the root cause of diminishing PBs lies in human behavioural patterns, it is essential to begin with understanding the mechanics of how individuals behave across different domains in a pro-environmental manner.

Therefore, inducing PEB is one of the critical challenges in the path to sustainability. The determinants of PEB have long been a topic of interest for a broad spectrum of disciplines, including economics, psychology, anthropology, and sociology. The philosophical and methodical foundations vary so much across disciplines that often, it is difficult to find a common ground to develop an integrated understanding of behaviour. This makes this topic a pressing case for an interdisciplinary model for deepening the understanding of this crucial subject matter in current socio-economic and global affairs.

Today's consumers, as responsible citizens with social responsibilities, are accountable not just to themselves solely for the outcomes of their decisions (Solomon, 2006) but are also responsible for their behaviour and actions that may have a profound impact on the social or natural environment where they live (Gilg et al., 2005; Steg & Vlek, 2009). However, despite a considerable leap in awareness and disposition by the public at large to behave in a pro-environmental manner, the gap between intention and action still exists to a great extent (Vermeir & Verbeke, 2006). It has been found that emotions can be a significant predictor of the large variance in environmentally relevant behaviours and a potential driver in influencing relevant behavioural intentions (Hahnel & Brosch, 2018; Kals & Maes, 2002)

The thesis of this interdisciplinary study has been structured around the tenant of affect (particularly emotions) and their role in economic decision-making, specifically eco-friendly consumer behaviour, exploring the factors behind the 'intention-to-action' gap. In order to establish the scope of this research, an attempt has been made to review the approaches and gaps in consumer decision-making research, particularly in understanding the role of emotions and their action tendencies in advertising, marketing, and pro-environmental behaviour. Eventually, in this thesis, I will share my proposed hypothesis, define the key variables and relationships, obtain the data for analysis of results, and through the lens of appraisal dimensions from the cognitive appraisal theory, will attempt to draw insights to point toward future directions in the field of marketing and advertising for environmental friendly products.

First, a literature review of social psychology is presented on the current methods of predicting and understanding pro-environmental behaviour. The basic concepts of what constitutes pro-environmental behaviour and ethical consumerism, and the scope of this research is then established. This is followed by the gaps and practical implications of such research to establish directions for future research for applications in advertising and marketing.

Secondly, a deep dive is also undertaken into the nature of mixed eco-emotions (emotions related to the ecological environment) and their respective action tendencies through the account of "Cognitive Appraisal theory," stating the pitfalls and future directions aiding in better predictive modeling, affective forecasting and constructing advertising stimuli strategically for marketing on social media platforms.

Chapter 2

2   Literature review and Theoretical framework

This section's structure starts with a broader field of Marketing and Advertising, followed by the context and scope of the research. Eventually, it delves into the determinants of pro-environmental consumer behaviour, narrowing down to understanding the role of affect, particularly emotions, in pro-environmental behaviour.

2.1 Marketing / Advertising: An interdisciplinary outlook (Introduction)

Marketing can be seen as both a sub-discipline of economics and psychology. It has been described as a business philosophy on how the organization can work as one entity to maximize revenue by fulfilling consumers' current and future wants (Jaworski & Kohli, 1993; Kohli & Jaworski, 1990; Narver & Slater, 1990). This entails the use of consumer behaviour analysis in marketing management. In this paper, I delve into a relevant future 'want' / 'need,' i.e., the consumption of eco-friendly products.

Marketing and Advertising is based on behavioural function, hence finding a causal link between the determinants of behaviour and or further developing current models for better prediction of behaviour is crucial. Fundamentally, the fields are interested in the effects of

incentives and penalties in fulfilling needs and wants. As such, it can be defined as "the study of the behaviour of consumers and marketers, especially as they interact" (Foxall, 2001) and the research of their bilateral workings on each other.

Behavioural analysis as a research discipline can be broken down by having components of experimental, applied and conceptual behaviour analysis. This research is conducted through the lens of 'experimental analysis,' concerned with controlling and changing the environmental stimuli (antecedents and consequences) affecting the choices. In this research paper, I intend to use a behavioural decision-making experiment to investigate the role of emotions on the PEB of consumers. In particular, I will be utilizing a revealed preference discrete choice experiment to conduct an experimental analysis on choice behaviour. Additionally, this research will also entail a descriptive section that will include the literature review and theoretical underpinnings across various disciplines.

2.1.1 Scope and Context

In understanding the factors of decision choice in consumption, it is essential to specify the medium and stage of the consumer journey. The consumer journey can be broadly divided into pre-purchase and post-purchase stages. In the context of 'social media' marketing, the pre-purchase stage refers to the time when the consumer is simply scrolling through social media feed or intentionally evaluating or looking for a product to buy on various web stores. In such a context, users experience both related (integral) and unrelated (incidental) emotions as they consume different media on the feed.

The revenue model of social media sites is primarily through targeted ads. Hence it is crucial to strategically construct the content of the ad, to not only hold attention and increase awareness but also convert the consumer for consideration and purchase.

2.1.2 Green Marketing

What is Pro-environmental consumer behaviour

According to Kollmuss & Agyeman (2002), pro-environmental behaviour can be defined as "behaviour that consciously seeks to minimize the negative impact of one's actions on the natural and built world" (Kollmuss & Agyeman, 2002, p.240). While pro-environmental behaviour

primarily focuses on consumption with minimal impact on the natural and the built world, ethical consumerism or ethical consumption covers a broader range. In this study, the focus is on pro-environmental consumer behaviour.

<u>Green marketing</u>

Estimated currently at over US dollar 60 billion annually green technology and sustainability market size and likely to rise sharply by five-fold in the next seven years (Laricchia, F., 2022); there is an increasing demand for environmentally friendly products amongst today's consumers, buoyed by the increased awareness and sustainability drive initiated by the governments and organizations alike. Accordingly, manufacturers and marketers are putting more attention and focus into offering green products and services to meet the increased demand and the needs of consumers.

In today's competitive business landscape, both profit-oriented and socially responsible companies have begun using the concept of green marketing to address environmental issues as a tool to gain a competitive advantage by developing and promoting environmentally friendly products to meet the demand of environmentally conscious consumers (Peattie, 2001). In order to effectively influence customer purchase interest and behaviour towards green products, green advertising messages must be informative and persuasive enough to achieve the desired business outcomes. However, the effectiveness of common terms such as "eco-friendly" and "biodegradable" in convincing customers to make green purchases is still uncertain. As a result, firms need to develop a further understanding of the determinants of green purchase behaviour to deliver an effective and persuasive advertisement in their communication strategies.

2.2 Segmentation and Consumer perception

Adopting green marketing practices is a significant trend in modern business (Kassaye, 2001). Green marketing, also known as social marketing, ecological marketing, or environmental marketing, involves the process and activities undertaken by firms to deliver environmentally friendly goods or services that meet consumer satisfaction (Soonthonsmai, 2007). Other definitions of green marketing include the management of identifying, anticipating, and satisfying the needs and requirements of customers and society profitably and sustainably (Peattie, 1995; Welford,

2000). Firms that engage in green marketing may face challenges such as fluctuating demand, negative consumer perceptions, and high production costs (Gurău & Ranchhod, 2005).

In this paper, I am taking a deep dive into the challenge of consumer perception of marketing /advertising stimuli.

Conventionally Green consumers have been segmented as individuals who are aware of and concerned with environmental issues (Soonthonsmai, 2007). They may participate in activities such as boycotts and petitions to promote environmental preservation (Fergus, 1991). It is vital for companies to understand the characteristics of green consumers in order to develop targeted and segmented marketing strategies (D'Souza et al., 2007). According to Ottman (1992), consumers are more likely to accept green products when their primary needs for performance, quality, convenience, and affordability are met and when they understand how the product can help address environmental problems. Although this is true, I argue that in order to expand the segment, it is necessary to understand the affective and respective behavioural tendencies of the segment to have greater predictive power toward consumer preferences and buying choice behaviour.

2.3 Social Psychology

The overall consensus in the environmental literature is that the value of general dispositional and attitudinal measures is questionable when applied to particular contexts, including the prediction of specific environmentally responsible behaviours (Roberts & Bacon, 1997; Smith-Sebasto, 1992; Smith-Sebasto & Fortner, 1994).

2.3.1 Traditional approaches to PEB

Previous researchers often concluded that the ethical consumer's behaviour does not comply with the attitudes they report, which are typical worldwide (Eckhardt et al., 2010; Papaoikonomou & Ryan, 2011; Sudbury-Riley & Kohlbacher, F, 2016). Often the theory adopted in exploring this gap between attitude-behaviour is the Theory of Planned Behaviour (TPB) (Khare, 2015; Samarasinghe & Ahsan, 2014). Researchers have recognised that TPB has several disadvantages, assessing the intention to behave without focusing on actual behaviour (Hassan et al., 2014). The issue with this approach is that the subjective evaluation or 'meaning-making' of the stimuli, and the respective emotion elicitation and action are not accounted for (Ellsworth & Scherer, 2003). This phenomenon has been explained in the cognitive appraisal theories, which state that the

evaluation or appraisal of personally relevant information from an event causes emotions and specifies a causal relationship between appraisal dimensions and emotions (Moors, In Press; Smith & Lazarus, 1990). Emotions-based research is gaining increasing attention in many subject areas, especially in 'consumer decision-making research' since emotions are inevitable in making consumption decisions.

Peattie (2001) proposed a green purchase perception matrix in which instead of trying to understand the purchasers, researchers should understand the purchases. He suggested that green purchases for a specific product may vary according to the purchaser's degree of compromise and degree of confidence generated in a particular choice's environmental benefits. The concessions include paying the premium price, travelling farther to purchase a green product, and accepting a trade-off between improved eco-performance and a lower technical performance level. Peattie revealed that consumers' confidence and compromises are the most important influential factors in their green purchase decision. Such considerations are essential in the marketing context of green products. In this study, I shall be testing such rational elements of trade-offs between an eco-friendly and non-eco-friendly product, through a revealed choice experiment, in addition to testing the role of the affective (emotions) element.

Past research on choice behaviour has been predominantly cognitive, without paying much attention to the role of affect. In recent times, this imbalance has been taken up with greater focus by the researchers of consumer purchase decision-making from theoretical and empirical accounts in determining the influence of affect on choice behaviour (Shiv & Fedorikhin, 1999). This study is an extension in that direction.

In order to improve the predictive power of TPB, it is necessary to introduce emotions into the decision-making model, as shown in the figure below.
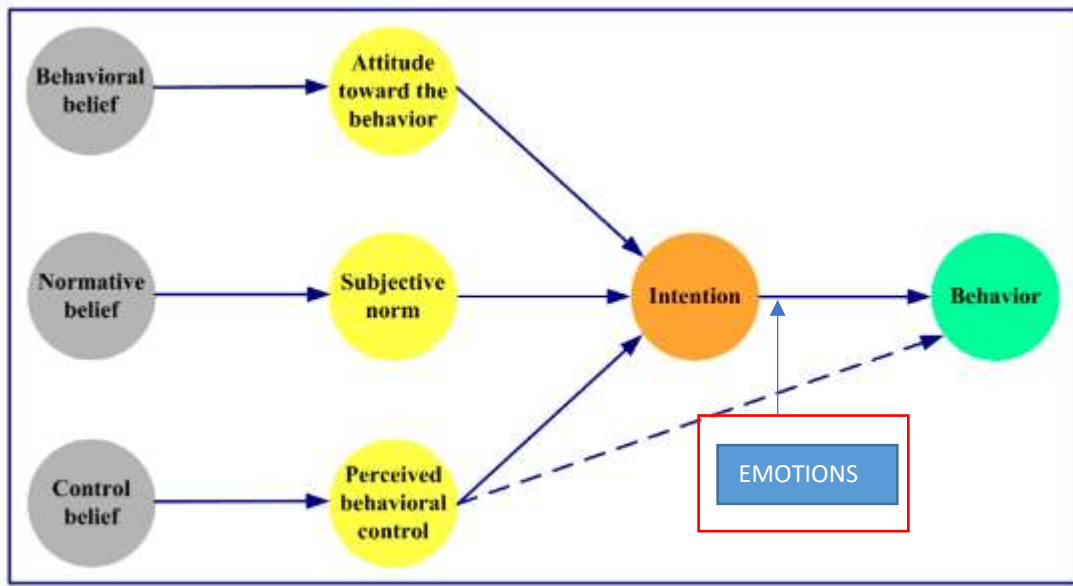
Figure 2: Theory of Planned Behaviour schematic *(Si et al., 2019)*

Although this study is not directly implementing or re-validating through measurement of every primary variable (attitude, norms and perceived behavioural control) from TPB, I re-validate the influence of attitudinal and normative variables as a moderating variable - 'Environmental Concern' measured through a standard questionnaire (NEP) on pro-environmental choice behaviour.
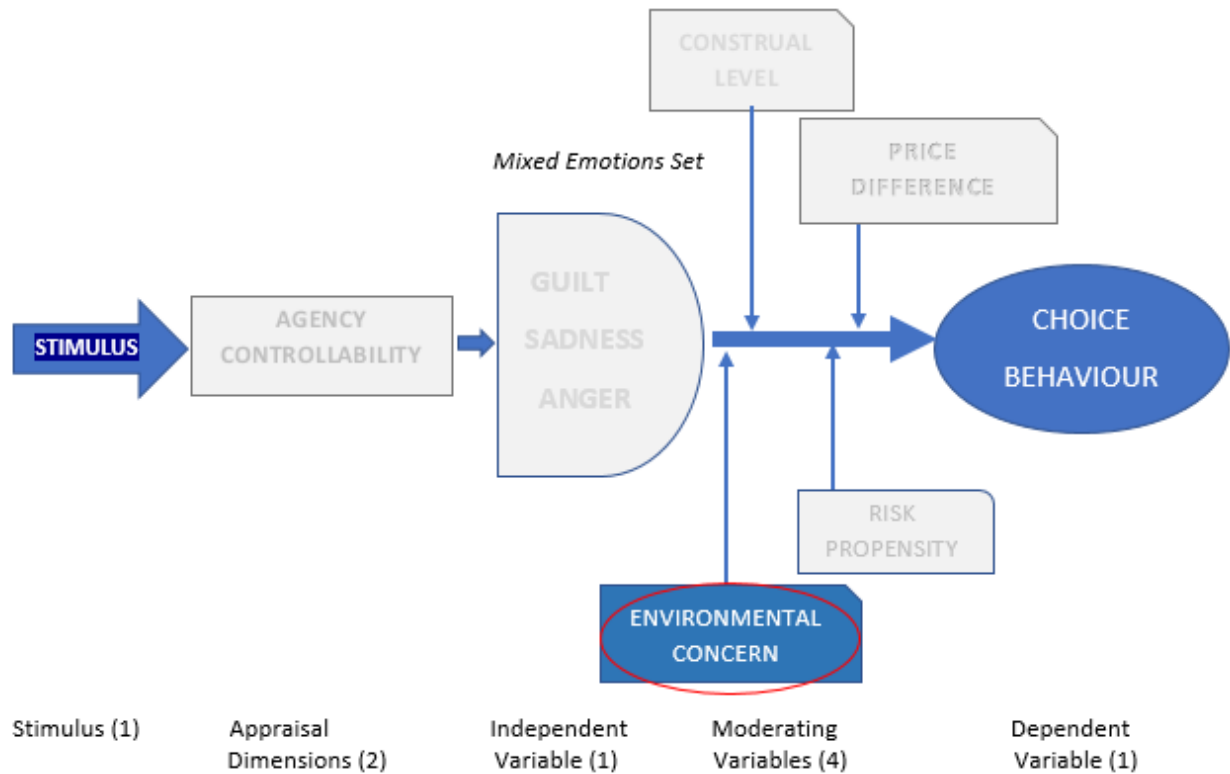
Figure 3: Schematic Model (Environmental Concern as a moderating variable)

Marketers have used guilt as a messaging tactic for years. Guilt is an unpleasant emotional state associated with action, inaction, or intention (Baumeiste et al., 1994). Individuals tend to feel guilt after engaging in undesirable behaviour that violates their internal standards or conflicts with their ideal sense of self, leading to lower self-esteem (Burnett & Lunsford, 1994; Tracy & Robins, 2004). As a result, they feel a degree of dissonance or psychological discomfort and seek to reduce the dissonance by correcting the behaviour (Festinger, 1957). Guilt more likely will occur when people have some degree of control over the outcome of a situation (Burnett & Lunsford, 1994). It can motivate changes in attitude and behaviour by stimulating a sense of responsibility (Bennett, 1998; Keltner & Haidt, 1999).

However, under the umbrella of ethical consumer behaviour, pro-environmental consumer behaviour may have more 'compound emotions' (a particular stimulus may evoke multiple different emotions at the same time instead of one single emotion) and needs further exploration, especially to see how specific contexts among the dimensions of purchase decisions interrelate with the emotional drivers. Additionally, in the context of pro-environmental consumer behaviour,

factors such as greenwashing[2] and PCE[3] further contribute to the complexity of 'compound emotions.' This, in turn, would affect the action potential of emotions and, consequently, the purchase behaviour of pro-environmental goods.

Hence, it is significant to understand the effect of the compound or mixed emotions on information processing and subsequent decision-making algorithm by consumers, as it plays a large part in the design of marketing communications and understanding of the consumer experience.

Armed with this understanding, researchers in decision-making and marketing can better structure messaging and suggest actions or products after exposure to stimuli that facilitate green-promoting consumer judgments and behaviour.

Pro-environmental behaviours have been attributed to complex and multi-layered consumer behaviour (Lazaric & Oltra, 2012), and hence a single theory does not adequately address the topic (Stern, 2000). Particularly the topic of emotions has been studied through various disciplines and their specific viewpoints. Emotions have been studied by psychologists, neuroscientists, social scientists, sociologists, behavioural therapists amongst others. All of these disciplines have specific approaches towards understanding the role of emotions in decision-making, and hence is multi-faceted. In this study I share various insights from sub-disciplines of psychology and economics and call for action in incorporating insights from different disciplines through the insight from the experiment conducted.

2.4 Fundamental Classification and Framework of Emotions by disciplines

According to Kals & Maes (2002) and Hahnel & Brosch (2018), emotions play a significant role in predicting behaviour and intentions related to the ecological environment. However, there is disagreement among scholars on the specific types of emotions that are relevant to environmental issues, as evidenced by the perspectives of Böhm (2003), Kals & Müller (2012), and Hahnel & Brosch (2018). As a result, the emotions that a person experiences and the respective

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[2] Greenwashing is not a general cognitive phenomenon but rather a deliberate marketing strategy used by companies to create a false impression of environmental responsibility (Delmas & Burbano, 2011). It involves making exaggerated or false claims about the environmental benefits of a product or service in order to appeal to consumers who are concerned about sustainability and the environment

[3] perceived consumer effectiveness, the concept of which was first described by (Kinnear et al., 1974) as a measure of an individual belief that he or she can have an effective contribution on pollution abatement.)

action tendencies, cognitive antecedents in relation to the environment can vary depending upon the discipline and the respective categorization of emotions.

Additionally, the topic of emotions has been classified and interpreted differently not just within conventional emotion theorists, but also between various disciplines (environmental or social psychology, cognitive and affective psychology, marketing and advertising, etc.).

As a part of the descriptive study, in the following section I shall outline some of the broader classifications by each of the relevant (relating to pro-environmental consumption) fields. The theory that is the most pertinent for consumer behaviour or pro-environmental consumer behaviour depends on the research question and level of analysis. In my research, I am interested in the action tendencies component of emotions and cognitive antecedents that can be controlled in terms of input parameters in the context of social media advertising. Therefore, I have adapted a version of the appraisal theory account into my experiment. Knowing the limitations, I explain the drawbacks and subscribe to a hybrid version – 'Embodied Appraisal Theory' (J. J. Prinz, 2004) in terms of a theoretical account for future consideration in further deepening the role of emotions in decision-making.

2.4.1   Theories of Emotions from Psychology

As per Oum & Lieberman (2007), the number of theories of emotion generated is as vast as it is varied: for example, they include David Hume's view of emotion as "master over reason" (i.e. emotional responses shape our beliefs and attitudes, which in turn guide our actions) (Hume, 1739), the theory that emotional feelings depend on feedback from the body (James, 1884; Lange, 1885), cognitive-appraisal theories (Frijda, 1986; Lazarus, 1991), Two-Factor Theory of Emotions (Schachter & Singer, 1962), theories of universal emotions with associated facial expressions (Ekman & Friesen, 1971; C. E. Izard, 1977; Tomkins, 1963), and social-constructionist theories (Averill, 1980; Harré, 1986; Shweder & Levine, 1984). These theories can be broadly divided into cognitive and non-cognitive theories of emotions.

2.4.1.1 Cognitive vs non-cognitive accounts

Cognitive and non-cognitive accounts of emotions are two theories that attempt to explain the underlying mechanisms of emotions and their action tendencies.

Cognitive accounts of emotions hold that emotions are based on an individual's interpretation and appraisal of events. The action tendencies associated with emotions come from the goals or intentions formed in response to the situation (Frijda, 1986).

On the other hand, non-cognitive accounts of emotions argue that emotions are innate and biologically based, and their action tendencies stem from the automatic physiological responses they evoke (Damasio, 1994).

Current marketing and neuro-marketing practices have been influenced by both theories, where a non-cognitive approach would be more relevant in a 'sensory marketing' or experiential shopping scenario. In contrast, traditional advertising on TV or social media would take on the approach of a cognitive approach. Since, in the latter, the content of emotion is the variable that can be framed or manipulated for desired outcomes in the context of consumer preferences, engagement with the brand or purchase behaviour; I have chosen the cognitive account as a basis for constructing my experiment.

2.4.1.2 Embodied Appraisal Theory of Emotions

According to "Embodied Appraisal theory" by Jesse Prinz (J. Prinz, 2004) ; emotions are simple perceptions of bodily changes, but they carry information by being calibrated to matters of concern. They get calibrated through elicitation files (which are content determining causes of our emotions and not constituent parts) that can be culturally informed, and culture can also alter our patterns of bodily response. Thus, emotions can be both embodied and socially constructed. This is relevant in the context of the current research in pro-environmental consumer behaviour, as cultural factors can have a significant difference towards climate change and pro-environmental attitudes as shown in recent studies.

There exists an element of both nature and nurture in every emotion. Each is built up from a biologically basic emotion, but its conditions of elicitation, and hence its content, are influenced by learning.

Emotions are perceptions of bodily changes that represent such things as dangers, losses, and offences because they are set up to be set off by such things. Emotions are embodied because they are perceptions of bodily changes, and they are appraisals because they represent matters of concern. In essence, emotions are neither fixed bio-programs nor cognitively mediated scripts.

Prinz further states that no emotion is biologically basic; instead, all are psychologically basic. Each may begin with a set of responses tuned to highly specific elicitors, and some may have several component subspecies; for example, anger may emerge as a blend of something like goal frustration and aggressiveness. Sadness may begin as separation distress and then expand to encompass other forms of loss through learning and enculturation. Disgust may begin as a form of physical revulsion that ultimately gets expanded to subsume moral aberrations.

Each emotion is structurally analogous. Each is simply a perception of a patterned bodily change. And all emotions have elicitation files that can contain judgments, as well as perceptual representations.

In my research, I dwell on the second tenet of Prinz' theory (J. Prinz, 2004) – the content of emotions (and not the form of emotion – the first tenet) to explore the role that emotions play in decision-making and action.

2.4.1.3 Social Constructivism

Critics of evolutionary psychology argue that emotions are a result of how we are raised rather than being innate. Constructionists propose that emotions are socially constructed through our cognitive evaluations of situations and our actions we take in response. As per Averill (1980), "emotions are construed as cognitive appraisals nested in behavioural scripts. An appraisal is a judgment about how one's situation bears on well-being. Appraisals represent situations as matters of concern. Scripts are instructions about what to do when something of concern transpires. Each emotion script dictates a different range of actions which may be quite complex and protracted. Appraisals and scripts are enculturated. They reflect the values and convictions of a cultural group. When we act out an emotion script, we engage in behaviour and decision making that has been prescribed by our culture".

This would closely resemble value and motivation-based models in marketing theories. However, what would be interesting is to explore, in future research, to measure appraisals and respective scripts that dictate a specific action in a particular context based on cultural or habitual encryption.

Constructionists argue that to be angry, we need to construe something as an offence, which requires the deployment of subtle, culturally informed moral judgments. Anger is, therefore, not

an animal reflex but a sophisticated moral attitude. This holds validity in the context of 'ethical consumerism' or 'pro-environmental' behaviour as demonstrated in illustrative images below.

Figure 4: Child labor in Congo's cobalt supply chain - used by major consumer electronics brand(s)
(*Guardian News and Media. (2019). Steven Gislam, 2019*)

For example, the images above may evoke a varying degree of sadness, anger or no emotion, shaped by the appraisal arising from the cultural encryption. A person from Congo viewing this may see this as a day-to-day normal activity, whereas a Norwegian may see this as a violation of fundamental human rights, and hence may feel angry and have a script of taking action through boycotting specific brands or file a petition towards the supply chain and sourcing of certain elements towards manufacturing of certain goods.

Figure 5: Images of Seal Hunting
(*NBCNews.Com, 2008; Google. (n.d.). Google Image : Seal Hunt, n.d.*)

Similarly, the age-old practice of seal hunting (the largest slaughter of marine mammals on the planet) may not seem as inhumane and disgusting to a section of the Canadian community living on the east coast, enculturated in the tradition.

The primary source of evidence for constructionism is cultural variation. Emotions apparently vary across borders. In this light, emotions begin to look less like biological universals and more like enculturated scripts.

2.4.2 Eco- Emotions from public health literature

When navigating the literature on public mental health (Ágoston et al., 2022), I find newly classified and studied emotions such as eco-anxiety, eco-grief, eco-guilt, and sostalgia are emotional responses to ecological issues and concerns. People develop different emotions about climate change such as depression, anxiety, and anger (Stanley et al., 2021), which affect behaviour and well-being differently. Albrecht (2011) postulated that chronic stress on ecosystems is likely to have an adverse impact on the mental health of humans, resulting in certain "psychoterratic" syndromes as mentioned above (e.g., eco-anxiety, etc.).

Eco-anxiety refers to the feelings of fear, worry, and concern that individuals experience in response to environmental problems such as climate change, pollution, and loss of biodiversity. It is considered a subtype of general anxiety disorder characterized by feelings of powerlessness and helplessness (Panu, 2020).

Eco-grief is an emotional response to the loss of natural environments and species caused by human activity. It is characterized by feelings of sadness, despair, and loss of identity triggered by the disruptions to the environmental knowledge systems (Cunsolo & Ellis, 2018).

Eco-guilt refers to the feelings of responsibility and remorse that individuals experience in response to their actions that violate personal or social standards of behaviour (Mallett et al., 2013). In a recent global research, as many as 50% of young respondents reported the feeling of climate guilt (Hickman et al., 2021). With its inherent nature of self-criticism and individual responsibility, this feeling may often lead to reparative action and change in behaviour (Ágoston et al., 2022).

Sostalgia refers to feelings of nostalgia for a time when the natural environment was in a healthier state, often evoked by the sight of environmental degradation. It is characterized by feelings of longing, sadness, despair and disappointment (Albrecht, 2011).

Theoretical underpinnings for these emotional responses can be found in cognitive behavioural therapy (CBT) and cognitive theory of emotions. CBT emphasizes the role of thoughts, beliefs, and attitudes in shaping emotions and behaviours. In the case of eco-anxiety, eco-grief, eco-guilt, and sostalgia, negative thoughts and beliefs about the state of the environment and the self, shape these emotions.

These examples and forms of psychological conditions further add to the case of choosing a 'cognitive account' as the basis for my experiment on influence of emotion in the study of ecological behaviour (being a practical approach in explaining the nexus between emotion and cognition within the limitation of this study).

2.4.3 Classification and application emotions in Advertising literature

2.4.3.1 Basic vs Complex and Higher vs Lower order Emotions

<u>Basic vs Complex (Social)</u>

The typology and classification of emotions are described differently across fields. From the viewpoint of a philosopher and cognitive scientist such as J. J. Prinz, (2004), in his book "Gut Reactions: A Perceptual Theory of Emotion", he distinguishes between n basic emotions and social emotions, which he considers to be more complex.

According to Prinz, basic emotions are "triggered by specific perceptual cues and are experienced as immediate, unmediated, and automatic" (J. J. Prinz, 2004, p 38). These emotions are thought to be innate, universal, and cross-cultural and include fear, anger, joy, sadness, disgust, and surprise. Prinz argues that basic emotions are not cognitive, but "non-conceptual mental states" that are directly linked to physiological changes in the body (J. J. Prinz, 2004, p 38).

On the other hand, Prinz characterizes social emotions as more complex because they involve "the representation of higher-order mental states, such as beliefs, desires, and intentions" (J. J. Prinz, 2004, p 40). Social emotions are thought to arise from social interactions and require more cognitive processing than basic emotions. Examples of social emotions include guilt, shame, pride, envy, and jealousy.

Prinz's classification of emotions is based on the idea that basic emotions are universal and innate, whereas social emotions are culturally constructed and depend on cognitive processing. He

argues that basic emotions are more fundamental and provide the building blocks for social emotions, which are more complex and variable across cultures.

<u>Higher vs Lower Order Emotions</u>

According to Poels & Dewitte, (2006), different types of emotions are enlisted in the literature on emotions. Similarly, the advertising literature reflects the same, whereby various reactions are referred to as emotions. For instance, Van den Bergh et al. (2008) identified positive arousal evoked in men by ads featuring seductive women. Das et al. (2015) found that highly pleasurable ads have strong persuasive effects, and Poels & Dewitte (2008b) identified hope as an emotional reaction evoked by ads about revolutionary dieting pills. However, these reactions reflect different types of emotions stemming from different mental states. In the first example, positive arousal and high pleasure occur automatically, while in the last example, on dietary pills, hope involves a higher degree of cognitive processing of the message. The first example falls under the conceptualization of lower-order emotions, while the emotion of hope is seen as a higher-order emotion.

In the context of this study, I will be focusing on higher-order emotions (synonymous with social emotions) that are directed at the ecological environment.

There are some parallels between how emotions have been classified in the advertising literature and psychology literature. Both fields recognize the importance of basic emotions and their universality across cultures. Additionally, both fields acknowledge the role of cognitive appraisals in the experience of emotions. However, there are also differences in how emotions are classified. Advertising literature tends to focus on the practical application of emotions in marketing and advertising, and thus may prioritize emotions that are more easily manipulated or evoked in a consumer context. Psychology, on the other hand, is more focused on understanding the underlying mechanisms of emotional experiences and their relationship to behaviour. Since this is an interdisciplinary studies research paper, it attempts to take a hybrid path in showcasing the need for underlying the mechanisms of emotional experiences in the pro-environmental context, to improve advertising effectiveness in the long run.

2.4.3.2 Higher-Order Emotions and Cognitive Appraisal

In this article, I study a cluster of higher-order emotions, as prevalent in pro-environmental behaviour, and later discuss why appraisal patterns or action tendencies of discrete emotions may not always hold validity in this context. Therefore, I discuss the concept of 'mixed emotions' and the gap in research for appraisal dimensions and respective action tendencies for the same in the following section.

The cognitive-appraisal theory holds that, in addition to valence[4], various appraisal dimensions differentiate discrete emotions from one another. Smith & Ellsworth (1985) identify six dimensions: certainty, pleasantness, attentional activity, control, anticipated effort, and responsibility.

In this study I look at the dimensions of controllability and agency as antecedents to 'Eco-Emotions', comparing and contrasting which are more relevant antecedents for elicitation of targeted discrete emotions or cluster of mixed emotions.

The specific emotion approach has been valuable for research investigating the differential influence of discrete emotions of the same valence on various cognitive and behavioural outcomes. For example, DeSteno et al. (2000) differentiated sadness and anger in terms of their effects on probability perception, with individuals judging the likelihood of emotionally relevant events as higher when they were congruent with their discrete emotions. Additionally, Lerner & Keltner (2000) applied the specific emotion approach to illustrate the differential effects of the basic emotions anger and fear on risk perception. They found that fear increased pessimism about a negative event, whereas anger increased optimism, consistent with differences in the control action tendency for the two emotions.

In this research, I had initially set out to explore the typical emotions in marketing and advertising stimuli for promoting green products and test if findings from Lerner & Keltner (2000) using the ATF framework still hold true, i.e., if stimulus eliciting sadness, vs anger, would lead to different action tendencies in terms of buyer choice behaviour, through a binary choice experiment, in the context of pro-environmental product purchase. However, during the course of the research, it became increasingly obvious that emotions as elicited in the context of pro-environmental behaviour (PEB) are not as easily isolated due to the nature of the propositional content or

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[4] Valence in emotion is the level of pleasantness that an event generates and is defined along a continuum from negative to positive.

directedness (the degradation of the environment are attributed to both the self and various other agents). Hence this study may call for future research investigating other appraisal dimensions of mixed emotions and other physiological measures to understand better the cause and consequence of such affective content of the ad/marketing stimuli.

2.5 Mixed Emotions, Meaning making and Appraisal theory

2.5.1 Mixed Emotions and Meaning Making

Emotions can play a significant role in shaping consumer decision-making and behaviour, but complex emotional states like mixed emotions have not been studied as extensively as isolated or discrete emotions such as sadness, anger, and fear. Mixed emotions are commonly reported in consumption contexts (Ramanathan & Williams, 2007) and in response to advertisements (Hong & Lee, 2010; Williams & Aaker, 2002).

Consumer research has acknowledged that meaning-making is a key goal of consumption (Belk, 1988; Williams & Aaker, 2002), and that consumer decision-making can be affected by changes in a sense of meaningfulness (Escalas & Bettman, 2005; Mandel & Heine, 1999). An argument is made in this context, that by drawing on meaning as an information model, the construct of 'meaning' can influence decision-making by impacting consumer mindsets, which are a broad set of attentional priorities. This, in turn, affects how consumers process and respond to mixed emotions. This is best encapsulated by the Appraisal theory of emotions.

2.5.1.1 **Description and Basic Model of Appraisal Theory**

Originally proposed by (Lazarus, 1966), the cognitive appraisal theory has gone though some reforms and new variations with respect to the appraisal dimensions.

Appraisal theory suggests that emotional response unfolds as a multistage process consisting of (1) the antecedents of the appraisal process, (2) the process of appraising personally relevant information, and (3) the consequences of appraisal and emotions (Johnson & Stewart, 2017). Figure 6 provides a pictorial representation of these states. See the figure 6 below for the basic approach that has been adopted for this study.
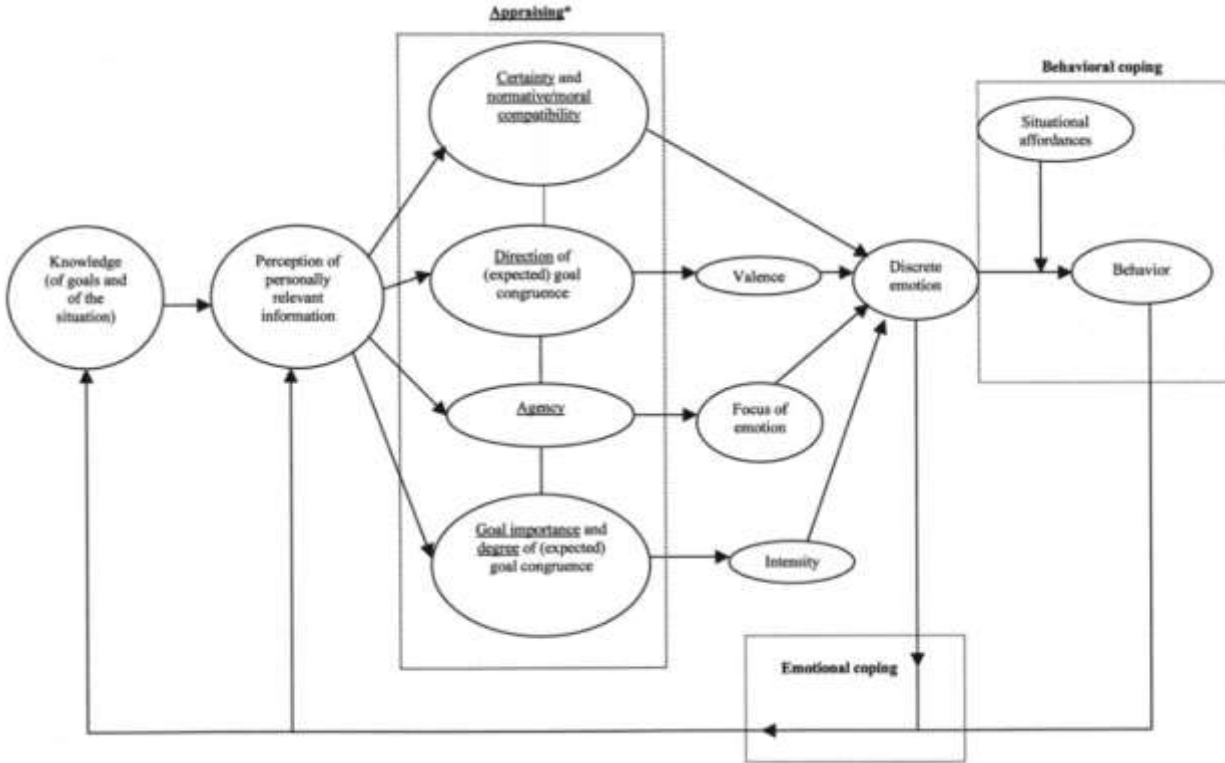
Figure 6: Appraisal Model of Emotion *(Johnson & Stewart, 2017)*

A simplified version of the model adopted for this study is shown in figure 7 below. The proposed theory shows that certain characteristics of an event or situation can cause emotions, affecting consumer behaviour. Emotions are seen as the outcome of the stimuli, duly mediated by the antecedents causing the resultant action tendency or behaviour.

However, it is acknowledged that there may be direct effects of the event on behaviour, and that emotions may not always play a significant role in decision making. In the context of consumer decision-making, the four key appraisal dimensions (L. Watson & Spence, 2007) that have been identified and can predict a wide range of consumption emotions include outcome desirability (evaluative and motivational processes), agency (responsibility and controllability), fairness and certainty.
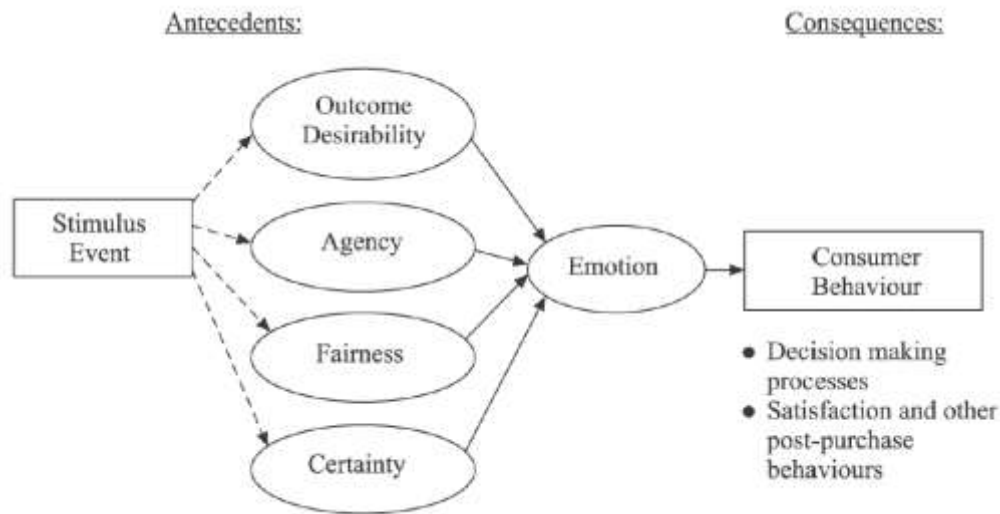
Figure 7: Cognitive Appraisal Theory Model (Schematic) *(L. Watson & Spence, 2007)*

2.6 Appraisal Dimensions – Agency and Controllability (Locus of Control)

Emotions are not experienced in isolation, and people do not enter into emotional experiences without any prior knowledge or expectations. In this context, as I have established previously, in a digital marketing scenario, whereby a consumer is scrolling on their social media feed and consuming various kinds of content, they are experiencing both incidental and integral emotions, (refer section 2.1.1) with respect to ad stimuli. Both situation and people, provide a context for the emotion and a guide to the meaning and consequences of an emotional response. The way in which an individual appraises a situation based on their unique perspective is the ultimate determinant of their emotional response, but situations also place constraints on the conclusions that an individual is likely to reach.

I partially adopt this model, as described by L. Watson & Spence (2007), shown in the figure 7 above, in terms of simply testing the validity of the 'appraisal dimensions' of agency and controllability, for elicitation of 'Eco-emotions' (Sadness, Anger and Guilt)
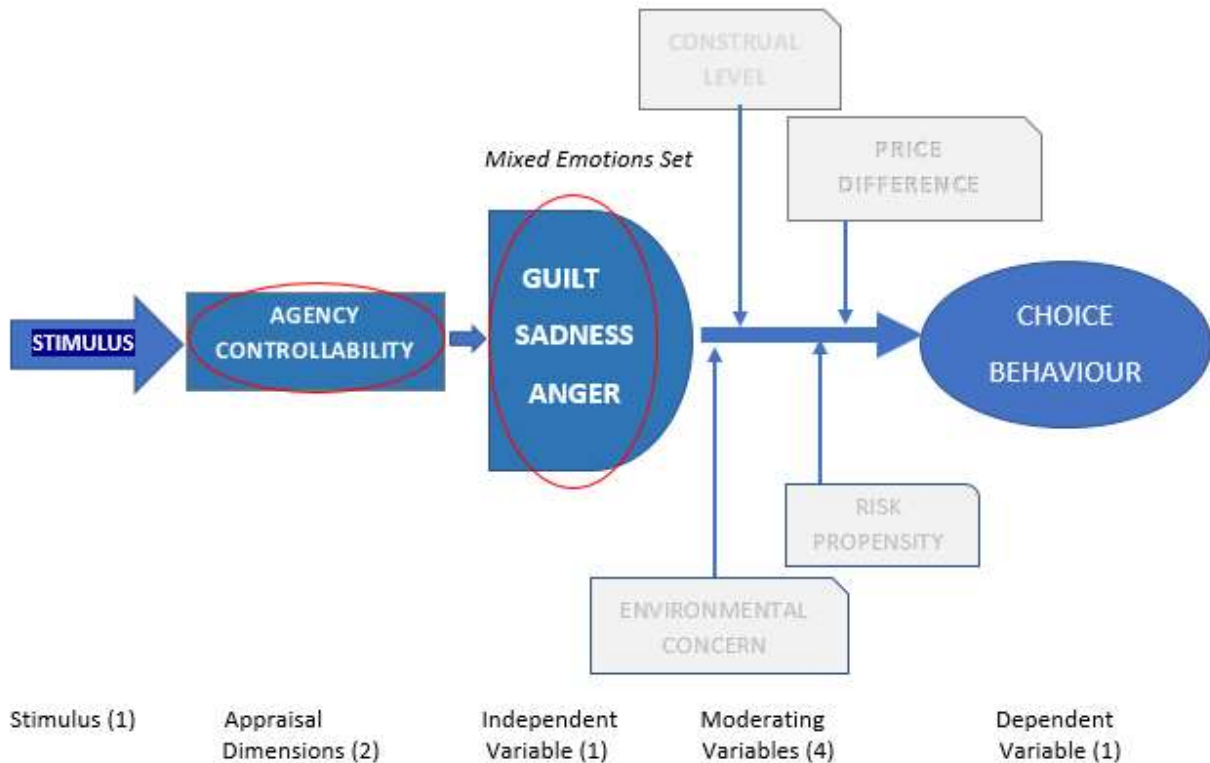
Figure 8: Schematic Model (Appraisal Dimensions and Mixed Emotions)

From the seminal work on appraisal theories (Frijda et al., 1989; Ellsworth & Smith, 1988), duly corroborated by more recent studies (Kuppens et al., 2003) (Ruth et al., 2002). I found the following interpretations in terms of the antecedents or appraisal dimensions (Agency and controllability), the most relevant for the study of the targeted 'Eco-Emotions (Anger, Sadness, Guilt):

- Anger: The proposed function of anger is to prepare and motivate the person to remove an obstacle to their well-being from the environment. Central appraisals for anger include the perception of a goal obstacle and that the unpleasant situation is due to human agents other than oneself. This allows the person to direct their efforts towards a likely target, and because the target is human, it is often possible for the person to influence and improve the situation (Kuppens et al., 2003). Appraisals of goal obstruction and a sense of lack of control are necessary conditions for anger to occur. Anger is increased with the degree of the agent's blame and severity of harm, with degree of blame being associated with controllability or intention (Weber, 2004).

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- Guilt: The proposed function of guilt is to hold the person accountable for their actions and maintain social order. Guilt serves to motivate self-punishment to reduce the likelihood that unacceptable behaviour will recur and attempts to repair any damages to restore social harmony. Central appraisals for guilt include goal obstacles in an unpleasant situation caused by self-agency and feeling personally responsible or blameworthy (Ruth et al., 2002) . It has been suggested that guilt is strongest and more common in the context of close relationships (Baumeiste et al., 1994) rather than in social isolation. Guilt is a prototypical emotion that has been elicited as well as widely studied and used by marketers and non-profit agents to elicit action towards the environment.

- Sadness: The proposed function of sadness is to serve as an appeal for support when the person is helpless. Central appraisals for sadness include the loss of a valued object or person and a sense of helplessness or hopelessness in the face of the loss (Lerner et al., 2004). Sadness is a basic emotion that is felt at the loss of the ecosystem, with a sense of helplessness or hopelessness (Comtesse et al., 2021).

In several studies in environmental and social psychology (Harth et al., 2013; Rees et al., 2015; Schneider et al., 2017) the emotions guilt, anger, sadness are elicited or manipulated through message framing, norm activation techniques. But most of them only tested intentions, and not real purchase behaviour. In this study I intend to simulate a real purchase behaviour through a revealed preference discrete choice experiment with incentives based on the choice behaviour decision.

2.6.1 LOC (Locus of Control)

Locus of control refers to the extent to which individuals believe they have control over events in their lives. According to Rotter's theory (Rotter, 1966) of locus of control, people can be classified as having an internal locus of control, which refers to the belief that one's own actions and behaviours determine the outcome of events, or an external locus of control, which refers to the belief that events are determined by forces outside of one's control.

When it comes to a negative marketing stimulus about the degradation of the environment, individuals with an internal locus of control are more likely to feel empowered and motivated to

take action, whereas individuals with an external locus of control may feel helpless and unmotivated.

If the negative marketing stimuli highlight the responsibility of individuals towards the degradation of the environment, an individual with an internal locus of control may be more likely to feel guilty or ashamed of their actions and may feel motivated to take action by purchasing eco-friendly products in order to make up for their past actions.

On the other hand, an individual with an external locus of control may see the negative marketing stimuli as something beyond their control and may feel that their actions do not make a significant difference in the grand scheme of things. Thus, they may not feel motivated to purchase eco-friendly products, or may even feel that their actions are not sufficient to address the problem.

The appraisal dimensions of Agency (causal responsibility of self vs. others) and Controllability (sense of control as shown by the stimulus) were initially chosen to test the validity of the ATF framework, whereby emotions of the same valence were to show action tendencies (WTP or purchase choice in this case) that would be different. For example, as per Lerner et al., (2004), sadness and disgust had varying reactions to an economic choice task, where sadness reversed the well-established 'endowment' effect in a selling condition to a much greater degree than disgust. However, in the context of PEB, even though sadness was elicited as a dominant emotion, there were other emotions, like anger and disgust, which have been felt as secondary emotions, or isolated emotions in the cluster of mixed emotions.

However, testing these appraisal dimensions as an antecedent for mixed 'eco-emotions' still contribute to further development and validity of the appraisal theory and hence has been chosen as a part of the experimental construct.

2.7 Challenges of mixed emotions under the appraisal theories

The existence of mixed emotions may weaken the relationship between assessments and consumer emotions. This poses a challenge to both the internal and external validity of a study such as this, especially when conducted in an online domain, outside of a physical lab setting and without measuring physiological parameters (which would potentially identify patterns of signatures of a specific set of emotions). In instances of a single, pure emotion, the pattern of assessments should only be related to that one target emotion. However, in situations where

multiple emotions are present, the assessment pattern for one emotion may be dominant but not as clear as in instances of a single, pure emotion. For example, in the study by Lerner et al. (2004) , the action tendencies for two discrete negative emotions show opposite directions in terms of 'buying prices', as illustrated in the table below. Therefore, the challenge is to identify core appraisal themes for mixed emotion sets, along with their action tendencies in terms of buying purchase behaviour in the pro-environmental context.

Emotion	Appraisal Theme	Behaviour	Prediction
Disgust	Being too close to indigestible substance	Expel new objects, Avoid taking in new objects	REDUCE Choice/Buying prices ("avoid taking in")
Sadness	Loss and Helplessness	Desire to change one's circumstance	INCREASE buying prices
Mixed EcoEmotions (Sadness, Anger, Guilt)	?	?	Increase buying prices ?

Table 2.1: Emotion (Negative Valence) - Appraisal – Behaviour and predicted economic choice (action tendency)

When the experience of one emotion leads to the experience of another emotion in the same category, assessments may tend to reflect the more intense emotion, but less clearly than when only one of them is elicited. As a result, clear distinctions in assessment patterns are less likely to exist. In situations where emotions occur sequentially as the perceptual focus shifts over time in the emotional episode, assessments may reflect a combination of perceptions related to each emotion. For example, greater perceptual "weight" (Ortony et al., 1988) may be given to assessments associated with the most recently experienced emotion. Although the exact mechanisms related to the elicitation of mixed emotions, and the exact way in which mixed emotions are reflected in accompanying assessments, are not fully understood, it is expected that assessment patterns will become less distinct as the level of mixed emotions increases.

2.8 The need for advancement of appraisal theories in the context of mixed emotions in consumer decision making (particularly PEB)

Previous research has found that emotions tend to cluster in two or three factors when not based on manipulation of appraisal conditions or reactions to a single stimulus (Edel & Burke, 1987;

Holbrook & Batra, 1987; Oliver, 1994; Westbrook, 1987). Additionally, studies of the construct validity of measures of discrete emotions in non-experimental settings have shown that there is often a lack of discriminant validity among measures of different positive or negative emotions (Bagozzi, 1993) or between measures within a particular subcategory of positive or negative emotions, such as elation, gladness, and joy (Bagozzi, 1991).

The reason for these differences between experimental research and survey research or research based on reactions to a single stimulus may be that discrete emotional reactions are short-lived or activate other related emotions. For example, sadness may also evoke feelings of anger, anxiety, guilt, envy, hope, and defence. This may be due to coping processes for sadness involving active struggle or protest against loss. Alternatively, the lack of discrete emotions may simply be due to the difficulty of creating them in a laboratory or research setting, as noted by (C. Izard, 1972), who stated that "pure emotions are virtually impossible to obtain in the laboratory or in any research setting".

In the context of this study, environmental stimuli such as the degradation of habitats for animals, suffering of various communities from polluted wastes streams or plastic pollution have been shown to elicit mixed emotions, and I contend that some of which are secondary emotions, as a part of the coping process.

While the initial intent could be to study the typical negative valenced emotions (e.g. sadness, anger, guilt, disgust, fear, contempt) as practiced by some pro-environmental campaigns (profit and non-profit), in terms of a distinction between their action tendencies on economic purchase choice decisions, it may change due to the interplay among such emotions as the stimuli of loss arising from moral transgression by self or others, and suffering of other creatures most certainly leads to elicitation of associated or secondary emotions (e.g. anger , guilt, etc.). This has been illustrated later in this section through the use of visual imagery related to ecological environment.

<u>Analogy of Anger as a secondary emotion</u>

Anger is a complex emotion that often serves as a response to a perceived threat or injustice. While it may appear as a primary emotion, recent research in cognitive and affective psychology suggests that it is often a secondary emotion, triggered by other underlying emotions such as fear, sadness, or frustration.

Folkman & Lazarus, (1988) proposed the cognitive appraisal theory of emotion, which suggests that individuals engage in a process of appraisal, which involves evaluating a situation and determining its personal significance. According to this theory, emotions are the result of this cognitive appraisal process, which includes both primary and secondary appraisals. Primary appraisals involve the evaluation of whether a situation is relevant to a person's goals or needs and whether it is positive or negative. Secondary appraisals, on the other hand, involve evaluating an individual's ability to cope with a situation and the resources available to them.

Anger is often triggered by a secondary appraisal of a situation that involves feelings of lack of control, powerlessness, or frustration. For example, if a person feels that they are not in control of a situation, such as being stuck in traffic or waiting in a long line, they may experience anger as a secondary emotion. This is because they evaluate the situation as being negative, and they feel that they cannot cope with it or that it is hindering their goals (Folkman & Lazarus, 1988b) .

Furthermore, anger can also be triggered by feelings of sadness. For example, if a person experiences a significant loss or feels excluded from a group, they may feel sadness, which can lead to anger as a secondary emotion. This is because they may feel that their needs or goals are not being met, and they may feel helpless or powerless to change the situation (Folkman & Lazarus, 1988b).

As an illustration, the pictures below may trigger a person's primary appraisal leading to arousal of sadness through the violation of their goal of wanting a clean ocean and not causing the death of various sea-bird species from extensive plastic pollution in the ocean. A secondary appraisal may be triggered from the image of the human fetus with micro-plastics, in terms of not feeling in control of the situation, and worrying about the next generation of children, leading to anger as a secondary emotion.

Figure 9: Plastic Debris killing marine life (*A Plague of Plastics. National Wildlife Federation.*, n.d)

Figure 10: The Menace of Plastic *(B, V., 2021)*
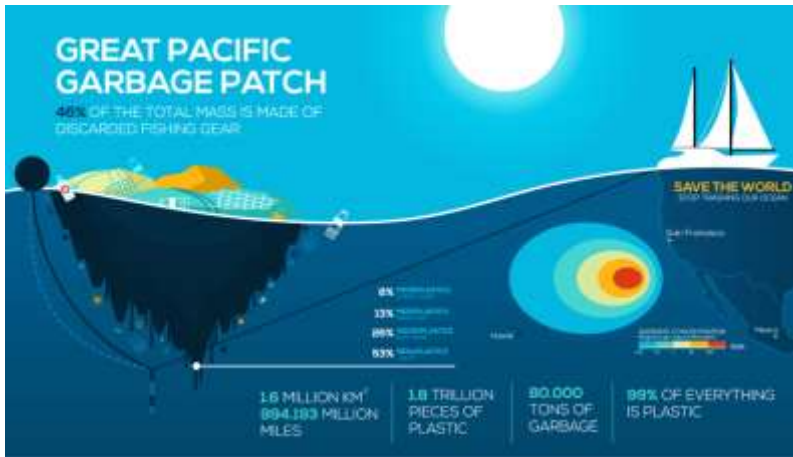
Figure 11: The Garbage Patch in the Pacific (*Global Trash Solutions*, 2020)

Anger can also be a defence mechanism for dealing with uncomfortable emotions such as fear and sadness (Kim Pratt, L. C. S. W., 2016). Fear can include feelings of anxiety and worry, and sadness can stem from experiences of loss, disappointment, or discouragement. These emotions make people feel vulnerable and out of control, which can be uncomfortable. To avoid feeling this way, people tend to shift into anger, as it can provide a sense of energy and control (Kim Pratt, L. C. S. W., 2016)

In the context of pro-environmental behaviour, individuals may feel sad about the loss of certain species and the suffering of animals, and angry about the state of affairs of human mismanagement consumption and disposal of goods at the end of their usage (as illustrated through the imagery above in figures 9, 10 and11).

This study hence tries to shed light for a call to action, to further understand the effect of mixed emotions with secondary emotions arising out in specific contexts and revalidation of current affective theories.

2.9 Theories from Economics

2.9.1 Trade-offs, Discounting and Valuation in Environmental Consumer products

The present research delves into studying the trade-offs between eco-friendly and non-ecofriendly consumer products (with utilitarian and hedonic products). In order to investigate possible domain differences in time preference, it is necessary to control for the multiple factors that typically distinguish intertemporal decisions involving environmental outcomes from those

involving monetary outcomes. Specifically, ecological outcomes typically affect multiple people (rather than only the decision maker), on a longer timescale (sometimes exceeding the lifetime of the decision maker) and are often less familiar and more ambiguous than typical monetary outcomes. The fact that goods with environmental impacts typically affect multiple people outside of the consumer is due to the economics of "externalities". An externality is a cost or benefit caused by a transaction that is not directly attributable to either the consumer or producer and is a spillover affecting a third-party. While the neoclassical economic model of supply and demand is based on expected utility theory that assumes that externalities are not taken into consideration by selfish consumers and producers (Mankiw, 2016), evidence from behavioural economics show that individuals sometimes take them into account depending on the circumstances (Michaud et al., 2013). The fact that goods with environmental effects typically have impacts occurring over a long time periods means that a consumers must take into account their "time preference" or "discount rate" when making decisions involving these products. This is due to the fact that individuals tend to weigh current costs and benefits more heavily than those occurring in the future (Heal, 2005; Ioannou & Sadeh, 2016). Lastly, the fact that consumers are often less familiar with the environmental outcomes of products, compared to the monetary and direct utility outcomes of the products, means that consumers will have difficulty making rational choices involving goods with unknown environmental impacts. According to Microeconomic choice theory (Hausman et al., 1992), to make a rational decision an individual must satisfy "completeness" and "perfect information" assumptions which requires the individual to have perfect knowledge about alternative products so that any two given products can be compared with no uncertainty. It is not difficult to see how goods with varying unknown environmental impacts strain traditional economic models of rational decision making, and thereby, making the role of emotion on pro-environmental behaviour all the more important.

Further, environmental outcomes often result in sequence of progressive changes in the state of the world (changes in what economists would call streams of consumption) rather than a one-time consumption event. In other words, as typically studied in laboratory studies, the utility from receiving a monetary reward is assumed to be experienced at one point in time, whereas the utility from an environmental outcome, such as an improvement in water quality or the extinction of a species, is often experienced over a long period of time. In the context of this research, pro-environmental consumer behaviour is a hybrid version between long-term gains, utility from the

product itself, and monetary factors. Due to the complex nature of such decision-making and a significant variance of purchase behaviour amongst different product categories, there have been very limited studies in this sphere.

The values of environmental goods have conventionally been measured by "pricing them out" through contingent valuation (Mitchell et al., 1989) which relies on the perception of respondents that environmental outcomes can be easily valued in and exchanged for dollars (and vice versa). However, this may not be a valid assumption (Frederick, 2006; Gregory et al., 1993; Schkade & Payne, 1994). For example, when asked to assign a monetary value (e.g., their willingness to pay) to some environmental consequence, respondents often express the strength of their attitudes (for example, "protecting the environment is important") or express what they consider a fair contribution, rather than communicating the result of a cost–benefit analysis reflecting the magnitude and value of the environmental outcome (Schkade & Payne, 1994). Thus, ecological benefits assessed through contingent valuation may be very misleading. It is especially more prominent when it comes to more complex decision-making scenarios, such as consumer product purchase and decision-making since the attributes and schemas related to the products also play a role in consumer decision behaviour. In the present study, we study consumer choice under the influence of certain emotions (that have typically been used in green marketing communication and advert) to differentiate and gain a deeper understanding of how these emotions affect product purchase choice and how it affects Willingness To Pay (WTP) across three product categories (hedonic, utilitarian and semi-hedonic/utilitarian product) qualified with three discrete price differential points (the environmentally friendly option for each product being dearer than the other standard product option) . Rational choice theory from the discipline of Economics will not be much help in guiding this research as it generally ignores the significance of emotions in individual decision-making[5].

Proponents of emotional choice theory (Lerner & Keltner, 2000; Loewenstein & Lerner, 2003) criticize the rational choice paradigm by drawing on new findings from emotion research

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[5] There exist several new developing areas in which social decision making plays a central role: B*ehavioral game theory* (Camerer, 2003) contrasts with standard game theory. Similarly, *Decision Neuroscience* aims to integrate research in neuroscience and behavioral decision making (Shiv et al., 2005). The emerging field of N*euroeconomics* (Kahneman, 2011; Sanfey, 2007) focuses more on the subject from the perspective of economy and also utilizes Neuroscience to get a better understanding how humans make decisions (Rilling & Sanfey, 2011).

in psychology and neuroscience. They point out that rational choice theory is generally based on the assumption that decision-making is a conscious and reflective process based on thoughts and beliefs. It presumes that people decide on the basis of calculation and deliberation. However, cumulative research in neuroscience suggests that only a small part of the brain's activities operate at the level of conscious reflection. The vast majority of its activities consist of unconscious appraisals and emotions (Franks, 2014). The significance of emotions in decision-making has generally been ignored by rational choice theory, according to these critics. Moreover, emotional choice theorists contend that the rational choice paradigm has difficulty incorporating emotions into its models, because it cannot account for the social nature of emotions. Even though emotions are felt by individuals, psychologists and sociologists have shown that emotions cannot be isolated from the social environment in which they arise. Emotions are inextricably intertwined with people's social norms and identities, which are typically outside the scope of standard rational choice models (Hochschild, 2012). Emotional choice theory seeks to capture not only the social but also the physiological and dynamic character of emotions. It represents a unitary action model to organize, explain, and predict the ways in which emotions shape decision-making (Markwica, 2018)

2.9.2 Emotions in economics decision making

While traditional neoclassical economic models ignore the role that emotions play in an individual's decisions, the literature on how emotions affect decision-making has focused on anticipated emotions compared to immediate or incidental emotions (Dunning et al., 2017).

In conformity with the conventional approach to emotion, while dealing with treatments of risky choice, people attach their feelings to the possible outcomes of their decisions. In such cases, the utility matrix of the individual while assessing the risk, may include emotions (e.g., pleasure), that one can anticipate feeling only upon the ultimate fructification of one's action. This is called "**anticipated emotions**" (Dunning et al., 2017)

On the other hand, in more recent treatments of emotion; the class of "**immediate emotions**" has emerged as a category of the emotions that people feel, which influence the choices that people make at the time of their decision-making itself.

There are two important sub-categories of immediate emotions, namely- 'background emotions' and 'action-related emotions (Dunning et al., 2017). In the former (also called incidental emotions), the emotions that people happen to bring at the time of their decision making from some other incidental circumstance not integral to the decision, are the trigger for immediate emotions. The latter (action-related emotions) refer to the emotions which are not connected to the outcome following an action but instead get aroused by the prospect of an action itself while making a decision (Dunning et al., 2017).

As such, **action-oriented emotions** change the analysis of risky decisions (Dunning & Fetchenhauer, 2013). Usually, the analysis is consequentialist and instrumental in nature. In consequentialist analysis, theorists emphasize the outcomes people consider as they make decisions. Whereas, in instrumental analysis, it is considered that people choose their actions in order to bring about those outcomes. The act itself carries no value. Instead, its value is determined purely by the potential costs and benefits it may produce via outcomes (Dunning et al., 2017).

2.10 Psychological Distance [Construal level theory]

The fact that some of the eco-friendly products are sometimes purchased and used with the accruing benefits not generated in a shorter term like that in a traditional product, and instead for benefits into the future over a long term; brings an element of incongruence with the consumer's mindset in the current decision context.

As per the construal level theory (Trope & Liberman, 2010), a leading contemporary theory of mental construal in Judgement and Decision-Making as well as Consumer Behaviour; the same persuasive information is construed by people differently based on psychological distance, which is defined as a subjective mental formation of how close an object or event is perceived. While the psychological distance can be spatial, temporal or social in nature, it is the temporal distance that is dealt under the construal level theory. With an object or event at a far temporal distance, the representation becomes more abstract which are referred as high-level construal, and the low-level construal, in contrast, represents the near distant objects or events construing more detailed or concrete features. For instance, when looking at a distance, people see a forest (abstract mindset), but as they get closer, they see the trees (concrete mindset) (Trope & Liberman, 2010).

Construal level theory (Trope & Liberman, 2010) distinguishes between high-level construal and low-level construal of the decision problem, which subsequently leads to different evaluations of the alternatives.

A distant future time perspective induces abstract thinking while a near future time perspective facilitates concrete thinking (Förster et al., 2004). Since many loss-framed and gain-framed ads using green appeal have a natural temporal rhythm (i.e., a slogan emphasizes either the future state or the present benefits of adopting an environment-friendly product), it is plausible that exposure to ads with different temporal focus stimulates different construal levels among consumers. In other words, the construal level at which a stimulus is construed might influence consumers' information processing and decision making.

Differences in construal levels could affect subsequent judgments and decision-making. To elaborate, individuals with a high construal level mind set, as activated, would tend to prefer the options construed at a higher level as compared to those who activate low construal level mind set and prefer the option construed at a lower level. Also, an abstract mindset (high level construal) facilitates people to decipher and identify the essential content of the informational inputs (i.e. the information stimulus such as an advertisement) more effectively than the incidental inputs which may create more subjective feeling at the lower construal level (concrete mindset). This discerning approach by individuals with higher construal level reduces the judgment bias in decision-making process under the cognitive appraisal model (Tsai & Thomas, 2011).

This has been nicely demonstrated in an empirical study (Septianto & Pratiwi, 2016) conducted to observe the impact of persuasiveness of different ads between respondents with abstract mindset (high construal) versus the concrete mindset (low construal). The study entailed showing two coffee ads (with the same fictional brand) with two different messages. One ad described the emotional appeal of the coffee (e.g. relaxing, refreshing – Image ad) while the other described the cognitive appeal (e.g. produced from the best Colombian coffee beans – quality ad). The results confirmed that the construal level moderates consumer evaluation toward different appeals in ads. While no significant difference in ad evaluation was seen among the high construal level participants; participants with low-level construal showed a more favourable evaluation of the emotional appeal ad than the cognitive appeal ad (see figure 12 below).
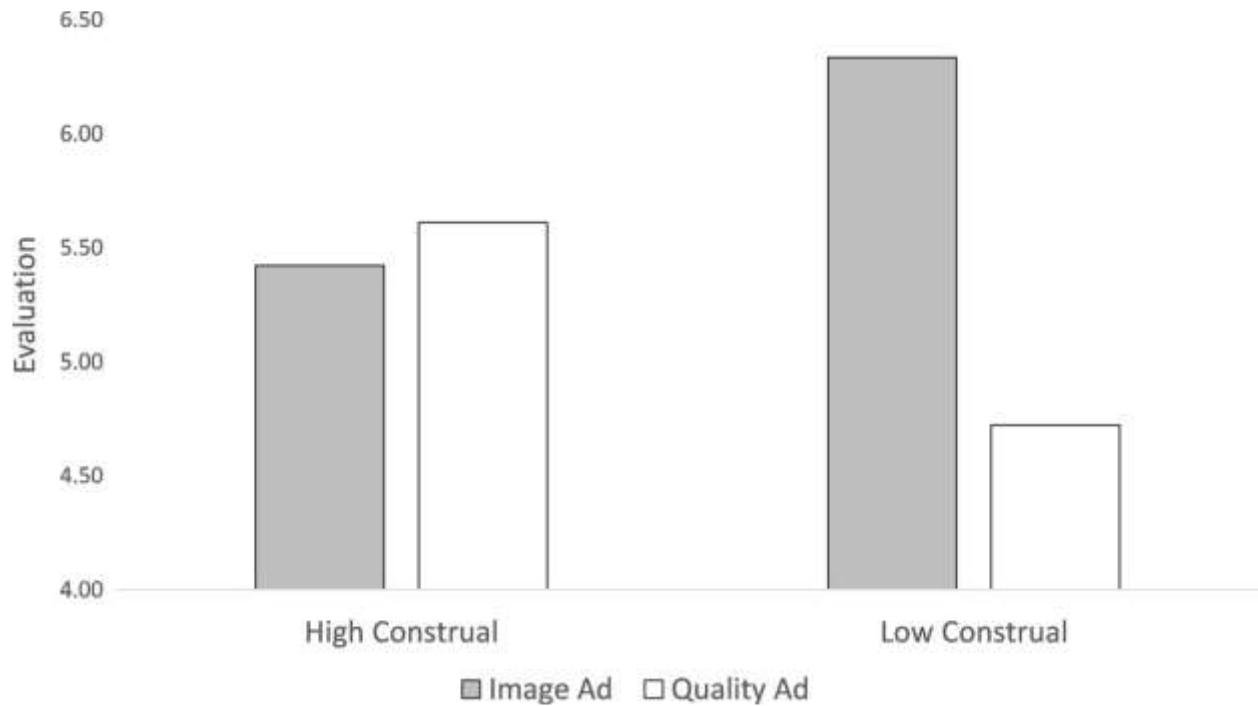
Figure 12: Consumer evaluation as a function of construal levels and ad appeals *(Septianto & Pratiwi, 2016)*

In the context of this study, let us suppose someone as a participant was to choose between two products, such as laundry detergent or t-shirt (whose primary features would be washing effectiveness, fabric material, etc. and secondary features would include eco-friendly features such as recyclability or biodegradability, concentration etc.), it would be pertinent to study how the activated construal levels would affect one's choice. Therefore, the current research bears direct relevance for construal level theory.

Chapter 3

3   Hypothesis Development

3.1 The rationale for choosing mixed emotions (cluster of discrete emotions): Eco-Emotion (Mixed emotion cluster (Sadness, Anger, Guilt) as Independent Variable)) in a binary choice task:

The initial intent was to understand the effect of individual emotions such as sadness, anger, guilt and disgust (prototypical emotions, when it comes to marketing and social interventions for pro-environmental behaviour).

Assessing the monetary value of goods underlies numerous consumer decisions. Drawing on the ATF, Lerner et al. (2004) examined the effects of disgust and sadness on routine economic transactions. Although they share the same valence, disgust and sadness differ markedly in their appraisal themes. Though possibly an outgrown system, it is stated that disgust revolves around the appraisal theme of being too close to an indigestible object or idea (Lazarus, 1991); thus, it is expected to evoke an implicit action tendency to expel current objects and avoid taking in anything new (Rozin et al., 1993). On the other hand, sadness revolves around the appraisal theme of loss (Lazarus, 1991); thus, it is expected to evoke an implicit action tendency to change one's circumstances by seeking reward (Raghunathan & Pham, 1999).

I draw parallels from the studies mentioned above to test the effect of mixed emotions of sadness, guilt and anger to test the effect of purchase choice behaviour within a short period of time interval.

Drawing on conceptual models of emotion and cognition (Lerner et al., 2013), my overarching hypothesis is that experimentally primed 'guilt laden sadness and anger' as a mixed emotion cluster (termed as '**Eco-emotion**' in this study) under the context of eco-stimulus, will carry over to shape subsequent choice decisions.

Valence-based models of emotion predict that negative emotions elicit global devaluation of what one perceives. As shown in the study by Cryder et al. (2008), "The misery-is-not-miserly

effect", where there is a different pattern: when self-focus (internal LOC) is sufficiently high, sadness increases valuation of commodities that one may purchase.

Although pure emotions of anger and sadness would most likely have different economic action tendencies, it is unexplored if they co-occur in the same situation or one occurs as a secondary emotion (refer section for secondary emotion 2.8), how would that affect purchase choice decision.

Eco-emotion advertising has often used message framing techniques, or visual stimuli to elicit emotions such as guilt, disgust, anger, sadness etc. However, it is probable that due to the nature of stimuli of environmental degradation, more often than not, there are mixed emotions at play. It is hypothesized that both pre and post purchase stages will generate a unique set of emotions, in some of the recent environmental studies (Ágoston et al., 2022; Wang et al., 2018). Determining a unique set of affect or emotions, and their respective action tendencies (in terms of choice preference or actual purchase) in the pre-purchase stage is crucial in the eventual measurement of the influence of product attributes to purchasing eco-products. This study would hence like to test integral emotions and their respective responses to economic choice behaviour in the context of environmental friendliness.

In order to compare and contrast the effect of emotions on purchase choice, a control group is made in my study with no emotional stimuli, before making the purchase choice decision.

Based on the above I posit:

A: Relationship of Purchase behaviour (Pro-environmental or Green) with and without integral mixed Eco-emotion cluster (Anger, Sadness and Guilt)

The modified and final hypothesis, based on the concept of mixed emotions, has been framed as:

HA1: *The effect of integrally induced 'eco-emotions' (Guilt laden sadness and anger) on purchase choice decisions will result in a higher trade off, i.e., participants will be more likely willing to pay (WTP) a premium price and chose an environmentally friendly product (in comparison with behaviour under no such stimulus)*

3.2 Intensity of emotions from Marketing Literature

While there has been much focus on the problem of excessive emotion in the literature on the role of emotion in decision making (Loewenstein, 1996; Metcalfe & Walter, 1999), it is also commented that insufficiency of emotion can be an even bigger problem (Loewenstein, 2010). According to many authors, emotions are essential for motivation and action (Kringelbach & Berridge, 2016), and insufficiency of emotion often leads to inaction when the situation actually warrants an action (Slovic, 2007; Witte, 1998; Witte & Allen, 2000).

It has been reported in studies within the domain of commercial marketing that the effect of the appeal on outcomes such as attitude change or intentions is moderated by the intensity of the appeal. In this context, it may be noted that the notion of high or low intensity is relative and not an objective feature of a message (O'Keefe, 2000, 2002). The effect of various levels of intensity of guilt appeals on purchase intentions appear to show a curvilinear effect of the level of guilt communication in the message on the amount of guilt as reported by the participants in the study (Pinto & Priest, 1991). As per the reported data in their study, the feelings of guilt show an increase corresponding to the increase in the intensity of guilt appeal until reaching a point at which the felt intensity of guilt would begin to decrease (i.e., an inverse-u effect). In fact, it was found in the study that at higher intensity levels of guilt appeal, feeling of anger was aroused at the source of the message instead of feelings of guilt.

Although the emotion of guilt has been very prevalent and widely studied in marketing practices, the effect of guilt as a part of a cluster of emotions or the presence of secondary emotions such as anger and sadness have not been examined in great detail.

In the digital era, visual emotional appeals are quite common. These types of visual stimuli often call for immediate action (e.g., donation in the non-profit context, and purchase or website visit by products / services). Due to the fading effect of emotions, the intensity of emotions is quite important, when elicited, such that they are able to successfully evoke the desired action.

Based on the above rationale, and trends cited by the intensity of guilt, I posit:

B. Relationship of Intensity of Felt Emotion with PEB

HB1: *Higher intensity of certain cluster of felt Eco-emotion in participants being more likely to purchase the environment-friendly product.*

3.3 Rationale for Price Index (Across various Product categories - Hedonic and Utilitarian product categories)

While past research has offered multiple explanations about why the purchase intentions for sustainable products are not always positive, one distinct possibility lies in the relative price premium for eco-friendly products (Reczek et al., 2018). Though with more awareness and emerging social norms, more and more consumers have demonstrated their willingness to pay for more sustainable goods (Trudel & Cotte, 2009), many others are yet reluctant to pay a premium for environment-friendly products (Clifford & Martin, 2011)

In line with (Peattie, 2001), as discussed under the section on 'Traditional approaches to PEB' (section 2.3.1), it was shown on why it would be important to focus on studying the purchases, rather than purchasers, the current study initially proposed to conduct the experiment across three product categories (entirely hedonic – coffee, partly hedonic & partly utilitarian – T-shirt, and entirely utilitarian – Laundry Detergent) in the consumer goods domain. Goal activation, motivational appraisal and 'felt emotions' are likely to vary based on the product type and cognitive schemas of the consumer for the product category.

In hedonic purchases, consumers are drawn more to its sensory and imagery-invoking aspects than functional attributes of the product (Dhar & Wertenbroch, 2000; MacInnis & Price, 1987). As per the cause related marketing literature (Strahilevitz & Myers, 1998) for utilitarian conditions, consumers focus more on the products functional need, and hence not so likely to choose the product with an associated cause. However, it is likely that consumers who do choose a cause-related product are driven by a more cognitive versus emotional motivation. (Guerreiro et al. (2015) posit that consumers who choose cause-related products in utilitarian conditions focus on rational stimuli, such as the primary features, and not on overall attention to packaging design or other secondary features, or in other words, if the cause-related brand fulfils a functional need, consumers are likely to select the cause-related product and not the alternatives in the shelf. These choice experiments were essentially trying to study choice behaviour under rationalized intentions

without the presence of emotional stimuli. Hence this perspective would be more applicable to apply for the 'control group' condition (neutral condition) in the current study.

Due to the limitations faced in not being able to conduct an in-person lab experiment (due to the COVID pandemic) for the study and instead adoption of an online survey without actual presentation of the product choices, I realized that the 'hedonic' product advert (Coffee Cup) might have mixed interpretations. Some may have focused on the coffee itself (primarily pricing, since they couldn't smell the brew or see the cup), while others on the secondary feature (packaging and recyclability). Due to this confound, I focused on using 'pricing' as moderating variable, instead of 'product category'.

Even though recent research on emotions has identified, for example, that emotions have a significant role in decision making (Vohs et al., 2007), the current pricing literature has paid only limited attention to the role emotions play in how people respond to prices and price information, and more so in 'green purchase' behaviour.

Similar to the psychology behind brands, whereby brands were emotionalized in a purchase decision (Deppe et al., 2005; Schaefer et al., 2006), pro-environmental consumer behaviour is highly likely to be emotionalized as a result of consumer's meaning and subjective evaluation of the 'marketing' stimuli'.

Drawing from the "emotion regulation" theory (Folkman & Lazarus, 1988a) which suggests that individuals may use consumption as a way to cope with negative emotions (in this case the mixed emotional cluster , termed as 'Eco-emotions' consisting of sadness, anger and guilt as primary or dominant emotions), and previously explained appraisal theory, whereby given the appraisals of agency and controllability from the given stimuli, consumers may use the act of purchasing, as a reparative behaviour, or gain back a feeling of sense control through the act of purchasing.

Based on the section above, I posit,

C: Relationship of purchase behaviour (product category / price difference index) under neutral condition vs. emotion stimuli

HC1: *Under Eco-Emotion (emotion stimuli), there will likely be a significant relationship between purchase behaviour and price difference index*

HC2: *Under neutral condition, the degree of WTP for the environment friendly product (or actual purchase, as simulated in this experiment) is less than what it would be under stimulated condition for its relationship with price index (i.e. under each level of price difference index).*

3.4 Rationale for Risk Aversion (as a moderator)

The role of risk in consumer behaviour is critical because risk determines consumers' willingness to engage in certain pro-environmental activities (Hamzaoui Essoussi & Linton, 2010). The concept of risk has been studied through a variety of different constructs — perceived risk, product risk, functional risk, and so on — in the sustainable consumption context since risk is considered to be a central factor when individuals make decisions that could potentially change the level of comfort they might have about a certain action (Hamzaoui Essoussi & Linton, 2010).

The present study focuses particularly on the moderating role of risk aversion. Risk aversion, or "the extent to which people feel threatened by ambiguous situations and have created beliefs and institutions that try to avoid these" (Bao et al., 2003), is a key factor in consumer decision making. Risk aversion is to not be confused with perceived risk which has frequently been studied in environmental behaviour research (Brach et al., 2018; Han & Chung, 2014; Kang & Kim, 2013; Lang & Zhang, 2019). Perceived risk is a product- or context sensitive construct, while risk aversion is an enduring personality trait that does not change with product type or purchase situation. Consistent with the concept of risk aversion, Nicholson et al. (2005) examined the personality profiles of 2,041 career professionals to measure risk propensity and found that personality defines whether a person is a risk avoider or a risk taker further differentiating the constructs of perceived risk and risk aversion Additionally, past research (Shimp & Bearden, 1982) has demonstrated that risk aversion plays an integral role in how consumers make decisions. Individuals with a low level of risk aversion are more comfortable engaging in situations that are new or less familiar than individuals who have a high level of risk aversion (Bao et al., 2003). Likewise, risk aversion has been highlighted as an important factor to consider in the consumer behaviour field in general, although risk aversion has received far less attention in environmental

studies in particular compared to its similar counterpart, perceived risk. Risk aversion needs to be further examined because it could offer valuable insights into explaining variances among individuals, especially in the inherently complex nature of sustainable consumption: it can help explain why some people engage more intensively in a sustainable practice than others. Thus, based on previous literature and the importance of exploring risk aversion in sustainable consumption, risk aversion is defined as an individual's tendency not to take a risk when buying (de Matos et al., 2007), inferring that it is an appropriate moderator that strengthens or weakens the effects of personal norms, social norms, and attitudes on Environmentally Sustainable Product (ESP) purchase behaviours.

While it can be argued that hypothetical questions are not a perfect substitute for elicitation of risk preferences using paid lottery experiments, the usefulness (and relative advantage) of these measures for elicitation of risk attitudes in large-scale surveys cannot be ignored.

For example, one question directly asks individuals to make a global assessment of their willingness to take risks: "How willing are you to take risks, in general?" Respondents rate their willingness on a scale from 0 to 10. This is called a simple, ordinal measure of the general risk question.

Dohmen et al., (2011) also assess the stability of risk attitudes across contexts. In economics it is common to think of a single trait as governing risk taking in all contexts, whereas in psychology there is more controversy about this point. The results suggest that risk attitudes are strongly but not perfectly correlated across contexts. This indicates the presence of a common underlying risk trait, but also points to some value-added by asking context-specific questions. The risk aversion or risk attitude in this study, is therefore, termed as Risk Taking Propensity.

A consumer with a higher risk taking propensity might have a higher willingness to pay (WTP) for an environmentally friendly product over a traditional product, especially if the consumer is not sure whether or not the product is as green as advertised (so in that way the environment friendly product benefit is more risky than the non-environment friendly one). On the other hand, a consumer might see the traditional product as riskier and the environment friendly product as safer since the traditional product might contribute more to climate change or environmental issues

etc. Ultimately those with a higher risk-taking propensity will be more likely to prefer a riskier outcome over a more certain outcome (where both have the same expected value), however that is defined in their thoughts.

In this case of revealed preferred choice experiment, as the price difference between the two options (environment friendly product which is costlier than the non-environment friendly product) is the predominant differentiating parameter; hence, I posit

D: Relationship of risk aversion or risk-taking propensity in consumer choice or binary choice behaviour

HD1: *Risk Taking Propensity acts as a moderator for purchase choice behaviour: Higher the Risk-Taking Propensity, higher is the likelihood for the Willingness to Pay (WTP)*

3.5 Rationale for pretesting for Environmental concern (EC) / attitude

Most marketing practices have been survey based and measuring general and specific attitudes to predict brand preferences. The basis of this is explained in detail in the 'Traditional approaches to PEB' section (2.3.1), along with issues with low predictability in terms of addressing the intention to action gap. Hence, we test the specific attitude of environmental concern to benchmark and revalidate this notion, that environmental attitude is not sufficient, when it comes to addressing the intention to action gap.

In a meta-analysis of 128 studies, (Hines et al., 1987) found only a moderate (.30) but significant correlation between knowledge and behaviour. In contrast, other studies report no significance to the relationship between environmental knowledge and behaviour (Arbuthnot & Lingg, 1975; Geller, 1981; Schahn & Holzer, 1990). Takacs-Santa, (2007) found that having a high level of environmental concern is "likely to be an important prerequisite of long-lasting pro- environmental behaviour".

However, it is not clear whether consumers' attitude or concern for the environment will always turn into positive environmental change (Troy, 2007). Shapiro & Associates (*RT Seminar Puts 'Green' up for Debate*, n.d.) at a Scholarly Publishing and Academic Resources Coalition seminar, shared that their research of 800 consumers found that "being green" is more of an aspiration than

a reality at this point" (p.24) and that although there appears to be concern by consumers to care about the environment, this has yet to translate into any substantial behaviour especially when it comes to the products they shop for and which retailers they choose. This seems to mirror the findings of the 2009 IBM study of UK"s Millennial cohort group (IBM, 2009) — that consumers may express concern for the environment, but they are not following through in their behaviour (Brosdahl & Carpenter, 2010).

Minton & Rose, (1997) also concluded that overall, possessing an environmental disposition, affected the intention to act in four pro- environmentally behaviours including recycling, purchasing environmentally-safe goods, searching for environmental-related information, and buying recycled goods, although they also found that consumers possessing a personal moral obligation were more likely to perform environmentally- friendly behaviours than merely having a concern for the environment itself (Brosdahl & Carpenter, 2010).

Due to the aforesaid conflicting findings as reported in the literature with regard to the effects of knowledge and concern on consumption behaviour (i.e., the environmental knowledge does not necessarily manifest in pro-environmental behaviour), the present research intends to revalidate the role of environmental attitude as a moderating variable between impact of emotions on pro-environmental behaviour.

Based on the above I posit that:

E: Relationship between Environmental Concern (EC) and Purchase choice behaviour:

HE1: Environmental Concern (*EC) will most likely not have a significant relationship on actual purchase choice behaviour*

3.6 Rationale for Construal level as a Moderator:

Drawing on the Construal Level Theory (CLT, Trope & Liberman, 2003), it is stated that construing information at an abstract level is associated with greater purchase intentions and more positive reactions to sustainable products than construing information at a concrete level. Individuals who construe at an abstract level are more likely to focus on the future than the present

by comparing the difference between long term benefits of purchasing eco-friendly products with the potential harm of using traditional products. This ability to focus on the future in an abstract mindset is associated with more positive evaluations of, greater purchase intentions towards, and increased choice of eco-friendly products (relative to those with a concrete construal) (Reczek et al., 2018).

Construal level theory (Trope & Liberman, 2003) distinguishes between high level construal and low-level construal of the decision problem, which subsequently leads to different evaluations of the alternatives. For example, changes in risky behaviour with changes in construal level can be predicted subject to validation under construal level theory.

The theory proposes that the same object or event can be construed at different levels of abstraction. A concrete construal is one that tends to be represented in terms of specific, subordinate, and contextualized features. On the other hand, an abstract construal is one that represents events in terms of general, superordinate, and decontextualized features (Liberman & Trope, 1998; Trope, 1989). The more psychological distance an object has from the individual, the more likely it is to be construed at a higher level of abstraction.

In comparison with people with high construal level, people with low construal level would be more influenced and persuaded with the emotional appeal of an advertisement since emotional experience is associated with close psychological distance (Van Boven & Ashworth, 2007; Van Boven et al., 2010). As a consequence, consumers with low level construal will evaluate the emotional appeal more favorably than the cognitive appeal. However, it may be noted that complex emotional states might be construed in different manners and not always in a straightforward manner as mentioned above (Septianto & Pratiwi, 2016).

It will be therefore, of interest to investigate the effect of construal level under no emotional stimulus (when the higher construal level would presumably dominate the choice of a pro-environmental product but not the lower construal level) vis-à-vis the effect of construal level under emotional stimuli which will induce the decision from lower construal level towards the choice of the environment friendly product and hence would bridge the difference in behaviour with that of higher construal level people.

Based on the above I posit:

F: Relationship between Construal Level and Choice Behaviour

HF1: *The effect of Construal level as a moderator in neutral condition will likely have a significant difference on purchase behaviour (high level showing significant pro-environmental behaviour).*

HF2: *The effect of Construal level as a moderator in emotional condition will likely have a significant difference in behaviour for concrete mindset (low construal) as compared to abstract mindset (high construal), from the corresponding behaviour pattern under neutral condition*

3.7 Rationale for Environmental Locus of Control (LOC)

In addition to the demographic and socio-economic variables, Do Paco & Raposo (2009) identified environmental related variables such as ecological consciousness, environmental behaviour, affect and commitment, perceived behavioural control, environmental concern, activism, recycling habits, etc.; which could be applied for segmentation of green consumers. But lack of adequate explanation about Locus of Control and Pro-Environmental Behaviour as more relevant variables had made the application of the study limited (Trivedi et al., 2015) . This shortcoming is addressed in the present study to understand the relationship between LOC and Emotion, as a trigger to 'choice behaviour'.

Psychological underpinning for the motives of private provision of the public goods is manifested through Locus of Control (LOC) beliefs. LOC measures the extent to which an individual believes that events in their life are shaped by their own actions (Gatz & Karel, 1993; Rotter, 1966). Specifically, individuals who believe that they have control over the outcome of events in their lives are considered to have an internal LOC. In contrast, those who believe that life is controlled by chance or fate are considered to have an external LOC (Andor et al., 2022).

A recent study by Andor et al., (2022) reported the importance of LOC beliefs on prosocial behaviour, duly substantiated by primary survey and experimental data from Germany related to green energy and carbon offset. It has been empirically found that individuals with an internal

LOC tend to show more prosocial behaviour than those with an external LOC. The study found that a single percent change in LOC generates an approximate 2.3% increase in the likelihood of an individual having a green electricity tariff and a 4% increase in the likelihood of their willingness to pay a higher rate of tariff to subsidize renewable energy costs. In this study, the pro-environmental behaviour is taken as an extension of prosocial behaviour.

Hwang et al. (2020, 2021) studied the association among internal environment locus of control (INELOC) with anticipated emotions and intention to adopt eco-friendly behaviour in the context of food delivery service by use of drones. It was found that individuals with high INELOC showed greater inclination towards eco-friendly related behaviour.

Instead of the nexus between LOC and PEB, this paper addresses the validation of the relationship of the LOC as an antecedent or appraisal dimension with elicitation of Eco-Emotions (mixed emotion consisting of sadness, anger and guilt as dominant emotions), which in turn leads to Pro-Environmental Behaviour. As the primary aim of this study is to understand the role of Eco-Emotions on PEB or choice behaviour, the relationship of LOC with Eco-Emotions would further open up the dimension of articulating the message arousing such emotions for marketers and advertising professionals in promotion of environment friendly products and consumption thereof.

Initially, the research was theorized such that, I wanted to test the strength of antecedents causing specific emotions and their respective action tendencies, on specific appraisal dimensions such as agency and controllability – (Smith & Ellsworth, 1985). After changing the narrative to eco-emotions, the concept of Locus of control made more sense in explaining Pro-environmental behaviour (PEB), as a benchmark to compare against several previous studies that linked Locus of control to prosocial and pro-environmental.

The following questions were asked to participants:

Questions from Survey:

- Self-Responsibility: How responsible did you feel for having brought about the events that were occurring in this situation? (0 - YOU being not at all responsible, and 5 - YOU being highly responsible)

- Other Responsibility: How responsible did you think someone or something other than yourself was for having brought about the events that were occurring in this situation? (0 - THEY being not at all responsible, and 5 - THEY being highly responsible)
- Self-Controllability: To what extent did you feel that you could influence what was happening in this situation? (0 - being to no extent at all, and 5 - being to a great extent)
- Other Controllability: To what extent did you feel that someone other than yourself was controlling what was happening in this situation? (0 - being to no extent at all, and 5 - being to a great extent)

In consideration of the foregoing rationale in the context of my study, I posit

G: Relationship between Antecedents / Locus of Control with Eco Emotion

HG1: Internal LOC (Controllability and Responsibility) will likely lead to higher arousal of Eco Emotion

Chapter 4

4   Methodology

This chapter addresses the choice of the research method, its design characteristics, data management, ethical issues, research validity and reliability

Sections

- **Methodological Approach**

    Revealed Preference Incentivised Discrete Choice Experiments

- **Research Design**

    Choice of products / price levels (Choice situations)

    Selection of Stimuli

    Choice of variables and categorization

- **Survey Design**

Survey Administration Design (Online)

Survey Distribution

Survey Methodology and Design

- **Research Ethics**

- **Data Security and Management**

- **Pilot Study**

4.1 Methodological Approach

4.1.1 Rationale for choosing a Revealed Preference Incentivized Discrete Choice Experiment

In accordance with best practices in choice experimentation, the requirements to study the effect of emotions on consumer decision making, and the limitations posed by the onset of the pandemic (leading to lack of availability of conducting experiments in a physical lab space), I have chosen an incentivized revealed preference discrete choice experiment as my framework for this study.

In the experimental protocol described below, each participant is first asked to answer a set of pretest and post test questions along with watching a video to elicit an emotional state and then are asked to make as single discrete choice of which product to purchase. The discrete purchase decision is made between two products with various attributes, including a given price and various environmentally relevant characteristics. The decision is incentivized because, with a random probability, the participant will receive remuneration based on their product choice (i.e. they receive a gift card in accordance to the price and the environmental attributes of the product chosen).

One of the main reasons a revealed preference discrete choice experiment was used, was to prevent hypothetical bias.

It is widely accepted by researchers in behavioural economics that the best indicator of future choices will be an individual's revealed preference indicated through incentivized observed

behaviour (Carson & Czajkowski, 2014) . In contrast, simply asking questions to assess a respondents' product choices or willingness to pay for a specific good is considered a stated preference method. While stated preference experiments provide insight into the assessment of perceived value of the good or service in question, they are ultimately hypothetical and not real decisions. A common criticism to such stated preference survey experiments is often raised for the inherent hypothetical bias that the experiments entail in view of the absence of real money or stakes for the participants (e.g. when the stated price is only a hypothetical figure). Hypothetical bias is especially worrisome when studying phenomena which do not provide individuals with direct benefits, such as charitable donations and environmental protection, since it is easier for individuals to alleviate their guilt by claiming they would support social goods and services when they are not actually forced to do so.

The hypothetical bias shortcoming of stated preference experiments is overcome through the use of an incentivized revealed preference experiment which is a quantitative technique that allows researchers to elicit individual preferences. This enables researchers to understand the value that individual respondents assign on selected attributes of a product or service by asking them to make a choice over different product options.

In order to reduce hypothetical bias, I introduced real stakes to the decision made by the respondents in the form of virtually endowing them a monetary amount, and them implementing the product choice they made in the experiment by reducing their endowment funds by the price of their chosen product in the experiment and paying them with the monetary balance in the form of a gift card from a company consistent with the traditional or pro-environmental attributes of their purchase decision. Due to logistics and financial feasibility, not all participants could afford to be paid, so each participant was incentivized by having a random chance for their decision to be implemented for real. Participants were told in the initial instructions that they would have a 1 in 20 chance of being chosen for a real payout based on their product decision and that they would be notified following the experiment if they were chosen and if so, an electronic gift card would be sent.

The economic foundation behind discrete choice experiments like this is the 'hedonic theory of demand': this theory argues that the satisfaction that people get from buying goods and services

can be better understood as the satisfaction that they get from purchasing access to the various attributes that those goods and services provide (Lancaster, 1966). In similar contexts, behavioural economists use other methodologies such as Discrete Choice Experiments (DCEs) that involve 8-18 choice sets like the ones used here or sometimes use auctions such as the Becker-DeGroot-Marschak (BDM) mechanism to assess individual WTPs for products (Drummond et al., 2015; Becker et al., 1964). Neither of these techniques were appropriate for this study because they both require more time for respondents to read instructions and to provide the required choices, which was not possible due financial constraints and time limitations created by the requirement for participants to also watch videos to elicit emotional responses before they make product decisions. The benefit of the experiment used here over the DCE and BDM techniques is that it takes less time for respondents to participate and it has a lower cognitive burden, as it only asks each participant to make a single discrete choice between two similar products with different prices and environmental attributes.

In the current study, during the experiment, participants are offered to view and choose their preferred product (with probabilistic real stakes), hence revealing their preference which is analogous to a real-life digital marketing scenario (for example, choosing between two similar products on amazon with different attributes such as prices and distinctive features). The stimuli contain the basic qualifying dimensions of the product and the additional characteristics that make it unique and differentiated from other options (in this case, the pro-environmental products usually have the added benefits of being eco-friendly, which have intrinsic utility). The type of decision that the respondents make in the experimental conditions is similar to them scrolling on social media platforms, coming across a video stimulus which elicit emotion, and then making a purchase decision to buy the product from the offered options.

In my study, I have incorporated both qualitative and quantitative approaches. A qualitative approach has been used to capture the attitudinal, risk taking and personality or social based preferences with a pretest questionnaire. While a quantitative approach has been undertaken through the incentivized revealed preference discrete choice approach based on the price the respondents were willing to pay based on the product choice they made (which for randomly chosen respondents was associated with a proportional gift card reward payout).

My research is exploratory and descriptive in nature. As explained previously when defining the scope and gap of research and practical applications of understanding the effectiveness and role of emotional embedded stimuli in marketing and advertising, I expect to shed light on future directions in choice modeling, affective forecasting and predictive modeling in consumer behaviour and neuro-marketing research. In this experiment, I showcase how situation specific choices are determined through variables such as environmental locus of control, the need for understanding the role of mixed integral emotions in the context of pro-environmental consumer behaviour, the cognitive antecedents and the action tendencies of such mixed emotions (in terms of risk taking or economic purchase behaviour), above and beyond the current psychographic constructs measured through variables explained under Theory of Planned Behaviour and traditional hierarchical consumer behaviour and brand marketing theory, for the purpose of segmentation and positioning.

4.2 Research Design

Although the experimental design is exploratory and descriptive in nature, the results, and the thesis appeal towards refinement of the cognitive appraisal theory for future research and accurate predictive modeling, in the pro-environmental consumer behaviour context.

The table below (Table 4.1) enlists a summary of the various experimental factors that are considered and described in this chapter.

1. Revealed Preference Incentivised Discrete Choice Experiment
Scenarios for choice of variables (Emotion types, behaviour choices, product attributes, price levels and price difference index, endowment fund, inducement/gift card)
2. Refinement of Emotions
Understanding of emotion types and selection criteria based on statistical analysis
3. Respondent selection
Target sample population, sample size,
4. Respondent characteristic questions

Demographics, Attitudinal (environmental concern, risk aversion, construal level), Appraisal (agency and controllability)
5. Response measurement - scale, classification
Range, Levels, Scales
6. Survey Phasing
Pilot, First Part, Second Part, Time intervals
7. Platform for survey
Technology, confidentiality, anonymity, storage and security

Table 4.1 - Research Design Structure

4.3 Measures

Dependent variable - Behaviour

➢ Product Choice- Purchase behaviour (EV denoting Environmental) between environmentally sustainable product and non-environmentally sustainable product (NEV denoting non-Environmental). [Binary Choice]

➢ Independent variable – Stimuli (environment-related mixed emotion with sadness/guilt/ anger)

➢ Moderating variables –

★ Intensity of Felt Emotions (Eco Emotion) – two levels (Hi >=3 and Lo <3 on a scale of 0-5)

★ Environmental Concern measured by NEP scale (on a scale of 1 to 5) – two levels [High >=3.5 and Low < 3.5]

★ Price Differential Index – three levels (Lo @ 17%, Med @ 27% and Hi @ 50%)

★ Construal Level measured by Behaviour Identification Form (BIF) Score – two levels (Lo : 6 and below and Hi : above 6 on a 12 point scale)

★ Risk taking Propensity Index – two levels (Lo : 6 and below and Hi : above 6 on a 11 point scale)

A separate linear relationship model encompassing emotion as outcome variable and antecedents as causal variable has been included in the study to examine the appraisal theory framework.

➢ Antecedents / Appraisal Dimensions (Responsibility – Self / Other and Controllability – Self / Other) – two levels (Lo : 3 and below and Hi : above 3 on a scale of 0 – 5)

4.4 A Structural Model (schematic)

The schematic below represents the theoretical framework for the stimulated condition – treatment group (Fig 13)
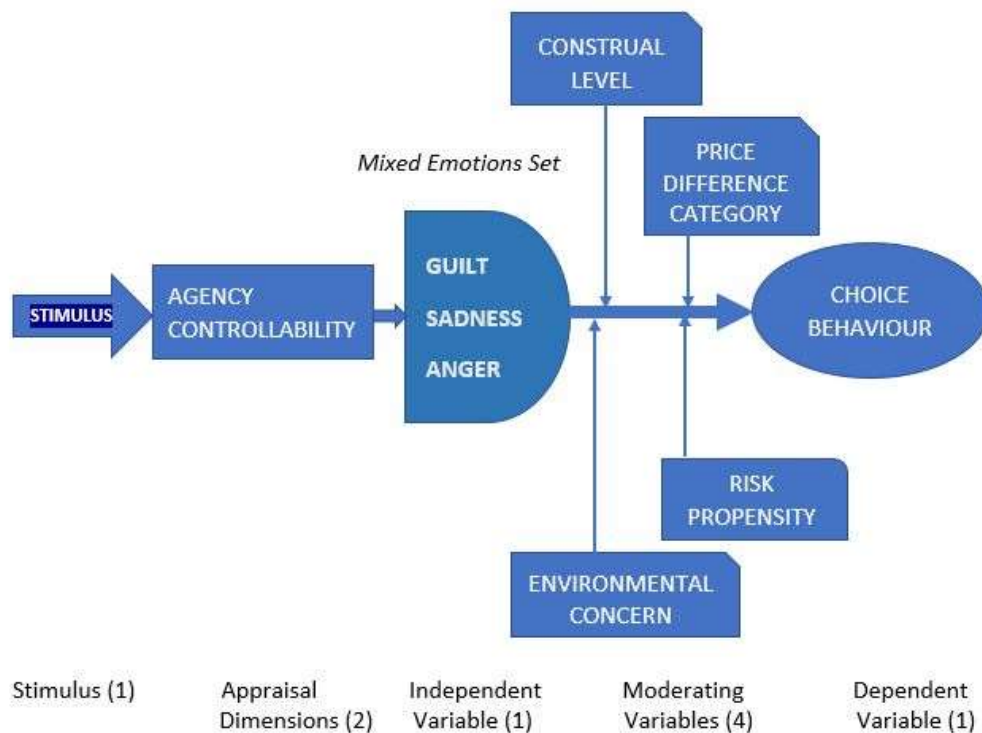
Figure 13: Structural Framework (Schematic) of the Study Model [Emotion Condition]

The schematic below represents the theoretical framework for the neutral condition – control group (Fig 14)
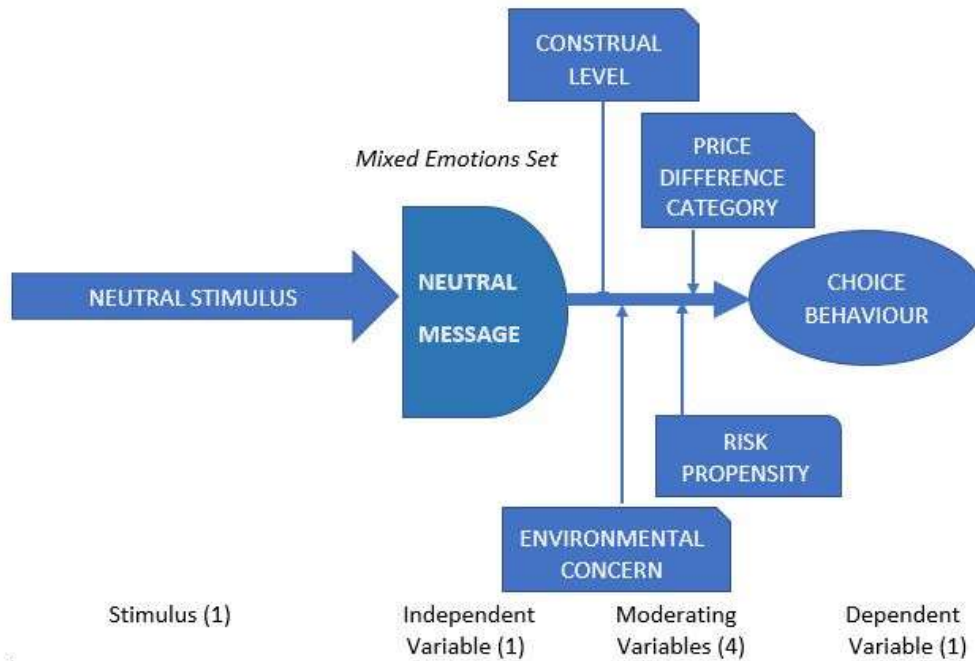
Figure 14: Structural Framework (Schematic) of the Study Model [Neutral Condition]

4.5 Data Analysis

Descriptive statistics including mean, median, moving average, frequency analysis, and standard deviation is conducted for basic analysis of the data as collected.

ANOVA has been widely employed on R studio to study the variance across variables and significance of relationship, with main and interaction effects.

Hypothesis testing has been done applying ANOVA in R environment.

ANCOVA has also been used in R for study of covariance among antecedents in its relationship with emotions in the study.

4.6 Survey Design

Online Survey Platform of Qualtrics was used. This helped with anonymous distribution, participation, and reward selection.

In order to reduce the most common bias (social desirability bias), particularly in a pro-social, pro-environmental context, the following measures were taken to curb its effect on the research results and reduce confounds:

1. The title and description of the experiment was such that it aimed at consumer decision making preferences in a purchase behaviour situation without explicit reference to pro-environmental alignment as the background of the study. The survey was accordingly titled as a consumer behaviour / behavioural economics experiment and was split into two parts with an interim time interval of one week. The first part focused on eliciting participants' attitudinal attributes (e.g. environmental concern, risk propensity, construal level, etc.) while the second part focused on the participants making the product choice. This time gap was done deliberately in order to reduce any bias that might have arisen if the survey were designed as in a single integral module (i.e. product choice being made at the same time as asking about environment related questions). This was in line with ethics, since the participants were given the option to reach out for debriefing about the actual intent, post the completion of both the parts.

2. As stated above, an interval of at least one week was also introduced between the first and second part of the survey, so that participants are not able to correlate or find out the underlying measures of the experiment and hence get biased on social norms.

3. A "Random Questionnaire" containing five questions was also introduced in the first part, to further disguise the actual intent (drivers of pro-environmental purchase choice) of the experiment.

The final decision on survey mode, construct of experimental design, and chosen variables (lack of physiological measures such as pupil dilation or skin conductance, as initially envisioned) were contingent on the limitations and the objectives of the research had to be modified.

Additionally, due to the emergence of Covid-19 global pandemic and restrictions on moving research endeavors to remote formats, an internet-based approach was selected for this research

4.7 Recruitment

The sample for the survey included randomly selected 258 students of York University undergrad and graduate departments. This met the minimum number of participants (150), distributed within the various experimental and control groups (see Appendix A1). The participants were invited on a voluntary basis, as a part of engaging in a 'behavioural economics research decision-making experiment'. The participants were offered a chance to win a gift card based on draws depending on their choices in the experiment. The recruitments were invited to participate through a survey link that was posted by the instructor on the course e-class website. An invitation link (see Appendix A2 for 'recruitment / invitation message') was sent. The information and response of the participants will be obtained from Qualtrics (survey tool) database only after a participant completes the full survey.

Inducements - The participants were eligible for a lottery draw for rewards proportionate to their choice tasks, in the form of gift cards (amounts ranging from 5$ to 25$).

Also, since participants were being recruited through Economics, Marketing and Business, and Psychology courses, and since this experiment uses methodologies from such disciplines, participation provided an experiential learning opportunity for student participants to gain first-hand knowledge of how research would be conducted in their field of study.

4.8 Survey Methodology

The basic methodology approach was that of a two-part economic or consumer response experiment in which participants got exposed to a certain kind of stimulus (in this case a video clip https://www.youtube.com/watch?v=BS00epSZuGc or https://www.youtube.com/watch?v=ohNgo8PzJjc), eliciting certain emotions, following which they rated their emotions on a Likert scale, and partook in a binary choice experiment.

1. The sample population was divided into a control and two treatment groups. The control group followed the same sequence of events, except that they were exposed to neutral stimuli (elicited through a video clip (https://www.youtube.com/watch?v=EEeu7-

) for one minute and were administered a one-part survey, being exposed to no emotion stimulus (neutral condition).

Once participants clicked on the 'consent' button on the initial survey page to give their consent, Qualtrics was programmed to show them the three 'pre-test' standard surveys (outside of asking participants some basic demographic questions about their age, gender and income level) listed in Appendix A3, one at a time before they participate in the second part of the main survey. The sequence of events are as follows:

Participants were pre-tested with three pre-existing standard surveys (outside of some basic demographic information such as age, gender, as shown below) which are (Questionnaire listed in Appendix A3):

I) Environmental attitude with the HEP NEP Questionnaire – 15 questions
II) Risk aversion using a socioeconomic panel questionnaire –1 question
III) Construal level through BIF Questionnaire – 12 questions
IV) Random topic Questionnaire – 5 questions

<u>Rationale for pre-test surveys:</u>

➢ Environmental attitude survey: Rationale for HEP-NEP Survey choice to measure Environmental Attitude. The authors contend that the extent to which the New Ecological Paradigm reflects the attitudes of a community can be measured using a questionnaire, known as the NEP. The questionnaire consists of fifteen questions. Eight questions reflect an NEP perspective and seven questions reflect a HEP perspective on environmentalism.

The NEP remains the most commonly and widely used instrument for assessing environmental attitudes. The NEP questionnaire sought to identify the environmental attitudes present in each subject using a five-point bi-polar Likert scale (1 = strongly disagree, 2 = agree, 3 = neutral, 4 = disagree and 5 = strongly agree).

➢ Construal Level Survey / Behaviour Identification Form (BIF) Score: As the construal level at which a stimulus is construed might influence consumers' information processing and decision

making, the psychological distance of the respondents is measured through a set of twelve selective questions with pre-set binary answers to measure the construal levels (abstract or concrete). This personality dimension of construal level measurement is achieved through BIF score computation (Vallacher & Wegner, 1989)

➢ Risk Aversion Survey: Based on German Socio-Economic Panel (SOEP), risk attitude measurement model through a simple qualitative survey is adopted in this research for determination of risk aversion in survey respondents as a method for classification of moderating variable. It is also useful for determining the optimal way to reliably capture an individual's risk-taking tendencies in different contexts (Dohmen et al., 2011). The survey contains one question for risk attitude.

This procedure of risk assessment survey offers the advantages of both statistical power and confidence in the reliability of the survey questions. Risk attitudes are shown to be relatively stable across different contexts, shedding light on a deeper question about stability of willingness to take risks as a personal trait.

➢ Random Questionnaire The random set of random questions consists of questions developed by assessing frugality, equity which will be rated on a 5-point Likert scale (0 = totally agree…5 = totally disagree). The rationale for adding a random set of questionnaires is to prevent bias or saliency towards environmentally friendly products.

After completion of the pre survey questionnaire, participants were informed that they would receive a second Qualtrics link via email, about one week after the pretest survey so that they could participate in the second part of the survey if they wished. An alpha numeric code was designated to each participant at the end of the survey. In order to maintain anonymity, the pre-test survey database will only link the alpha numeric code to their responses. Their email ids were strictly used for contacting the participant for continuing to participate in the second (primary) part of the experiment, and later on for sending their respective e-gift cards (based on the draw and their choice selections).

2. At the beginning of the second half of the experiment, participants in the experimental group were assigned to watch a video clip eliciting Eco-Emotions (Discrete emotions such as Sadness, Anger, Guilt, Disgust etc.), while participants in the control/neutral group were invited to watch a video aimed to elicit none or neutral emotions.

Initially the intent was to elicit two distinct / discrete emotions from two separate videos. The first clip (https://www.youtube.com/watch?v=BS00epSZuGc) was a scene from the movie "Green" by Patrick Rouxel showcasing the destruction of the habitat of Orangutans for the production of Palm Oil, and the insensitivity of "consumerism". The second video was a clip from the short animation movie (https://www.youtube.com/watch?v=ohNgo8PzJjc). This video showed how reversing roles with animals would be like, in terms of the demise, agony and torture that mankind has brought upon nature.

Participants were required to watch the visuals for about four minutes. However, they were informed that they would be free to stop the video anytime and leave the experiment.

- After watching the video, participants rated their emotions on a six-point Likert scale. For the neutral condition, the participants were shown a one-minute video of Paris cityscapes - (https://www.youtube.com/watch?v=EEeu7-xJX_c&t=10s).

- For the neutral condition participants only had to select the most dominant emotion felt, without any Likert scale.

After watching the video clip and responding to the questions as assigned; the participants were given a fixed amount of virtual funds (signifying a reserve of cash given to the participant) to start with (see starting amounts in the table below). Individual participants were assigned only to one product category each. The purchase choices they made in the experiment would proportionally deduct certain amounts based on their choices, as each product was shown with a unique price. The participants were informed (before starting the survey) that there would be a draw whereby 1 in every 20 participants (or less) could receive a gift card that is proportional to their choice decisions (the gift card would be worth twice the remnant amount after paying for their choice). For example, in the coffee product category, if the participant chose coffee B (The environment

friendly option), they would have a chance to receive a gift card from a more sustainably driven coffee brand (Starbucks in this case), where the amount of the gift card would be twice the remnant amount ($10 - $7.5 = 2.5 x 2 = $5) [See Table 4.2 below].

This would signify if participants were willing to forego more cash, in order to contribute towards the environment through their act of consumer purchase decision (rather than purchasing cheaper coffee from a non-sustainable coffee brand). This payment system was to both compensate participants for their time and to incentivize them in accordance with the hypothetical decisions they were making in the survey (a methodology commonly used in the field of Experimental and Behavioural Economics).

Starting Value ($)	Product Choice	Price ($)	Price Difference			Gift Card (Proportionate to the choice)
			Value ($)	% Differential EV to NEV		
10 $	Coffee A (NEV)	5.00 $	2.50 $	**50%** (2.5 $ as % of 5 $) **HIGH**		Gift Card 10$ from Tim Horton's
	Coffee B (EV)	7.50 $				Gift Card 5$ from Starbucks
40 $	T Shirt A (NEV)	27.50 $	7.50 $	**27%** (7.5 $ as % of 27.5 $) **MEDIUM**		Gift Card 25$ from H&M
	T Shirt B (EV)	35.00 $				Gift Card 10$ from Good Tee
20 $	Laundry Detergent A (NEV)	15.00 $	2.50 $	**17%** (2.5 $ as % of 15 $) **LOW**		Gift Card 10$ from Tim Horton's
	Laundry Detergent B (EV)	17.50 $				Gift Card 5$ from Starbucks

Table 4.2 - Product Pricing and Payoff for each Choice

3. These three different categories of product choices are shown below (Table 4.3). Each participant was subjected to one kind of stimuli (either sadness or anger in experimental condition) or neutral condition, and one of the following product choice categories (assigned randomly) for purchase selection.

a. Coffee

Coffee A 5.0$
- 10 oz. White Paper Hot Coffee Cups for serving hot coffee, tea, hot chocolate, and other hot or cold beverages.
- Suitable for beverage temperatures up to 205 degrees F.
- Polyethylene lining for resistance to leaking and moisture penetration.
- Its thick paper wall makes it great as everyday hot coffee cups, hot cocoa cups and hot teacups.

Coffee B 7.50$
- Biodegradable natural bamboo fiber & Compostable paper
- 10 oz. Coffee Cup made from sustainably derived compostable paper
- Suitable for beverage temperatures up to 180 degrees F.
- Forest Stewardship Council approved paper and plant-based resin for lining for resistance to leaking and moisture penetration.
- Its thick bamboo wall makes it great as everyday hot coffee cups, hot cocoa cups and hot tea cups.

b. T-shirt

T-shirt A 27.5$
- 100% Cotton
- Machine Wash
- Soft ring spun cotton
- Lightweight jersey fabric

T-shirt B 35.0$
- Fair trade certified Bamboo Fiber (Rayon) and eco friendly dyes
- Machine Wash
- Natural Fiber With Versatile Performance: Bamboo Fiber is a kind of cellulosic fiber extracted from natural materials-bamboo. It is featured with good air permeability, instant water-absorbing, great durability and stable dyeing property. Thus, it is antibacterial and odor-resistant.

c. Detergent

Detergent A 15.0$ (1L -24 loads)
- America's #1 selling detergent.
- This liquid laundry detergent is the one you you love, now with 40% more stain & odor removal power per drop. vs. previous formula
- Rinses clean in all water temperatures, even in cold water.
- Safe and effective in all washers, even HE (high efficiency).
- Concentrated, so less is more
- Dermatologist and allergy tested.

Detergent B 17.5$ (1L -24 loads)
- Recognized by the U.S. Environmental Protection Agency's (EPA) Safer Choice Program for containing safer ingredients that don't sacrifice quality or performance.
- Rinses clean in all water temperatures, even in cold water.
- Safe and effective in all washers, even HE (high efficiency).
- Biodegradable formula.
- No phosphates, chlorine or other unpleasant ingredients, so it's safer for the environment.
- Concentrated, so less is more.
- Dermatologist and allergy tested.

Table 4.3 - Product Attribute/Price difference Choice Options

4.9 Rationale for time interval between a decision and its consequences:

The participants would have a maximum of 90 seconds to make their choices

The time pressure induces two main consequences in the survey subjects compatible with the aim of eliciting the maximum response of affect in judgment and decision making. As outlined by (Svenson & Maule, 1993), perception that time is limited may influence judgment by:

(1) Inducing affective changes via a generally increased arousal level (making `hot' affective processes more salient than analytical cognitive processes to individuals); and

(2) Reducing cognitive resources available for analytic deliberation during risk and benefit judgments (because the awareness of time pressure demands that resources are allocated to monitoring the time available)

Most time-pressure research has examined how cognitive processes and outcomes change as a result of the minimization of cognitive effort (Beach & Mitchell, 1978; Edland & Svenson, 1993; Kerstholt, 1994; Payne et al., 1988; Svenson et al., 1990). However, from the perspective of this study, the methodology is relevant because of its potential for manipulating individuals' heuristic reliance on affect when making judgments.

4.10 Limitations of survey design and methodology

Generalizability and external validity: It is also argued that test subjects face relatively weak monetary incentives in the experiments, which cannot model their decision making in economic situations in real life to full extent (Cappelen & Tungodden, 2012).

The fact that the majority of the controlled laboratory experiments were conducted with students as test subjects also puts a question mark on the practical application and representativeness of the results.

One more concern when it comes to controlled laboratory experiments is that we only observe or record individuals' actual behaviour and do not know for sure the reasoning behind this behaviour.

Although due to the advent of Covid, this wasn't exactly a controlled lab experiment, but an online experiment, with limitations such as not knowing what the subject was interacting with before and during the experiment, and hence interfering with the intended emotion elicitation and cognition, leading to noise in the response data (self-reported questionnaires)

4.11 Research Ethics

Ethics is a set of principles, rules and guidelines to evaluate if our handlings are right or wrong (Johannesen et al., 2011). Ethical issues arise when scientific research directly involves interaction

with people through observations, interviews or experiments (Johannesen et al., 2011). The last is the case in our research.

The protocol for research ethics of this experimental study was conducted in line with York University Graduate Student Thesis guidelines. [Refer Appendix A4 for details and Informed Consent Form as distributed to the participants of the experiment].

4.12 Data Security & Data Management

The data as collected would be treated with strict confidentiality, in a secure server (York U) for privacy and authorized access to the repository. [Refer Appendix A5 for details of data management].

The experiment was conducted on Qualtrics (within the YorkU server). A password protected student researcher sub account had been created by the primary supervisor from the faculty of health. The data have been stored on an encrypted password protected folders on a student laptop – Location – OneDrive server through YorkU, Microsoft suite).

4.13 Pilot Study

The Pilot test was conducted as a validation exercise to examine that the videos were eliciting the targeted set of emotions, and to estimate the intensity of emotions being felt[6]. Additionally, all the participants were asked to provide comments on the reasons they felt 'sadness' and 'anger' after watching the stimulus material. This was done to validate the notion presented by the appraisal theory that feelings of anger and sadness would be differentiated by appraisal dimensions such as certainty, controllability and responsibility. The questions entailing these appraisal dimensions are mentioned in Appendix A6. The comments answered by the participants were matched against these questions to validate if indeed aspects of controllability and responsibility (in the case of anger - other responsibility and controllability) elicited 'anger' as the dominant emotion, as an example. Similarly, 'sadness' appraisal dimensions were also reviewed against the answers from the participants.

- [6] Pilot survey form - https://forms.gle/qviJd4UY75LQPd147

Two rounds of pilot testing were done on sixty participants (28 in first round and 32 in the second) of similar demographics but outside York University. A self-reported questionnaire was administered through google form (https://forms.gle/qviJd4UY75LQPd147), and the two visuals that were tested for the two rounds were:

Green Movie Clip (Deforestation) - https://www.youtube.com/watch?v=BS00epSZuGc , and

Video clip of Turning Point (Animation) - https://www.youtube.com/watch?v=ohNgo8PzJjc

4.13.1 Observations from Pilot Study # 1

Sadness has emerged as the peak emotion with highest intensity (4.2), and maximum occurrence of high scores (89%). However, other emotions also showed proximal scores with average intensity at scores between 3.5 and 3.9, showing the associative elicitation of mixed emotions (see Table 9.1 in Appendix A7).

Mixed emotions and their Correlation: A correlation matrix was conducted to review classifications of related emotions. For example, previous studies by Haidt, (2017) have classified 'Contempt-Anger-Disgust' as 'other condemning' emotions.

Accordingly, correlation analysis was carried out (see Table 9.2 in Appendix A8) which showed that - Contempt ~ Anger ~ Disgust triad shows moderate to high correlation (correlation coefficient about 0.50).

Similarly, Guilt with Shame shows moderate correlation (correlation coefficient 0.51). Sadness is not too highly correlated to any other emotion except moderately with grief and hence was taken to be considered as prime emotion

4.13.2 Observations from Pilot Study # 2

In this round, Sadness again has emerged as the peak emotion with highest intensity (4.2) and maximum occurrence of high scores (86%). However, other emotions also showed proximal scores with average intensity at scores between 3.6 and 3.8, showing the associative elicitation of mixed emotions (refer Table 9.3 in Appendix A9).

Mixed emotions and their Correlation: The correlation among the emotions show similar trends as like the pilot study # 1, with grief and sadness moderately correlated (coefficient value 0.53) whereas the CAD triad indicates a nexus of positive correlation as expected (see Table 9.4 in Appendix A10).

4.13.3 Qualitative Comments from Pilot Study

As mentioned previously, participants were asked to write about why or what made them feel sad or angry, during the pilot. Some of the comments are extracted as shown below:

Anger	Sadness	Anger + Sadness
Anger because people destroy forests as though they are not home to all these animals, and entirely disrupt the natural balance just to fulfill their greed.	Sad from the empathy felt for the creatures we leave with nothing	Angry at the human race and sad for the animals.
Angry because we are the reason of our own disaster, felt sad since wild animals and beautiful nature are victims of our selfishness.	Sad about the environment and what we are doing in the name of development	I am angry at us and sad for the animals who list their homes.
Angry that we humans are so selfish that v are destroying the natural habitat of the animals	Sad Impact of deforestation on wildlife	Felt anger at the selfishness of mankind and tendency to overlook other creatures' equal rights on planet earth. Sadness for not realizing the importance of coexistence and harmony with the nature!
Angry because they stole a creature's home that can't even retaliate		Anger that we are responsible for the destruction of this planet. Sadness because we know some of the damage is permanent and irreversible.
Anger for not being able to do right by the species that has always been around us as a blessing and being sad for being so selfish and not trying to put their needs at the same level as ours		Angry because people are irresponsible towards the animals and their habitat. Sad to see the condition of the animals after their home was destroyed.
The uprooting of trees making the orangutan homeless.		Angry- As because of humans our green earth is getting spooled and animals are dying and getting homeless...

Angry at the negligence of us humans and sad at the plight of the flora and fauna		

Table 4.4 - Comments from Respondents on Reasons for Emotions

The reasons as recorded above possibly point towards agency (responsibility) and controllability (self / others / situational) in line with the cognitive antecedents or appraisals for such emotions. Therefore, this aspect is incorporated in the main survey to understand the relationship of antecedents on the arousal of emotions.

Finally, after preparing the first version of the survey, a few focus group meetings with academic experts were scheduled to eliminate the potential 'measurement errors' from the survey. We have also reviewed the sequencing, flow of the survey and the understandability of the questions in respondent's eye.

In accordance with the findings from the pilot study, the main survey design was formulated accounting for all related emotions with the focus on dominant emotions (e.g., sadness, anger and guilt) in the visuals thus created with suitable edits and revisions. A complete version of the survey questionnaire (part 2) is listed in Appendix A11.

4.13.4 Primary Challenges and Takeaways from Pilot study

- *Elicitation of isolated emotions in the context of the environment seems challenging:* In spite of trying to maximize anger as the dominant emotion, sadness came out to be more prevalent. Similar effects were seen with other prototypical negative valenced emotions such as guilt, disgust, fear etc.

Chapter 5

5 Observations and Data Analysis

5.1 MAIN SURVEY: Preliminary Observations and Analysis

Sample for the Main Study: Based on a target size of 150 participants (90 in experimental group and 60 in control group); the final sample size consisted of 258 respondents from York University student population who were invited to participate in an economic experiment eliciting choice

behaviour on the background of emotional stimulus (treatment group) vs. neutral stimulus (control group).

5.1.1 Sampling Size Distribution

A total of 93 respondents in the treatment group and 165 participants in the control group completed the survey. Detail break-up is shown in Appendix A1.

5.1.2 Treatment Group

A total of 115 responses were received from part 1 survey of the treatment group, who were invited within two weeks to participate in the second part of the survey. Out of this respondent population of 115 from the part 1 survey, 93 participants finally completed part 2 of survey.

The participants showed medium to high scores on all the three variables (Environmental Concern, BIF Score and Risk Aversion) in general without any trend or pattern (refer Table 9.5 in Appendix A12).

The preliminary analysis of the part 1 survey did not establish any correlation (see Table 9.6 in Appendix A13) among the three measured variables (e.g., Environmental Attitude, Risk Propensity and Construal Level / BIF score). It was also found that majority were female respondents (about two-third) and mostly young population (refer Table 9.7 in Appendix A14), consistent with the target segment as selected for the study. As such, they were evenly distributed on a random basis between the two stimulus visuals (Animation and Deforestation video) for study of difference (if any) of the impact on the outcome variables.

As part of the second phase of the survey for the treatment group, a Qualtrics link was made available to participant within two weeks after filling out pretest for the full experiment.

They were initially provided with a brief description of the experiment and the tasks involved. The participants were informed initially that these were economic choice experiments and the purchase choices they make in the experiment will proportionally deduct certain amounts based on their choices.

Participants after being exposed to one of the stimulus videos (Animation / Deforestation), were asked to rate their intensity of felt emotions immediately after the video, as well as the antecedent measures (e.g., responsibility and controllability for self and others) related to such emotion, on a Likert scale [0-5]. 93 participants (from the experimental group of 115 respondents of part 1) volunteered in completion of the part 2 survey.

5.1.3 Control Group

Under the identical set of relevant variables (Environmental Attitude, Risk Propensity and Construal Level) as applicable for this group, the one-part survey was administered on control group by showcasing the product advert (informative / non-emotional stimuli – refer Appendix 15) for product choice for each of three product categories. (refer Table 9.8 and Table 9.9 in Appendix A16 for demographic and attitudinal statistics)

The elicitation of neutral emotion was duly validated through the response analysis from the participants as shown in the Table below, listing the emotion (neutral or others) that they felt after watching the visual. As many as 65% of participants in this control group showed no/ neutral emotion (see Table 5.1 and figure 15 below).

Neutral	Sad	Anger	Contempt	Fear	Envy	Guilty	Pride	Total
108	16	2	11	5	6	7	10	165
65%	10%	1%	7%	3%	4%	4%	6%	% Of Total

Table 5.1- Type of Felt Emotion by Neutral Group Participants
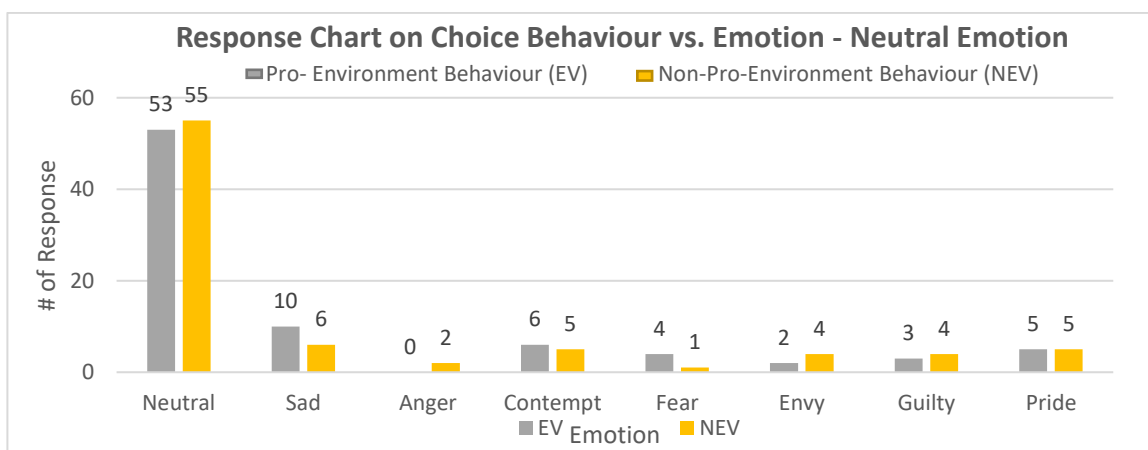
Figure 15: Response on Emotion Type in Control Group

5.2 MAIN SURVEY: Results and Discussion

5.2.1 Re-classification of stimulus as mixed-emotions vs discrete emotions, as the key independent variable

After gathering the required data on "Qualtrics" through the questionnaire listed in the section above, the following trends and observations were derived as follows:

5.2.1.1 Development of key Stimulus (Independent Variable)

Contrary to initial assumptions that each of the chosen videos from the treatment groups (namely 'Animation video' - https://www.youtube.com/watch?v=ohNgo8PzJjc aiming arousal of sadness) and Deforestation video (https://www.youtube.com/watch?v=BS00epSZuGc) aiming arousal of anger) would elicit a dominant discrete emotion, and have respective action tendencies in terms of choice preferences, it was observed that the two visual stimuli individually failed to show any significant difference in choice behaviour [$F(1,252) = 0.33$, $p = 0.566$] (refer Appendix A17 for further details – see Table 9.10 to Table 9.14). Therefore, the two treatment groups were clubbed into one group, eliciting 'mixed emotions', which has been termed as 'Eco Emotions' (a cluster of emotions) in this study.

Additionally, another reason in favor of collapsing the two treatment groups is that the intensity of all the relevant emotions (between each pair of treatment groups) measured were mostly similar as illustrated in the figure 16 below.
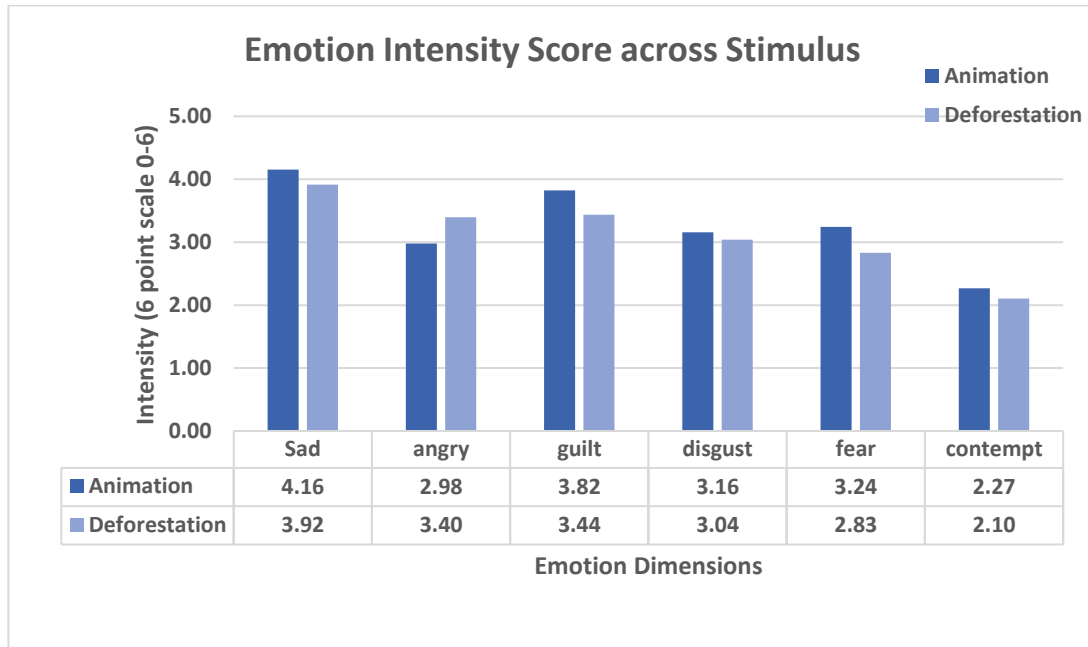
Figure 16: Intensity Score of Emotions under two Treatment conditions (Animation / Deforestation)

5.2.1.2 Development of cluster of 'Mixed emotions'

Although the initial intent was to elicit specific individual emotions such as sadness and anger in isolation, and see how each would have different action tendencies, in line with the development of mixed emotions as described in the section above, when it comes to eco-stimulus there will be elicitation of mixed emotions. In this case, the emotions of interest that were elicited, as primary dominant emotions, were sadness, anger, and guilt. Due to the nature of the content of directedness, in pro-social or pro-environmental domain, emotions elicited will be a mix of basic emotions such as sadness, anger, fear and disgust, along with higher order emotions such as guilt, shame or pride, depending upon the content of the stimulus.

Along with the intended dominant emotions, participants also felt disgust, fear, and contempt to a certain degree.

As stated earlier, we found that there wasn't a significant difference between the two stimuli, in terms of pro-environmental choice behaviour.

Based on the statistical values (namely, mean, mode, standard deviation of felt intensity), the top three emotions (sadness, anger, guilt) were selected for inclusion in the cluster of mixed

emotion in the study. (refer Appendix A18) for descriptive statistics in support of the cluster formation).

5.2.1.3 Remarks on emotions other than dominant emotions

On further investigation, in addition to the pilot studies, the emotions of disgust and contempt were interpreted differently by various participants, since for disgust, some interpreted the act of destroying the environment as morally wrong, while others had a physical reaction to the stimulus of destroying or dirtying the environment with toxins. Similarly, contempt being a non-basic emotion was interpreted differently, across participants. Fear being a general emotion, and having lower score of intensity, has not been selected in the mixed emotion cluster.

Based on above data, the group of emotion (**Eco Emotion** comprising of sadness, anger, and guilt) is considered as the stimulus or independent variable, for the dependent variable of choice behaviour (PEB) under different price points (with additional variables such as locus of control dimensions and construal level).

5.2.2   Key Results and Findings: Hypothesis Testing

5.2.2.1 Analysis of Choice Behaviour

(HA1- The effect of integrally induced 'eco-emotions' (Guilt laden sadness and anger) on purchase choice decisions will result in a higher trade off, i.e., participants will be willing to pay a premium price and chose an environmentally friendly product (in comparison with behaviour under no such stimulus)

In order to examine the effect of integrally induced 'eco-emotions' on choice behaviour (Environment Friendly "EV" vs. Non-Environment Friendly "NEV"), the empirical statistics of response frequency between treatment and control conditions are studied and tabulated in the Table 5.2 below. The table below shows the choice behaviour preferences at the aggregate level across all the three product / price levels involving the entire experimental sample of 258 respondents. As can be seen from the table, there is a clear difference in the proportion of 'EV' choices (76% vs 50%) between the two conditions.

	# Of Responses			
Group	EV	NEV	Total	% EV of Total
Eco Emotion (Sad + Anger + Guilt)	71	22	93	76%
Neutral	83	82	165	50%
Total	154	104	258	60%

Table 5.2 - Emotion vs Neutral Group – Proportion of EV and NEV

A significant difference exists between stimulus (Eco Emotion) and Neutral Group on Choice Behaviour, as shown in the main-effect plot (Fig 17) below. The difference is statistically significant as observed through ANOVA [$F(1, 256) = 17.79$, p = negligible (3.42×10^{-5})]. The post hoc comparisons indicated that the mean behaviour score (bipolar scale: -1 for non-PEB and +1 for PEB) under the Eco-Emotion stimulated condition (M= 0.53, SD = 0.09) is significantly different from that under neutral condition (M = 0.01, SD = 0.07). There is clear evidence of positive impact of Eco-Emotion on PEB, in comparison with neutral or unstimulated condition.

Hence The Hypothesis HA1 does hold true.
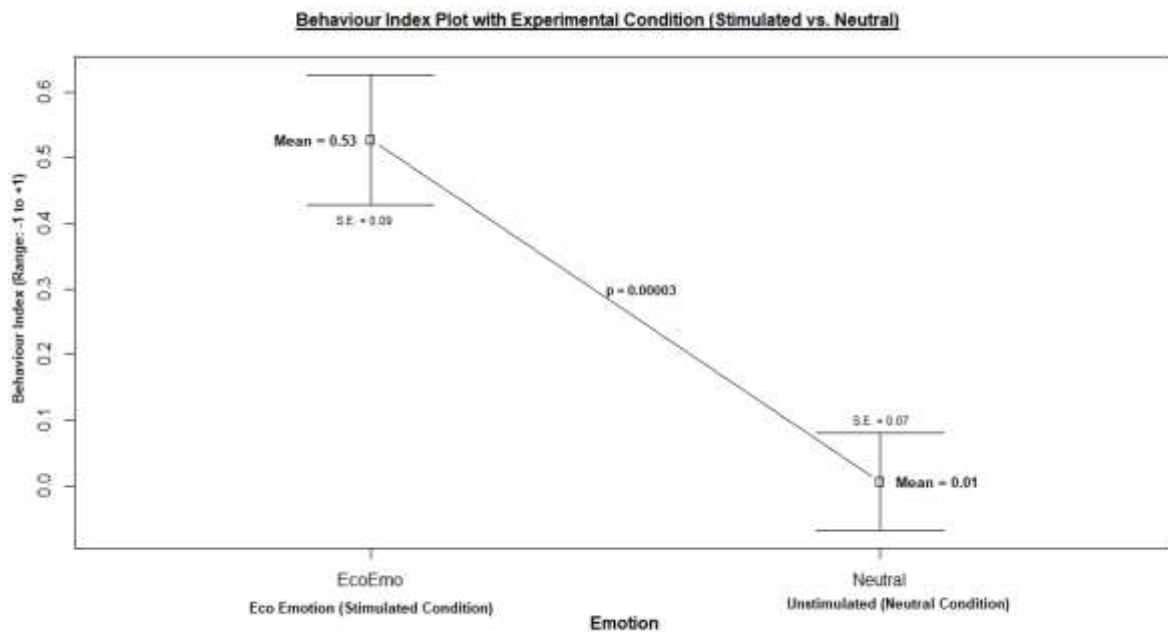
Figure 17: Main Effect Plot - Stimulus Effect on Choice Behaviour

5.2.2.2 Effect of intensity of felt emotion on choice behaviour

(HB1: Higher intensity of certain cluster of felt Eco-emotion will lead to more green purchase behaviour)

After reviewing the proportion of choice behaviour or Pro-Environmental Behaviour (EV) responses under the two intensity levels (High >=3, Low<3) of felt emotions, there appeared to be no difference (empirically) as shown in the table 5.3 below

	# Of Responses				Intensity	
Eco Emotion Group Intensity **Hi (>=3) and (Lo<3)**	**EV**	**NEV**	**Total**	**% EV of Total**	**average score**	**% of Sample Population**
Eco Emotion Hi (Sad + Anger + Guilt) **Hi in each component**	44	13	57	77%	4.198	62%
Eco Emotion Lo (Sad + Anger + Guilt) **Lo in at least one component**	27	9	36	75%	2.693	38%

Table 5.3 - Intensity of Eco Emotion and respective Choices(Eco Friendly vs Non-Eco Friendly)

While about two-thirds (62%) of the sample population recorded hi intensity of Eco Emotion, there is *no significant difference observed* in their choice behaviour (EV vs NEV) for high intensity subjects (77%) as compared to those who recorded low intensity (75%).

The statistical analysis of variance between the two intensity levels on choice behaviour is also found to be insignificant [$F(1,91) = 0.56$, $p = 0.457$).

Hypothesis HB1, therefore, stands rejected.

It needs to be further investigated on whether such pattern of insignificance (choice behaviour across price difference levels, for high and low intensity of emotions) holds valid for all three different levels of price difference.

I posit the null hypothesis as "There is no difference in behaviour between high and low intensity of felt emotion across different price levels".

The statistical ANOVA reveals that no significant difference of choice behaviour exists between high and low Eco-Emotion intensity across all price points, validating the above postulation. [$F_{High\ Price}$ (1,87) = 0.13, p = 0.71]; [$F_{Med\ Price}$ (1,87) = 0, p = 1]; [$F_{Low\ Price}$ (1,87) = 0.03, p = 0.84].

5.2.2.3 Analysis of choice behaviour with respect to Price Difference Index (Emotion stimuli – Treatment Group)

(HC1: Under Eco-Emotion (emotion stimuli), there will be a significant relationship between purchase behaviour and price index)

Instead of having product categories (namely coffee cup, T-shirt and laundry detergent), 3 levels (50% <high>27% <med> and 17% <low>,) of price difference indices have been incorporated in the study.

It may be noted that in this experiment, each of the three-product category has been pegged at three distinct levels of price differential index (between the environmental friendly and non-environmental friendly product options) and as such, there was a possibility of confound between product category and price index. Moreover, due to the limitations of the conduct of the experiment (online survey with product images / attributes and not in a laboratory setting with actual display or presentation of the products), the product attributes (primary features such as the coffee as a drink vs. secondary attributes such as the packaging of the coffee) may also have been perceived differently by the participants (as already explained in section 3.3). Accordingly, I have opted for 'pricing' as the moderating variable for my study, instead of 'product category', based on the reasoning that the price effect was more salient in my experiment as the focus of the participants was drawn on the price component with the incentivized real pay-off rather than the product category.

There appears to be a difference in behaviour across price difference index with Low price showing High EV, Medium Price showing moderate EV and High price showing no significant difference, as illustrated in the Table 5.4 below.

Choice Behaviour	EV		NEV			
Price Diff. Index	Hi Eco Emo	Lo Eco Emo	Hi Eco Emo	Lo Eco Emo	Total	% EV
Hi	12	6	8	5	31	58%
Med	20	2	8	1	31	71%
Lo	25	6	0	0	31	100%
Total	57	14	16	6	93	76%

Table 5.4 - Behaviour – Price Difference Index – Emotion Intensity Matrix

As detailed in the previous section, the statistical ANOVA fails to show any significant relationship between behaviour and eco-emotion intensity across each price difference levels. The price level, on the other hand, shows a very statistically significant relationship on choice behaviour [$F_{(2,90)}$ = 9.24, p = 0.0002]. From post hoc analysis, it is further observed that there is a significant difference in choice behaviour between Low and High-Price Level [$F_{(1,90)}$ = 17.60, p = 0.0002). There also exists a significant difference in choice behaviour between low and medium-price levels at 95% confidence level [$F_{(1,90)}$ = 8.44, p = 0.009).

No such significance in choice behaviour difference is observed between High and Medium-price levels [$F_{(1,90)}$ = 1.67, p = 0.20].

It is, therefore, the elicitation of Eco-Emotion, (and not so much the intensity) which induces the choice behaviour towards Willingness to Pay (WTP) for the eco-friendly product, duly moderated by the price/product considerations as relevant in the context.

Hypothesis HC1, therefore, stands valid.

5.2.2.4 Analysis of choice behaviour with respect to Price Difference Index (No Stimuli – Control Group)

(HC2 - Under neutral condition, the degree of WTP (or actual purchase, as simulated in this experiment) is less than what it would be under stimulated condition corresponding to its relationship with price index)

The empirical data from the choice behaviour analysis under neutral conditions (control group) across three price difference levels do not show much variance (38% for High, 56% for Low and 36% for Medium) unlike those under stimulated conditions as presented below in Table 5.5

	# of Responses (Neutral Condition)			# of Responses (Stimulated Condition)		
Price Diff Index	EV (a)	NEV (b)	% EV [a/(a+b)]	EV (c)	NEV (d)	% EV [c/(c+d)]
Hi (50%)	15	24	38%	18	13	58%
Med (27%)	4	7	36%	22	9	71%
Lo (17%)	64	51	56%	31	0	100%
Total	83	82	50%	71	22	76%

Table 5.5 - Price Index (classified as high, low and medium) and respective choice behaviours

No significant difference is observed across Price Difference levels for choice of PEB under neutral condition [F $(2,162)$ = 2.20, p = 0.11).
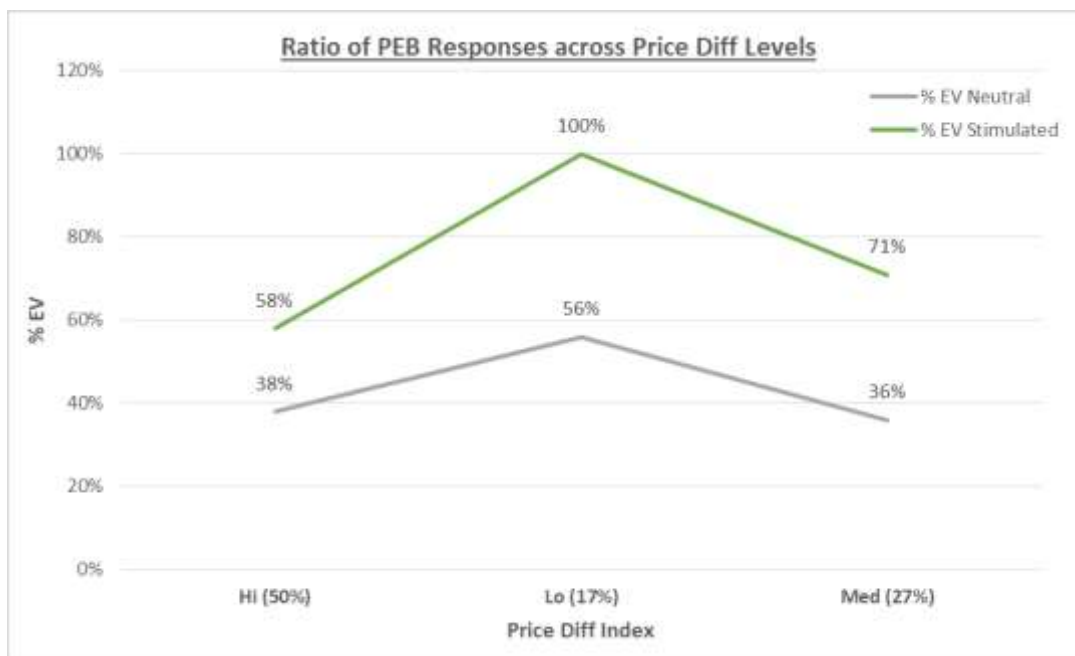
Figure 18: Graphical overview of Choice Behaviour across Price Levels & Experimental Condition

Consistent with Table 5.5 and figure 18 above, statistically significant difference is found between emotion and neutral condition for choice behaviour in the case of low price difference

option [$F(1,252) = 22.37$, p = negligible (3.74×10^{-6})] and medium price difference option category [$F(1,252) = 4.53$, p = 0.035]. The results are duly summarized in the Table 5.6 below.

Experimental Condition	Price Difference Index	P value (95% significance)	Remarks
Eco Emo vs. Neutral	High	0.080	Not significant
Eco Emo vs. Neutral	Low	0.000003	**Highly Significant**
Eco Emo vs. Neutral	Medium	0.035	**Significant**

Table 5.6 - Behaviour relationship across price difference levels - emotion and neutral condition

It is also observed that the difference in Behaviour Index is highly significant for low price difference category in comparison with high [$F(1,252) = 12.70$, p = 0.0004] and medium [$F(1,252) = 6.08$, p = 0.014] price difference category under stimulated condition (Eco Emotion); but much less under neutral condition, and in fact, insignificant between Low and medium price difference comparison (refer Table 5.7 below) and only marginally significant between Low and High price difference category [$F(1,252) = 4.01$, p = 0.046]. This justifies the hypothesis HC2, with clear evidence of less PEB under neutral condition for any specific price difference level than the behaviour under emotion stimulated condition.

Price Difference Index	Experimental Condition	P value (95% significance)	Remarks
Hi vs. Lo	Emotion	0.0004	Highly Significant
Hi vs. Med	Emotion	0.2739	Not significant
Lo vs. Med	Emotion	0.0143	Significant
Hi vs. Lo	Neutral	0.0463	Marginally significant
Hi vs. Med	Neutral	0.8945	Not significant
Lo vs. Med	Neutral	0.1883	Not significant

Table 5.7 - p value for ANOVA between Price Difference (Experimental and Neutral conditions)

This underlies the importance of presence of stimuli (Eco-Emotion), duly subjugated with a pricing caveat to which the respondents are willing to change towards a PEB.

Hypothesis HC2 is therefore validated.

5.2.2.5 Analysis of choice behaviour with risk taking propensity

(HD1: Risk Taking Propensity acts as a moderator for purchase choice behaviour: Higher the Risk-Taking Propensity, higher the Willingness To Pay)

There is a distinct preference for PEB with high-risk taking propensity as observed from the Table 5.8 below (69% vs. 31% under high risk-taking propensity as compared to almost equal proportions under low risk-taking propensity responses).

Behaviour	Environment Friendly (EV)		Non-Environnement Friendly (NEV)		Total Responses
Risk Propensity Index	# Responses (A)	Proportion (%) EV [(A) / (C)]	# Responses (B)	Proportion (%) NEV [(B) / (C)]	# Responses (C)=(A) + (B)
High Risk-Taking Propensity Index (score >6 on 10-point scale)	88	69%	40	31%	128
Low Risk-Taking Propensity Index (score <7 on 10-point scale)	66	51%	64	49%	130

Table 5.8 - Behaviour response (# of participants) across Risk Taking Propensity Levels

It is further substantiated by statistical analysis showing high significance of variance in behaviour between participants with high index of risk-taking propensity vis-à-vis those with low levels of risk-taking propensity [$F_{(1,256)} = 8.89$, $p = 0.003$] (see Plot in Figure 19 below). This is particularly true amongst the participants under neutral condition (control group responses) without the influence of emotional stimulus (see Appendix A19 for plots and statistical values).

The hypothesis HD1 is therefore validated.
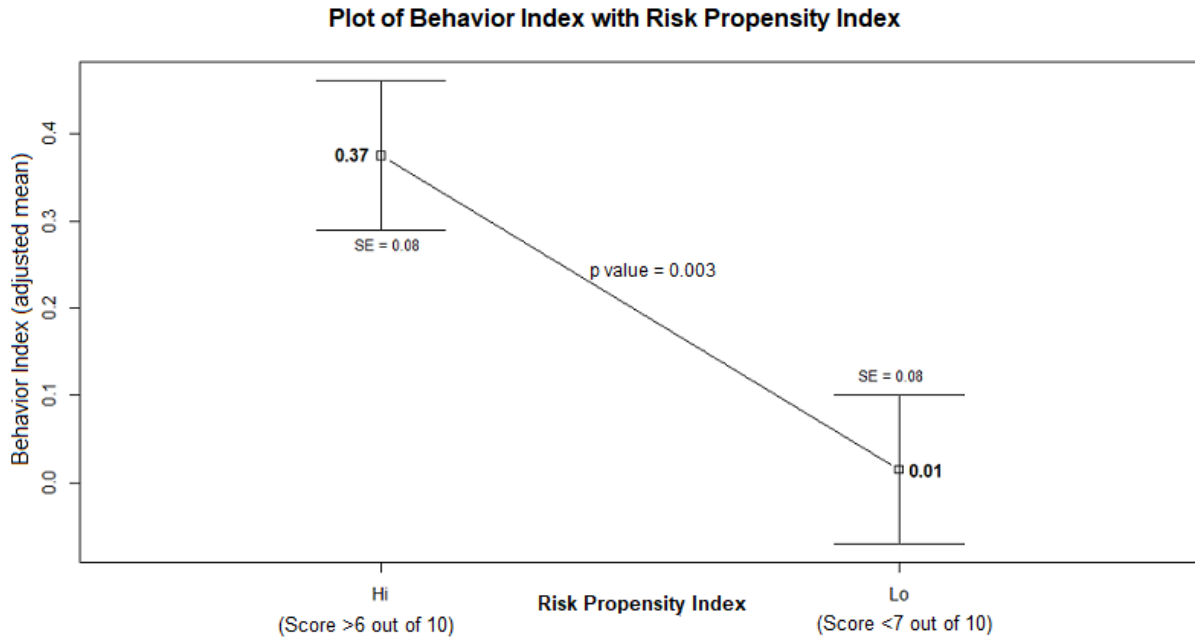
Figure 19: Main Effect Plot between Behaviour Index and Risk Propensity Index

5.2.2.6 Analysis of Choice Behaviour with Environmental Attitude / Concern (EC)

(HE1: EC will not have a significant relationship on actual purchase choice behaviour)

The Environmental Attitude or Concern does not appear to have any effect on the PEB as seen from the Table 5.9 below, with evidence of marginal difference in choice behaviour under high or low levels of Environmental Concern.

Behaviour	Pro-Environmental (PEB)		Non-Pro-Environmental (non PEB)		Total	
Environmental Concern (score >= 3.5 on 5-point scale)	# Responses	Proportion (%)	# Responses	Proportion (%)	# Responses	Proportion (%)
High Environmental Concern	72	62%	45	38%	117	100%
Low Environmental Concern	82	58%	59	42%	141	100%

Table 5.9 - Behaviour Frequency with Environmental Concern Response

It is also statistically observed through variance analysis between high and low levels of environmental concern of the survey participants and their choice behaviour thereof, that no significance difference on choice behaviour exists [$F(1,256) = 0.302$, $p = 0.583$] between respondents with high EC vs. those with low EC (see main effect plot in Figure 20 below)..

The Hypothesis HE1 is thus valid.
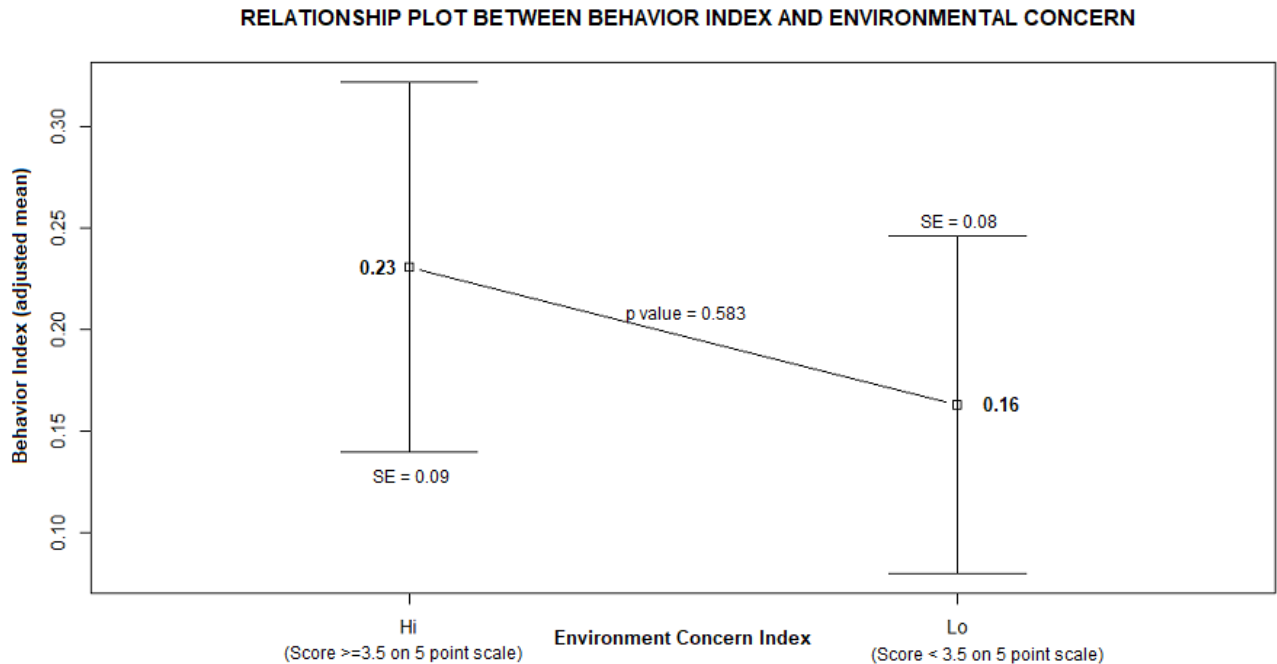
Figure 20: Main Effect Plot between Behaviour Index vs. Environmental Concern

5.2.2.7 Analysis of Relationship of Construal Level (BIF) on Choice Behaviour under Neutral condition

(HF1: The effect of Construal level as a moderator in neutral condition will have a significant difference on purchase behaviour (high level showing significant pro-environmental behaviour)).

Difference of 20% on BIF score between EV~NEV (8.64 vs. 7.16) is computed empirically as seen in the Table 5.10 below, indicating evidence of higher BIF score (construal level) leading to more PEB [$F(1, 163) = 22.57$, $p = 4.41 \times 10^{-6}$).

PEB ~ BIF Relationship under Neutral Condition

Price Index Category	# Responses (EV)	# Responses (NEV)	Total # of responses	% Responses (EV)
Hi	15	24	39	38%
Lo	64	51	115	56%
Med	4	7	11	36%
Total	83	82	165	50%
BIF Score	8.64	7.16		

Table 5.10 - Behaviour Response Frequency across Price Difference Levels with BIF Score

Further dissection of BIF Score under each behaviour category (EV vs. NEV) across various price difference levels is conducted empirically as shown below in Table 5.11. There appears to be a difference in average BIF Score for each price level, which is further tested for statistical significance.

Price Diff Index	BIF Score (EV)	BIF Score (NEV)	% Variance in BIF Score (EV) ~ BIF Score (NEV)	Mean BIF Score
Hi	8.53	6.7	27%	7.40
Lo	8.64	7.37	17%	8.07
Med	9	7.14	26%	7.81

Table 5.11 - Behaviour – Price Difference Index – BIF Score Matrix

Upon examination for statistical significance, it shows that for low price difference index, there is a significant difference in pro-environment behaviour choice between high construal (abstract) level participants and low construal (concrete) level [viz. BIF index (high vs. low)] [$F_{(1,159)} = 16$, $p = 9.66 \times 10^{-5}$], unlike in the other two price segments. For example, in the case of medium price difference category, the ANOVA results show [$F_{(1,159)} = 2.45$, $p = 0.12$]. Therefore, under neutral condition, the higher construal level (abstract mindset) does play a significant moderating role towards PEB, subject to a price point in the available choices (see graphical representation in Appendix A20).

5.2.2.8 Analysis of Relationship of Construal Level (BIF) on Choice Behaviour under Stimulated condition

(HF2: The effect of Construal level as a moderator in emotional condition will have a significant difference in behaviour for concrete mindset (low construal) as compared to abstract mindset (high construal))

A small difference of 3% on BIF score between EV~NEV (8.08 vs. 7.84) is computed empirically as seen in the Table 5.12 below, indicating evidence of less impact of BIF score (construal level) leading to more PEB under stimulated condition. It was further validated with the ANOVA model [$F_{(1, 91)} = 0.53$, $p = 0.466$]

PEB ~ BIF Relationship under Stimulated Condition

Price Difference Index	# Responses (EV)	# Responses (NEV)	Total # of Responses	% EV of Total
Hi	18	13	31	58%
Lo	31	0	31	100%
Med	22	9	31	71%
Total	71	22	93	76%
BIF Score	8.08	7.84		

Table 5.12 - Frequency Analysis of Responses on Choice Behaviour across various Price Levels

When computing BIF score across price indices, for the medium price index, there exists a difference (23% empirically), which needs to be tested for statistical significance. For low price index such computation of variance has not been possible, since all participants have chosen the EV product. Whereas for High price index, the BIF score has shown a reverse pattern, or in other words lower PEB is associated with Higher BIF score (refer Table 9.15 for data and Fig 25 for plots in Appendix A21).

There are two possible explanations for explaining the aberration, one is to do with the experimental design, and the other with the construct or measurement of construal level. Since the 'high-price' index product was shown as a coffee cup, with listings of primary and secondary features listed, the consumer perception of whether it is the coffee, or the packaging was mixed. Due to this possible confusion, participants resorted to the heuristic of choosing the product based on price, or previous habits. Secondly, for day-to-day consumable products like coffee, there might be other cognitive schemas, buying patterns and hedonic forces at play, that are better predictors of purchase behaviour than BIF. Additionally, the choice behaviour of low involvement (as per

the elaboration likelihood model of decision making (Bitner & Obermiller, 1985)) product may not have a significant relationship with BIF. This would be a case for further research.

Under stimulated condition, for medium price index, there appears to be some moderating effect of BIF score which necessitated statistical testing. In subsequent statistical analysis [$F_{(1, 87)} = 1.92$, p = 0.169], no such significance was could be established.

More importantly, there is a clear evidence of significant variance in behaviour towards pro-environmental by low construal level participants under stimulated condition [$F_{(1,254)} = 18.40$, $p = 2.54 \times 10^{-5}$]. Less variance (though statistically significant @$F_{(1,254)} = 6.55$, p=0.01) is observed for high construal level participants, presumably as they already showed a satisfactory level of pro-environmental behaviour under neutral condition due to their abstract construal mindset. [Mean Abstract Construal Level$_{neutral}$ = 0.21 and Mean Abstract Construal Level$_{emotion}$ = 0.56] (see Figure 21 below)
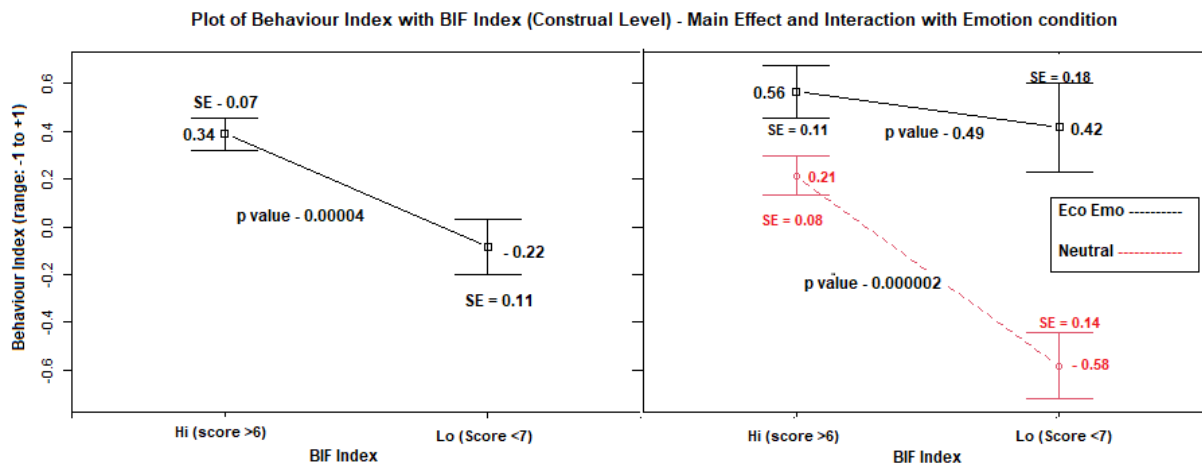
Figure 21: Main Effect and Interaction Plot of Construal Level with Emotion condition on behaviour

The Construal level, therefore, shows a significant moderation effect in the relationship between Eco-Emotion and Choice Behaviour under stimulated condition both for low as well as high construal level (though not as strongly as the low construal level) whereas in neutral condition, it does seem to play a role for high construal level people, subject to a tipping point in price level.

As such, under stimulated condition, there doesn't exist any significant difference of the behaviour by both high and low construal level respondents [$F_{(1,254)} = 0.47$, p = 0.49]; whereas

there is a significant difference between the two under neutral condition [$F_{(1,254)} = 24.08$, p value $= 1.65 \times 10^{-6}$].

Hypothesis HF1 (neutral condition) therefore stands valid with significant effect of higher construal level leading to more pro-environmental behaviour without emotional stimulus, subject to a price level consideration; whereas the hypothesis HF2 also stands valid showing the more pronounced effect of emotion on lower construal level towards pro-environmental behaviour.

5.2.2.9 Analysis of Locus of Control (as appraisal dimensions or antecedents) with Eco Emotion

(HG1: Internal LOC (Controllability and Responsibility) leads to higher arousal of Eco Emotion)

Descriptive statistics of LOC dimensions indicate that for higher intensity scores of 'Eco Emotion' the scores of each appraisal dimensions are higher than that for lower intensity scores of 'Eco Emotion', as shown in the figure 22 below.
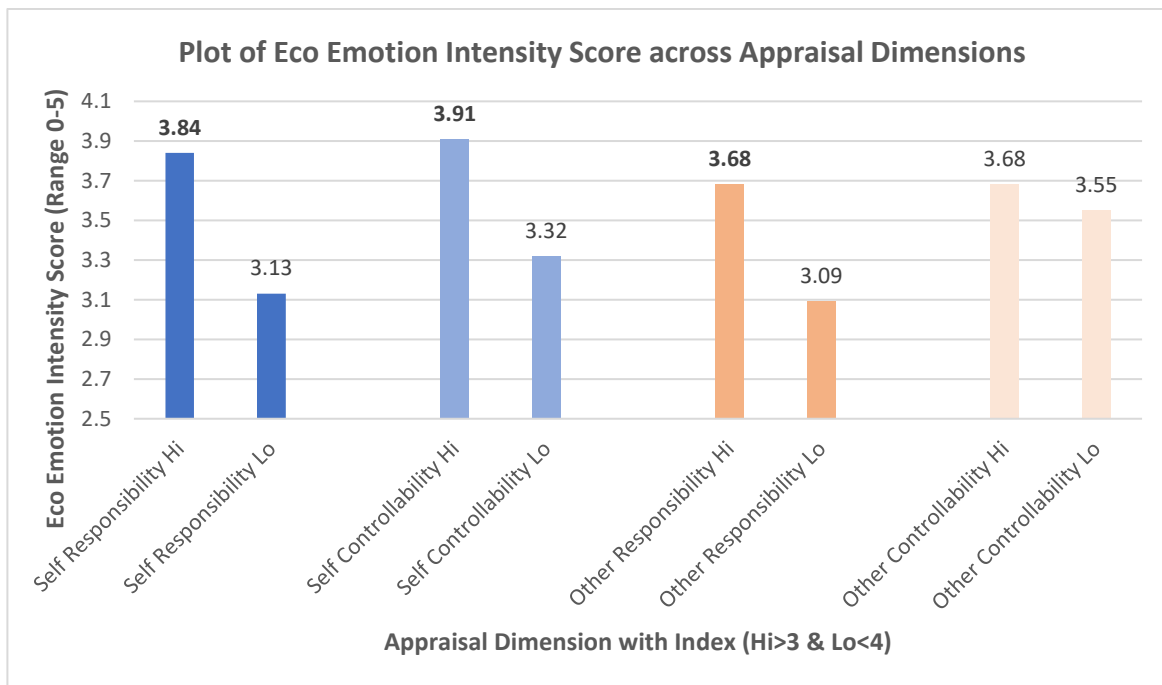
Figure 22: Histogram of Eco Emotion Intensity across Indexed Appraisal Dimensions

Testing for statistical significance, the observation related to higher scores of LOC dimensions leading to higher intensity of Eco Emotion (as antecedents) are validated by the p values (as shown in the Table 5.13 below):

LOC / Antecedent	Test of Significance (P-values: Eco-Emo)
Self-Responsibility	$F(1,91) = 12.72$, $p = 0.0006$
Self-Controllability	$F(1,91) = 9.56$, $p = 0.0026$
Other Responsibility	$F(1,91) = 3.88$, $p = 0.052$
Other Controllability	$F(1,91) = 0.41$, $p = 0.522$

Table 5.13 - Significance Locus of Control dimensions for elicitation of Eco-Emotions

There was high arousal of Eco-Emotion from High Self Responsibility and High Self Controllability scored participants, in comparison to low Self Responsibility and low Self Controllability scored participants respectively (see table 5.13 above).

When comparing the relationship of 'Other Responsibility' dimensions to arousal of 'Eco Emotion' we see that there is a marginal significance [$F (1, 91) = 3.88$, p-value = 0.052) between high and low scores of 'Eco Emotion' intensity. As referenced from a previous study, a high score on the 'Other Responsibility' dimension leads to blaming others, and leading to arousal of anger, attributed towards others.

Since the 'Eco Emotion' has been classified as a cluster of emotion, comprising of sadness, guilt on one hand related to internal LOC dimensions; and anger on the other hand related to external LOC dimensions, the intensity of 'Eco Emotion' in this study is positively impacted by the respective LOC dimensions. Or in other words, the internal LOC dimensions (Self responsibility and Self Controllability) has led to sadness and guilt in the 'Eco Emotion' while the external LOC dimension (Other Responsibility) has led to anger as the primary 'Eco Emotion' within the cluster.

On the other hand, Other Controllability failed to show any significant relationship with emotional arousal, thereby delinking this external LOC dimension as antecedent to Eco-Emotion.

It can hence be concluded that there exists is a significant antecedent relationship of high arousal of Eco-Emotion with internal LOC dimensions, whereas there also exists a moderate level of significance with Other Responsibility dimension (external LOC). It may be noted from previous

findings in this study that the intensity of Eco-Emotion however, does not lead to more PEB with any statistical significance. (refer Appendix A22 for statistical tables and plots).

The correlation coefficients are established among the antecedent dimensions (Appendix A23) and it is indeed found consistent with the foregoing analysis that the three dimensions, namely- self responsibility & self-controllability (internal LOC) are correlated while self-responsibility with other-responsibility is correlated. Other-controllability is not with any of these three dimensions.

The covariate analysis is performed (ANCOVA) among the internal LOC and external LOC dimensions to examine the interaction effects (refer Appendix A24) and the results are found as following:

➢ Self-responsibility has a positive impact on Eco-Emotion without any significant interaction effect of Self-Control

➢ Self-control has a positive impact on Eco-Emotion when Self Responsibility Index is high but a negative relationship when the Self Responsibility index is low, implying an interaction effect. The respondents seem to show more arousal based on their self-responsibility rather than self-control

➢ Other-responsibility has a significant relationship on Eco-Emotion, without any interaction effect from other-controllability

➢ There is no relationship of Other-controllability with Eco-Emotion

Hypothesis HG1 is validated.

Chapter 6

6 DISCUSSION

In this section I shall be outlining the discussion of results for each of the major findings, along with comments on limitations, future research and practical implications if any.

6.1 Attitude, Mixed Emotions, Appraisals and Choice Behaviour (Action tendencies)

One of the overarching goals of this study was to first validate the intention to action gap in attitudinal approaches to predict pro-environmental behaviour. This has been supported from the

experimental findings in this study wherein the Environmental Concern (measured through NEP score) failed to show any level of significance on its impact on pro-environmental behaviour, underlying the lack of substantive evidence of the inadequacy of rational theory and hence the important role of the emotion in such behaviour action, in particular.

Secondly the research attempted to go beyond the 'pleasure-arousal framework' to understand the role of mixed emotions and showcase the impact of favorable choice behaviour from a guilt-laden anger and sadness.

Additionally, this study attempted to measure precursor elements of such emotions that could potentially be useful in unlocking the predictions of emotions in a variety of social media marketing activities. While both 'pleasure-arousal framework' and appraisal approaches indicate arousal as a primary characteristic of emotions, in this study I identify a combination of self- and other-agency as a secondary means that controls the level of arousal of a specific mixed emotion set, which ultimately determine the purchase choice (action tendency) .

Conventionally 'valence-based models' of emotion predicted that negative emotions elicit global devaluation of what one perceives. However, it is observed that the results as postulated in HA1 (effect of integrally induced guilt laden sadness and anger on subsequent purchase choice preference / behaviour) showed that negatively valanced emotions showed favorable purchase behaviour towards eco-friendly products (higher priced option). The findings imply that emotions in the context of pro-environmental behaviour are more complex and will have varied action tendencies that cannot be simply explained through unidimensional measures like intention or valence of an attitude. Other dimensions like outcome desirability, certainty and 'agency and controllability' (the chosen appraisals for testing in this study) will shed further light towards individual differences in purchase choice behaviour.

Accordingly, with respect to hypothesis HG1 (Effect of agency and controllability <locus of control>), based on adopted simplified version of the cognitive appraisal theory (see figure 7), when individuals attribute higher external locus of control in a specific decision context, anger is likely to be elicited. This was verified in the pilot study when participants were asked to comment on what they felt anger or sadness about (refer Table 4.4 in the section 4.13.3). The appraisal account would also explain loss/helplessness or transgression of a moral code by the self, leading

to elicitation of sadness and guilt. This in turn would lead to the action tendency of paying for the higher priced option as an adaptive or coping mechanism from the negative emotions.

One of the challenges with the appraisal theory for elicitation of a mixed set of emotions was that the underlying appraisals of a situation could be ambiguous, making felt emotions unclear or mixed. In defense, the appraisal theorists suggests that people can experience more than one emotion in response to a particular event (Ruth et al., 2002; Scherer & Ceschi, 1997; Sullivan & Strongman, 2003). Most studies suggest that a dominant emotion occurs along with other less prominent emotions. The same occurred in my experiment as well, with sadness, anger and guilt being the most dominant emotions. Different methods have been used to capture this effect, with some studies asking participants to recall a past event where they felt one specific emotion and others asking about a collection of emotional responses to a particular scenario or event. The peak-end rule suggests that the strongest emotion and/or the last emotion felt during the critical incident will be the best remembered. Although this could hold internal validity, emotion induction in the real world, particularly in the context of browsing through the web or social media is complicated and is bound to have a lot more variability.

Future Research:

(a) Advancement of appraisal theories: Most research based on appraisal frameworks focused on single appraisal dimensions (e.g. uncertainty). In this study, I initially attempted to study prototypical environmental emotions of anger, disgust, sadness and guilt across two different dimensions (agency and controllability). However, due to the nature of the directedness or aboutness of the stimuli of environmental degradation, pure or isolated emotions were challenging to elicit.

Most emotions are best characterized by a combination of appraisals. Particularly a cluster of eco related emotions would be best encapsulated by combination of appraisals.

This is what differentiates them from other emotions. Because of this 'combination of appraisals' characteristic, it is important to study the interactions among emotional appraisals. Yet, there are hardly any studies that develop 'interaction' driven theorizing to explain the effects of 'eco- emotions (eco-anxiety', 'eco-grief', 'eco-guilt' and

'sostalgia' etc.) and examine how those emotions lead to differences in judgments and behaviour in a given context (e.g., digital advertising context in social media).

➢ <u>Practical Implications:</u> The practical implication or the aim of the research was with the question on whether marketers / advertisers can engineer ads such that, they directly trigger the desired behaviour based on the integral emotion that the ad evokes, particularly in a digital marketing (where behavioural analytics or factors driving behaviour have been attempted to be captured through clicks, shares, user-generated comments, likes and time spent on the media and the website etc.). The challenge for future advertising research is to creatively match cognitive appraisals and corresponding action tendencies to relevant behavioural advertising outcomes. Additionally neurophysiological measures like pupil dilation, skin conductance and fMRI's could be used to validate emotional activity and further gain understanding on the interplay of cognition and emotion.

➢ <u>Green consumer segmentation</u>: Previous research has suggested that traditional market segmentation may not be adequate for green marketing practices. For example, Straughan & Roberts, (1999) found that environmental segmentation alternatives are more stable than demographics and psychographic profiles of consumers. Similarly, Do Paco & Raposo, (2009) noted that selecting the appropriate segmentation base or criteria can be challenging as many segments are not observable in the marketplace in their original forms. To more effectively segment green consumers, variables beyond demographic and socioeconomic factors, and attitudinal preferences such as environmental concern, perceived behavioural control, environmental knowledge, environmental affect, environmental commitment, ecological consciousness, subjective norms, activism, information search, and previous pro-environmental purchases should be used, particularly in the social media marketing domain, and in the metaverse domain, where measurements of emotions through physiological or behavioural attributes of online consumers could be measured more accurately. In such contexts, the hybrid model 'embodied appraisal theory of emotions' by Jesse Prinz (J. J. Prinz, 2004)

could be put to test for empirical evidence in the online marketing and advertising domain.

Additionally, "feelings" of certainty, locus of control could be measured separately, to validate the strength of appraisal dimensions

Coping strategies based on Appraisals:

Richard Lazarus, (1991) proposed that emotion regulation is the result of cognitive appraisals that individuals make about a situation, including the significance and the coping potential of that situation. The theory suggests that individuals engage in problem-focused or emotion-focused coping strategies to regulate their emotions, depending on their appraisal of the situation.

The coping strategies (Folkman & Lazarus, 1988a), argue that people adapt to the negative emotion in one of two ways:

1. Problem-focused coping, as described by Folkman & Lazarus, (1988), refers to efforts aimed at managing or changing the source of a stressful situation. In the context of experiencing negative emotions from an ad and purchasing a product, problem-focused coping would involve taking action to address the root cause of the negative emotions.

2. Emotion-focused coping refers to a scenario where the individual takes actions to minimize the negative emotions by changing their thoughts about the decision. This could include avoiding the decision, letting someone else make the decision, choosing the status quo option, or avoiding the distressing aspects of the decision. (Anderson, 2003; Luce, 1998).

For example, if someone is experiencing negative emotions from an ad for a weight loss product, they may engage in problem-focused coping by researching the effectiveness of the product, seeking out reviews from other customers, and evaluating the scientific evidence supporting the product's claims. They may also consider alternative weight loss strategies, such as changing their diet or increasing their exercise routine, as a way to address their weight concerns. Such actions could be beneficial when creating persona's for a brand and strategically engage the consumer in respective online activities with the brand.

In the pro-environmental context, they engage in similar activities of changing their buying habits.

By taking a problem-focused approach, individuals can gain a sense of control over the situation and feel more empowered to make informed decisions that align with their values and goals.

As described in the "the psychology of appraisals paper" (So et al., 2015), " According to Duhachek et al., (2012), individuals who experience feelings of guilt are more likely to utilize problem-focused coping strategies, which involve taking direct action to manage the source of stress. This is because guilt is associated with high self-efficacy appraisals, meaning that individuals with this emotion tend to believe that they are capable of fixing the problem. In contrast, individuals who experience feelings of shame are more likely to employ emotion-focused coping strategies, which involve regulating emotional responses to stress, such as trying to forget about it or expressing negative emotions. This is because shame is associated with low self-efficacy appraisals, meaning that individuals with this emotion tend to believe that they are unable to solve the problem."

In the future, research could extend the current study for validation of the self-efficacy appraisal for pro-environmental consumers across various product categories, in addition to agency and controllability appraisals, to test the 'coping strategy' theory.

The cognitive appraisal theory provides an opportunity to enhance our understanding of how emotions affect consumer decision-making. However, the application and development of this theory in consumer research is still in its infancy. Prior to constructing a comprehensive theory on how appraisals and emotions influence consumer behaviour, marketers need to agree on which event characteristics are crucial to appraise in consumer contexts. This research aims to facilitate this agreement and encourage progress towards a more comprehensive evaluation of how emotions and appraisals impact consumer behaviour.

6.2 Construal level

The effect of construal level towards pro-environmental purchase behaviour has been found to be quite significant with the abstract mindset people (high construal level) without any emotional stimulus, showing a distinct preference for such behaviour with their apparent focus on towards thinking through over a longer time frame ecological impact. In the context of persuasive technique to adopt for concrete mindset people (low construal level), the role of emotion is found to play significant role through the process of arousal and consequent embodied appraisals in switching

to desired pro-environmental behaviour. The emotion does play a significant role on abstract mindset people too (though to a lesser extent compared to concrete mindset) towards the conversion of behaviour towards pro-environmental, thereby underlying the importance of stimuli or ad content traits, that would elicit certain emotions for the desired marketing outcome. The stimulus (both text and imagery or video) will be of critical importance for the advertising professionals in getting the maximum traction on green purchase behaviour.

Limitations: In my experiment, the within group study for both experimental conditions (emotion and neutral) under two construal level categories was not conducted to make more conclusive claim on the above findings.

Future Research: Another extension of the within group study could be for exploring the interactive relationship of construal level category and the product-price differentials on the choice behaviour to understand the implication of pricing as an input to the marketeers.

6.3 Pricing

Green Product pricing is a sensitive variable for the intended behaviour switch and hence needs a careful positioning strategy in the target market (to illustrate, in this study, the laundry detergent, an utilitarian product, shows a high conversion of 56% under neutral condition and 100% under stimulated condition). Test marketing for launch of green product pricing would be a must-do exercise to succeed. The behaviour for the two price differential points (low and medium) did show significant change towards pro-environmental behaviour under the influence of an emotional stimulus. The role of emotion is, therefore, established again, subject to a price differential caveat. It is of interest to note that appropriate messaging in the context of eco-environmental factors using the digital interface in today's world may possibly reduce the impact of price differential resistance as seen in this study with the T-shirt category (27% price differential) that showed a significant change in pro-environmental behaviour (almost two fold increase with a p value less than 0.05).

Limitations: The fact that price level and product category were not independently varied in the current experimental design, could result in these factors being confounded (even though it simulates in realistic market settings where coffees have much lower price points than t-shirts for instance). Due to the inadequacy of acquiring larger samples from the target population limited by the time and resource constraints, wider design in isolating the confounding variables (such as

different products at the same price difference level, say both coffee and T shirt with 27% price difference level; and thereby isolating the price difference factor from the confound), the findings from this study would remain of exploratory nature, but directional, at the best.

Future research: Such study could be extrapolated to study the effect of different price levels for the same product (i.e. T shirt in this study with price difference levels of 15% , 27% and 40% [say]) with all other conditions remaining same to understand the critical price level at which the product could be accepted for a switch over to PEB.

Also, products have their own schemas, in addition to the hedonic vs utilitarian nature. Product design, packaging and branding factors have been controlled in this experiment, however those remain as dominant factors, when it comes to purchase behaviour over a period of time.

Another area of future research could also use a free form willingness to pay (WTP) elicitation mechanism (such as the BDM mechanism (see section 4.1.1), instead of a discrete choice framework) to estimate participant's WTP for eco-friendly products.

Chapter 7

7 CONCLUDING REMARKS

In the ambit of pro-environmental behaviour, action tendency arising from a single discrete emotion is often improbable. Instead, it is usually a cluster of emotions which come into play in determining the pro-environmental behaviour. In this study, such cluster is formulated with sadness, anger and guilt as dominant emotions, and termed as Eco-Emotions, the effect of which is studied on choice behaviour between an environmentally friendly option and a non-environment friendly option (e.g. Pro-Environmental Behaviour).

The presence of stimuli – integrally induced Eco-Emotions, appears to have a significant impact on the PEB in comparison with behaviour in absence of such stimuli.

However, the intensity of such emotion did not show any significant variance in action tendency towards pro-environmental behaviour.

This study also found out an important caveat with respect to the effect of Eco-Emotions stimuli on PEB, related to price difference between an environmentally friendly option and a non-

environment friendly option. Based on the three levels of price differences as kept in the study and the findings thereof, it is concluded that the elicitation of Eco-Emotion, (and not so much the intensity) induces the choice behaviour towards the eco-friendly product, duly moderated by the price/product considerations. This underlies the importance of presence of stimuli (Eco-Emotion), duly subjugated with a pricing consideration to which the respondents are willing to change towards a PEB.

Further it is also found that the risk-taking propensity (as an internal characteristic of an individual) has a positive correlation with Pro-Environmental Behaviour (PEB) – "higher the Risk-Taking Propensity, higher the Willingness to Pay (WTP)".

Consistent with the hypothesis as formulated, the 'intention-to-action' gap is significant, with greater environmental concerns (as stated in attitudinal survey) not converting to actual purchase choice behaviour.

The construal level, as a moderating variable, appears to have some level of significance in its relationship with behaviour. At the abstract construal level in the absence of any emotion stimuli, the study points a greater PEB as compared to that at the concrete construal level, subject to a tipping point in price difference level between the environmental friendly option and a non-environment friendly option. However, under the influence of Eco-Emotions stimuli, the study fails to show any significant moderation in the relationship between Construal Level and Choice Behaviour (possibly the arousal effect dominates over construal level).

The impact of Locus of Control (LOC), limited to only agency and controllability dimensions in this study, revealed that Internal LOC beliefs (e.g. Self-Responsibility and Self-Controllability) leads (as antecedents) to higher arousal of Eco-Emotions, the presence of which leads to more PEB as already established in this paper.

The findings as above have considerable implications on the marketing and communication related to environmentally sustainable products (Green Marketing) in the areas of product design and its attributes, market segmentation and positioning, pricing strategy, content creation for advertising and messaging to the target audience, media selection and customer conversion roadmap.

The interdisciplinary approach in this study, drawing from the fields of psychology, economics, marketing and advertising with consequent findings showing meaningful correlation can be used as a lead for further research in this important domain of environment and sustainability.

There have, however, been some limitations to the conduct and findings of this study as enumerated below:

1) Demarcation of Integral and Incidental emotions:
   - One of the limitations of the design of study has been about the linkage of the elements in the video clips as purely integral or incidental. Although the design and study intent were to understand the effect of integral emotions (for example from the clip of 'turning point' there are scenes (screenshots shown below) that showcase the ill-effects of non-recyclable packaging from consumable products like bottles, cups, and other plastic containers or non-biodegradable features of products such as toxic effluents and harmful waste that endangers health and environment), which would be potentially linked to the purchase choices like choosing the recyclable coffee cup brand, or biodegradable laundry detergent preventing pollution into the water streams through toxic chemicals. The study was designed in line with several existing ads, which try to communicate the brand ethos through emotions, (one such example being '2014 chevy commercial' 2014 Chevy Commercial - Maddie - YouTube) and not about a specific product line.

- As most of the contemporary ads have the product shown clearly at some point in the video, unlike the video clips administered in my study; a case could be made that the stimulus and choice combination in my experiment is not purely integral.

- One of the future changes for such an experiment would be to show the lifecycle of the specific product such as coffee cup, detergent or T-shirt making it into the waste streams or degradation of the environment, and then showing them the respective product options to choose from, in order to solidify the integral nature of the emotion and decision at hand.

2) Pricing and Product Category:

- As described in section 6.3, in order to gauge a more accurate sense of Willingness To Pay (WTP) for both the treatment and control conditions, a single product with different price interval choices can be provided to measure the extent of WTP between the two conditions.

- Additionally, to account for the effects from the type of product (hedonic and utilitarian), future studies would need to incorporate in-lab studies, where the participants could see, touch, smell or feel the products to make them more salient in terms of being hedonic or utilitarian.

- Further, in an attempt to isolate the confounding variables of product category and pricing while examining the effect of product category in choice behaviour between an

environmental friendly option vis-à-vis a standard product, in view of the design limitation in the current experiment; it is imperative to assign a **fixed percentage price difference** between the two choices across product category under both the experimental conditions (i.e. emotion and neutral conditions). This can be represented in a tabular form as shown below.

Product Category	Price Difference	
	Emotion Condition	Neutral Condition
Hedonic	x percent	x percent
Semi-Hedonic / Semi-Utilitarian	x percent	x percent
Utilitarian	x percent	x percent

Table 6.1 – Schematic Layout of the Experimental Design for Pricing Study across Product Category ('x percent' represents fixed identical price difference)

3) Causal link between Emotion or the Content of the Video leading to 'Choice Behavior':

Lastly, the causal linkage between the integral emotion and the choice behavior could be further strengthened by the following changes or revisions in the experiment:

- Introduce a second treatment condition, which is not emotionally charged, and is more informative or documentary (with data, stats and facts, and not as much emotionally charged) based, (e.g. https://youtu.be/ju_2NuK5O-E) describing the effects of plastic pollution in the oceans; and then conduct a between-group analysis between the emotionally charged video and this documentary video. This would validate if the emotion indeed is the contributing factor for purchase choice. Although, in the context of environmental stimulus, the informational content and emotions are often synergistic.

- For the neutral condition video, include 'neutral' environmental aspects such as national parks, wildlife and nature related scenes, in order to be congruent with the treatment condition and maintain the integral emotion factor between both the neutral and stimulus conditions.

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9 APPENDICES

Appendix A1: Sample Size Statistics

Stimulus	COFFEE		DETERGENT		T SHIRT		Control Group		Sub-Total Count	
	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual
Experimental Group (Eco-Emotion)	30	31	30	31	30	31			90	93
Control Group (Neutral Stimuli)	20	39	20	115	20	11	60	165	30	165
Total	**50**	**70**	**50**	**146**	**50**	**42**			**150**	**258**

Table A1 - Survey Response Statistics (Target vs Actual)

Appendix A2: Invitation/Recruitment Message

INVITATION

PARTICIPATE IN A SURVEY ON ECONOMIC DECISION MAKING IN CONSUMER BEHAVIOUR

AND GET A CHANCE TO **WIN A GIFT COUPON** (BETWEEN 5 $ - 25 $) WITH A PROBABILITY OF 1 IN 20.

IT IS **VOLUNTARY** AND CONDUCTED IN CONFORMITY WITH ETHICS BOARD GUIDELINES OF YORK UNIVERSITY. IN SUPPORT OF A **MASTER'S DEGREE THESIS** WORK.

TOGETHER WITH A CHANCE TO WIN A GIFT CARD, YOU ALSO HAVE THE **OPPORTUNITY TO GAIN EXPERIENTIAL LEARNING** IN YOUR FIELD OF STUDY.

YOUR INVESTMENT WILL BE **ABOUT 15 MINUTES** SPLIT IN TWO PARTS.

THANK YOU FOR YOUR INTEREST, PARTICIPATION AND **VALUABLE RESPONSE**.

Appendix A3: Choice Behaviour Survey Questionnaire (Part 1)

Choice Experiment Part1

Start of Block: Block 3

X→

Consent Form **Study Name:** Consumer Decision Making
Researcher and Principal Investigator name: Rahul Bose
Program: M.A. in Interdisciplinary Studies – York University
Contact Details – rbose92@yorku.ca

Purpose of the Research:
Our research is aimed at understanding choice behaviour for consumer products within an allotted time to test the drivers of economic decision making.
The research will be conducted on an online platform using 'Qualtrics survey tool'.

What You Will Be Asked to Do in the Research:
The survey will consist of two parts. The first part will elicit your response related to various personality traits. Additionally, you will be requested to provide your demographic information. Your contact email id will also be solicited for the researcher so we can contact you in one week for the second part of the survey and finally for potential reward distribution. The Second Part will entail the display of a short video clip (about 3 -5 minutes) and consequent feedback about the video followed by hypothetical purchase choices from a given set of options. Both parts of the survey are self-administered. The total duration for the survey (both parts combined) is expected not to exceed 15 minutes.
The entire survey will be conducted on Qualtrics survey tool (an online platform, through the Psychology department, YorkU server), maintaining privacy and confidentiality of the data collected. The email id you provide will only be used for continuity of the experiment, between the pre-test and main survey (that are separated within one week of time) and for contacting the participant after the end of the study, for sending the e-gift cards (for those who get selected in the draw). Anonymity will be strictly maintained, as the only data related to the individual participant is the provided email ID. Participants are free to use their main or alternate email IDs, but they should remember this email ID will be used to notify the participant of the second part of the survey after one week's time.
Participants will be endowed with an initial virtual fund at the beginning of second part of the survey. Hypothetical purchase decisions in the second part of the survey will entitle participants to virtual rewards which have a chance to being converted to a real reward afterward. Upon completing both parts of the survey, participants will be eligible to win gift cards proportionate to their virtual rewards based on a draw (Ranging from 5-25), with a probability of 1 in 20 (or better).

Risks and Discomforts:
We do not foresee any risks or discomfort from your participation in the research, as the survey is only of very short duration and divided into two parts separated by a week. Participants are free to stop participation at any time.

Benefits of the Research and Benefits to You:
In return for your participation of time (total of about 10-15 mins), you will have a chance to get rewards (gift cards) through a lottery draw as described above. Also, your participation provides you with an experiential learning opportunity to gain first-hand knowledge of research that is conducted in your field of study, to supplement your current program of study at YorkU.

Voluntary Participation and Withdrawal: Your participation in the study is completely voluntary and you may choose to stop participating at any time. Your decision not to volunteer, to stop participating, or to refuse to answer particular questions will not influence the nature of the ongoing relationship you may have with the researchers or study staff, or the nature of your relationship with York University either now, or in the future.
While watching the video clips (3 -5 mins), in case of any feeling of inconvenience or discomfort, you are free to withdraw from the survey without any implications.
If you decide to stop participating, you may withdraw without penalty, financial or otherwise, but you will not be eligible to receive the gift card lottery draw.In the event you withdraw from the study, all associated data collected will be immediately destroyed wherever possible.

Confidentiality:
Your data will be safely stored in a locked facility and only the researcher will have access to this information. The experiment will be conducted on Qualtrics (within the YorkU server). The collected data will be coded with a randomized generated participant number, and the associated data from questionnaires and testing will be safely stored on password protected computers and only research staff will have access to this information. Thus, all information will be held in confidence, The email ID you provide will not appear in any report or publication of the research and it will not be stored in the data-repository. All data will be kept under password protection in a secured server of YorkU, with no planned destruction data (since the data will be anonymous and will be used for your future research since this is the first stage of a longer research agenda).
Confidentiality will be provided to the fullest extent possible by law.
The email ID you provide will only be used for continuity of the experiment, between the pre-test and main survey (that are separated within one week of time) and for contacting the participants after the end of the study, for sending them the e-gift cards (for those who get selected in the draw). Since the email addresses will be collected by Qualtrics during the pre-test survey, they will be temporarily stored with the pre-test answers and respective alpha-numeric codes. Once all data has been collected at the end of the summer, the email field will be removed from the pre-test data that was collected and it will be stored separately for proof of payment purposes. At no time will participant names be collected in order to ensure anonymity. The data collected in this research project may be used – in an anonymized form - by members of the research team in subsequent research investigations exploring similar lines of inquiry. Such projects will still undergo ethics review by the HPRC, our institutional REB. Any secondary use of anonymized data by the research team will be treated with the same degree of confidentiality and anonymity as in the original research project.
The researcher acknowledges that the host of the online survey (Qualtrics) may automatically collect participant data without their knowledge (i.e., IP addresses). Although this information may be provided or made accessible to the researchers, it will not be used or saved without participant's consent on the researcher's system. Further, because this project employs e-based collection techniques, data may be subject to access by third parties as a result of various security legislation now in place in many countries and thus the confidentiality and privacy of data cannot be guaranteed during web-based transmission.

Questions About the Research? If you have questions about the research in general or about your role in the study, please feel free to contact me at rbose92@yorku.ca or my supervisor, Vinod Goel at vgoel@yorku.ca and/or

Neil Buckley at nbuckley@yorku.ca

This research has received ethics review and approval by the Delegated Ethics Review Committee, which is delegated authority to review research ethics protocols by the Human Participants Review Sub-Committee, York University's Ethics Review Board, and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions about this process, or about your rights as a participant in the study, please contact the Sr. Manager & Policy Advisor for the Office of Research Ethics, 5th Floor, Kaneff Tower, York University (telephone 416-736-5914 or e-mail ore@yorku.ca).

Online Consent:

By clicking below I acknowledge my consent to participate in this study conducted by Rahul Bose of York University (MA IS program 2019-2021). I have understood the nature of this project and wish to participate. I am not waiving any of my legal rights but clicking on the submit button below indicates my consent.

   ◯   I consent (0)

Email Id Please enter your email id (This will be used to contact you within a week for part2 of the survey)

_____

Demographics Please select the age group you fall in

   ◯   Below 18 (1)

   ◯   18-25 (2)

   ◯   26-35 (3)

   ◯   Above 35 (4)

Gender Please select your gender

○ Male (1)

○ Female (2)

○ Non-binary / third gender (3)

○ Other (4)

Page Break ───

EC For each one, please indicate your preferred response. Be sure to respond each item.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1. We are approaching the limit of the number of people the earth can support (1)	○	○	○	○	○
2. Humans have the right to modify the natural environment to suit their needs (2)	○	○	○	○	○
3. When humans interfere with nature it often produces disastrous consequences (3)	○	○	○	○	○
4. Human ingenuity will insure that we do NOT make the earth unlivable (4)	○	○	○	○	○
5. Humans are severely abusing the environment (5)	○	○	○	○	○

6. The earth has plenty of natural resources if we just learn how to develop them (6)

○　　　○　　　○　　　○　　　○

7. Plants and animals have as much right as humans to exist (7)

○　　　○　　　○　　　○　　　○

8. The balance of nature is strong enough to cope with the impacts of modern industrial nations (8)

○　　　○　　　○　　　○　　　○

9. Despite our special abilities humans are still subject to the laws of nature (9)

○　　　○　　　○　　　○　　　○

10. The so-called "ecological crisis" facing humankind has been greatly exaggerated (10)

○　　　○　　　○　　　○　　　○

11. The earth is like a spaceship with very limited room and resources (11)

○　　　○　　　○　　　○　　　○

12. Humans were meant to rule over the rest of nature (12)	○	○	○	○	○
13. The balance of nature is very delicate and easily upset (13)	○	○	○	○	○
14. Humans will eventually learn enough about how nature works to be able to control it (14)	○	○	○	○	○
15. If things continue on their present course, we will soon experience a major ecological catastrophe (15)	○	○	○	○	○

Rk Please tick on the scale, where the value 0 means: 'not at all willing to take risks' and the value 10 means 'very willing to take risks'

How do you see yourself : are you generally a person who is fully prepared to take risks or do you avoid taking risks?

	0 1 2 3 4 5 6 7 8 9 10
1 ()	▬▬▬▬▬▬▬▮▬▬▬▬▬

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RD Please answer the following question to the best of your ability

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
	1	2	3	4	5
Even people who do not work should have guaranteed their access to health care ()			●		
I like living lightly (in a minimalistic fashion) ()			●		
At work, boss should treat his/her subordinate fellows like his/her equals ()			●		
I do not buy a new phone if my old phone functions ()			●		
Natural resources should be equitably distributed ()			●		

End of Block: Demographics

Start of Block: BIF

BIF questionnaire Your task is to choose the identification, a or b, that best describes the behaviour for you. Simply place a checkmark next to the option you prefer. Be sure to respond to every item. Please mark only one alternative for each pair. Remember, mark the description that you personally believe is more appropriate for each pair.

- -

X→

Q1 Making a list

    ○   Getting Organized (1)

    ○   Writing things down (0)

    X→

Q2 Reading

    ○   Following lines of print (0)

    ○   Gaining Knowledge (1)

    X→

Q3 Cleaning the house

    ○   Showing one's cleanliness (1)

    ○   Vacuuming the floor (0)

    X→

Q4 Caring for houseplants

    ○   Watching plants (0)

    ○   Making the room look nice (1)

    X→

Q5 Filling out a personality test

○ Answering questions (0)

○ Revealing what you're like (1)

X→

Q6 Taking a test

○ Answering questions (0)

○ Showing one's knowledge (1)

X→

Q7 Greeting someone

○ Saying hello (0)

○ Showing friendliness (1)

X→

Q8 Voting

○ Influencing the election (1)

○ Marking a ballot (0)

X→

Q9 Resisting Temptation

○   Saying "no" (0)

○   Showing moral courage (1)

X→

Q10 Eating

○   Getting nutrition (1)

○   Chewing and Swallowing (0)

X→

Q11 Talking to a child

○   Teaching a child something (1)

○   Using simple words (0)

X→

Q12 Pushing a doorbell

○   Moving a finger (0)

○   Seeing if someone's home (1)

End of Block: BIF

Appendix A4: Informed Consent Form - Ethics

Research Ethics

The protocol for research ethics of this experimental study was conducted in line with York University Graduate Student Thesis guidelines. The research involving human participants was classified under minimal risk as outlined in the SSHRC/NSERC/CIHR Tri-Council Policy Statement (TCPS) "Ethical conduct for research involving humans" (December 2014): "If potential subjects can reasonably be expected to regard the probability and magnitude of possible harms implied by the participation in the research to be no greater than those encountered by the subject in those aspects of his or her everyday life that relate to the research, then the research could be regarded as within the range of minimal risk" (p 1.5).

All potential participants of the experiment got reliable information about the experiment and the character of the task needed to be performed (see Appendix A for the example of the mail text). Participants could freely register and choose the date and time that suited them the most. All test subjects were informed that they could stop the experiment whenever they wanted in line with the first guideline on the right of autonomy and self-determination.

Emotional Risk - The kind of emotions elicited would include sadness, anger or disgust arising transiently for studying the influence of such emotions on purchase behaviour. Therefore, these were not likely to have any permanent or long-term prejudice or impact. However, the participant was allowed to abort / quit the study at any time if felt uncomfortable. Such participants leaving the survey incomplete would not be eligible for the lottery draw.

No audio / video / photographic recording was undertaken at any stage during the survey with human participants.

The detail procedure is narrated later in this appendix and survey questionnaire are included in Appendix A6 and A11. Once they accepted the invitation to participate through an advertised link, each participant was presented with the general description of the study, the time requirements, what the participant would be asked to do, how the participants would be compensated, the fact that the participant could withdraw from the study at any time, and how participants could learn more about the results coming out of the study (see the included consent form below). Participants

were informed that the principal investigator can be contacted via email or a zoom call for answering any questions. Once the individual had read the e-consent form, and any questions answered, the individual would be asked if they would like to e-sign the consent form. Upon signing the consent form the individual can then participate in the experiment. Each session included just the individual participant since the experiment was not interactive and was simply a controlled survey. The details of the experimental procedures, the choices the participants must make, and information about the rewards were described on their respective devices for each participant. At the conclusion of the experiment, the participant was thanked for his/her time. Upon full recruitment and reward processing thereof, subsequent contacts were made with the winners of the draw for their payoff in distribution of gift cards, if they happened to be chosen as one of the draw winners for their payoff. The detailed outline for the methodology is attached as a separate document titled 'outline methodology ethics' (appended in this appendix).

Informed Consent Form

Date:

Study Name: Consumer Decision Making

Researcher and Principal Investigator name: Rahul Bose
Program: M.A. in Interdisciplinary Studies – York University
Contact Details – rbose92@yorku.ca

Purpose of the Research:
> Our research is aimed in understanding choice behavior for consumer products within an allotted time to test the drivers of economic decision making.
> The research will be conducted on an online platform using 'Qualtrics survey tool'.

What You Will Be Asked to Do in the Research:

The survey will consist of two parts. The first part will elicit your response for twenty questions related to various personality traits. Additionally, you will be requested to provide your demographic information. Your contact email id will also be solicited for the researcher so we can contact you in one week for the second part of the survey and finally for potential reward distribution. The Second Part will entail the display of a short video clip (about 1-3 minutes) and consequent feedback about the video followed by hypothetical purchase choices from a given set of options. Both parts of the survey are self-administered. The total duration for the survey (both parts combine) is expected not to exceed 15 minutes.
The entire survey will be conducted on Qualtrics survey tool (an online platform, through the Psychology department, YorkU server), maintaining privacy and confidentiality of the data collected. The email id you provide will **only be used** for continuity of the experiment, between the pre-test and main survey (that are separated by 1 week of time) and for contacting the participant after the end of the study, for sending the e-gift cards (for those who get selected in the draw). Anonymity will be strictly maintained, as the only data related to the individual participant is the provided email ID. Participants are free to use their main or alternate email IDs, but they should remember this email ID will be used to notify the participant of the second part of the survey after one week's time.

Participants will be endowed with an initial virtual fund at the beginning of second part of the survey. Hypothetical purchase decisions in the second part of the survey will entitle participants to virtual rewards which have a chance to being convert to a real reward afterward. Upon completing both parts of the survey, participants will be eligible to win gift cards proportionate to their virtual rewards based on a draw (Ranging from 5-25), with a probability of 1 in 20 (or better).

Risks and Discomforts:

We do not foresee any risks or discomfort from your participation in the research, as the survey is only of very short duration and divided into two parts separated by a week. Participants are free to stop participation at any time.

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In return for your participation of time (total of about 10-15 mins), you will have a chance to get rewards (gift cards) through a lottery draw as described above. Also, your participation provides you with an experiential learning opportunity to gain first-hand knowledge of research that is conducted in your field of study, to supplement your current program of study at YorkU.

1

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While watching the video clips (1-3 mins), in case of any feeling of inconvenience or discomfort, you are free to withdraw from the survey without any implications.

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All data will be kept under password protection in a secured server of YorkU, with no planned destruction data (since the data will be anonymous and will be used for your future research since this is the first stage of a longer research agenda).

Confidentiality will be provided to the fullest extent possible by law.

The email ID you provide will only be used for continuity of the experiment, between the pre-test and main survey (that are separated by 1 week of time) and for contacting the participants after the end of the study, for sending them the e-gift cards (for those who get selected in the draw). Since the email addresses will be collected by Qualtrics during the pre-test survey, they will be temporarily stored with the pre-test answers and respective alpha-numeric codes. Once all data has been collected at the end of the summer, the email field will be removed from the pre-test data that was collected and it will be stored separately for proof of payment purposes. At no time will participant names be collected in order to ensure anonymity.

The data collected in this research project may be used – in an anonymized form - by members of the research team in subsequent research investigations exploring similar lines of inquiry. Such projects will still undergo ethics review by the HPRC, our institutional REB. Any secondary use of anonymized data by the research team will be treated with the same degree of confidentiality and anonymity as in the original research project.

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2

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Online Consent:

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Outline for methodology

The sample population will be divided into a control and experimental groups. The control group will follow the same sequence of events, except that they will exposed to neutral stimuli (elicited through a one minute video clip) . An example of such a video would be –
[https://www.youtube.com/watch?v=7S7smPw9EiE]

Once participants click on the 'consent' button on the initial survey page to give their consent, Qualtrics will be programmed to show them the three 'pre-test' standard surveys (outside of asking participants some basic demographic questions about their age, gender and income level) listed below, one at a time before they participate in the second part of the main survey.

The sequence of events are as follows:

1. Participants will be pre-tested with three pre-existing standard surveys (outside of some basic demographic information such as age, gender, see below) which are:

   a. Environmental attitude with the HEP NEP Questionnaire

   b. Risk aversion using a socioeconomic panel questionnaire.

   c. Random topic Questionnaire
      On a scale of 0-5, please respond to the questions below (0= totally agree...5 = totally

disagree).

<div style="border:1px solid red">

- Wives should have the same rights.
- I always eat at home.
- Even people who do not work should have guaranteed their access to health care.
- I like living lightly (in a minimalistic fashion)
- At work, boss should treat his/her subordinate fellows like his/her equals.
- I do not buy a new phone if my old phone functions.
- Natural resources should be equitably distributed

</div>

(The rationale for each of these surveys are listed in Appendix I)

At the beginning of the survey, participants will also be asked to fill in their email id along with an optional response about income level [(Question asked will include – 'Are you currently employed? [Yes/No]. If yes, what is your best estimate of your usual monthly income? →Less than $400, $400-$800, More than $800, Prefer not to respond), (What is your best estimate of your family's total household income over the past 12 months? →No Income, Less than $20,000, $20,000 - $49,999, $50,000 - $99,999, $100,000 or more, Prefer not to respond)].

After completion of the pre survey questionnaire, participants will be informed that they will receive a second Qualtrics link via email, one week after the pretest survey so that they can participate in the second part of the survey if they wish. An alpha numeric code will be designated to each participant at the end of the survey. In order to maintain anonymity, the pre-test survey database will only link the alpha numeric code to their responses. Their email id's will be strictly used for contacting the participant for continuing to participate in the second (primary) part of the experiment, and later on for sending their respective e-gift cards (based on the draw and their choice selections).

2. At the beginning of the second half of the experiment, participants in the experimental group will be assigned to watch a video clip eliciting either sadness or 'CAD triad' (Contempt, Anger, Disgust). While participants in the control/neutral group will watch a video eliciting no or neutral emotions.
Some examples for eliciting sadness and CAD triad are – (Sadness - The Champ (1979) Death-Final Ending Scene VERY SAD - YouTube - YouTube, CAD triad -Plastic Ocean - YouTube). A clipped version of such videos will be used in the actual experiment. Participants are required to watch one minute of this video. However, they will be told that they are free to stop the video anytime and leave the experiment.

3. After watching the video, participants will rate their emotions on a five-point Likert scale.

4. The participants will be given a fixed amount of virtual funds (signifying a reserve of cash given to the participant) to start with (see starting amounts in the table below). Individual participants will be assigned only to one product category each. The purchase choices they make in the experiment will proportionally deduct certain amounts based on their choices, as each product will be shown with a unique price. The participants will be informed (before starting the survey) that there will be a draw whereby 1 in every 20 participants (or less) will receive a gift card that is proportional to their choice decisions (the gift card would be worth twice the remnant amount after paying for their choice). For example, in the coffee product category, if the participant chooses coffee B (The environment friendly option), they would have a chance to

receive a gift card from a more sustainably driven coffee brand (Starbucks in this case), where the amount of the gift card is twice the remanent amount ($10 - $7.5 = 2.5 x 2 = $5) [See TABLE C below].

This would signify if participants are willing to forgo more cash, in order to contribute towards the environment through their act of consumer purchase decision (rather than purchasing cheaper coffee from a non-sustainable coffee brand, in this case Tim Horton's). This payment system is to both compensate participants for their time and to incentivize them in accordance with the hypothetical decisions they are making in the survey (a methodology commonly used in the field of Experimental and Behavioral Economics).

Starting amount	Product	Price	Price Difference	Git card (Proportionate to their choice)
10$	Coffee A	5.0		Gift card of 10$ from Tim Horton's
	Coffee B	7.5	2.5$	Gift card of 5$ from Starbucks
40$	T shirt A	27.5		Gift card of 25$ from H&M
	T shirt B	35.0	7.5$	Gift card of 10$ from Good tee
20$	LD a	15.0		Gift card of 10$ from Tim Horton's
	LD b	17.5	2.5$	Gift card of 5$ from Starbucks

Table C: Product Pricing and payoff for each choice

[Note: Participants will be entitled to be included in the lottery for rewards, subject to completion of both parts of the experimental survey]

5. These 3 different categories of product choices are shown below. Each participant will only be subjected to one kind of stimuli (either sadness or CAD), and one of the following product choice categories (assigned randomly).

   a. Coffee

Coffee A 5.0$
- 10 oz. White Paper Hot Coffee Cups for serving hot coffee, tea, hot chocolate, and other hot or cold beverages.
- Suitable for beverage temperatures up to 205 degrees F.
- Polyethylene lining for resistance to leaking and moisture penetration.
- Its thick paper wall makes it great as everyday hot coffee cups, hot cocoa cups and hot teacups.

Coffee B 7.50$
- Biodegradable natural bamboo fiber & Compostable paper
- 10 oz. Coffee Cup made from sustainably derived compostable paper
- Suitable for beverage temperatures up to 180 degrees F.
- Forest Stewardship Council approved paper and plant-based resin for lining for resistance to leaking and moisture penetration.
- Its thick bamboo wall makes it great as everyday hot coffee cups, hot cocoa cups and hot tea cups.

b. T-shirt

T-shirt A 27.5$	T-shirt B 35.0$
• 100% Cotton • Machine Wash • Soft ring spun cotton • Lightweight jersey fabric	• Fair trade certified Bamboo Fiber (Rayon) and eco friendly dyes • Machine Wash • Natural Fiber With Versatile Performance: Bamboo Fiber is a kind of cellulosic fiber extracted from natural materials-bamboo. It is featured with good air permeability, instant water-absorbing, great durability and stable dyeing property. Thus, it is antibacterial and odor-resistant.

c. Detergent

Detergent A 15.0$ (IL -24 loads)	Detergent B 17.5$ (IL -24 loads)
• America's #1 selling detergent. • This liquid laundry detergent is the one you you love, now with 40% more stain & odor removal power per drop. vs. previous formula • Rinses clean in all water temperatures, even in cold water. • Safe and effective in all washers, even HE (high efficiency). • Concentrated, so less is more • Dermatologist and allergy tested.	• Recognized by the U.S. Environmental Protection Agency's (EPA) Safer Choice Program for containing safer ingredients that don't sacrifice quality or performance. • Rinses clean in all water temperatures, even in cold water. • Safe and effective in all washers, even HE (high efficiency). • Biodegradable formula. • No phosphates, chlorine or other unpleasant ingredients, so it's safer for the environment. • Concentrated, so less is more. • Dermatologist and allergy tested.

Appendix A5: Data Management

The data collected from the main survey would be stored on the YorkU server from Qualtrics (secure server). All data would be kept under password protection with no planned destruction data (since the data will be anonymous and will be used for your future research since this is the first stage of a longer research agenda). The data would be retained for future research on this topic apart from using for presentation in this thesis paper and defense thereof. Anonymized data were planned to be deposited in an online academic data repository to benefit future research.

Participants would anonymously sign up and participate in the experiment. Each participant was tracked through a unique subject number (alpha numeric code) that would be generated automatically, when they completed the surveys. This way all survey data collected could be collected and stored without identifying information such as participant names. As mentioned previously, the email id would only be stored on a separate database and be used for contacting the participants who finished the pre survey, to continue the primary part of the experiment after a one-week time gap. Additionally, at the end of the term, those students who got selected at the draw would be contacted via email to receive their e-gift cards. A record of receipt of the gift card along with the email address would be recorded by the principal investigator and kept separate from the survey data as proof of payment for any future audit purposes. Collecting email addresses

instead of participant names, provided access for notifying participants of their rewards with increased anonymity since participants could create new email addresses for the sole purpose of participating in this experiment (using Gmail etc.).

Appendix A6: Preliminary Questionnaire

EC :

"Listed below are statements about the relationship between humans and the environment.[7]

For each one, please indicate whether you STRONGLY AGREE, MILDLY AGREE, are UNSURE, MILDLY DISAGREE or STRONGLY DISAGREE with it."

1. We are approaching the limit of the number of people the earth can support

2. Humans have the right to modify the natural environment to suit their needs

3. When humans interfere with nature it often produces disastrous consequences

4. Human ingenuity will insure that we do NOT make the earth unlivable

5. Humans are severely abusing the environment

6. The earth has plenty of natural resources if we just learn how to develop them

7. Plants and animals have as much right as humans to exist

8. The balance of nature is strong enough to cope with the impacts of modern industrial nations

9. Despite our special abilities humans are still subject to the laws of nature

10. The so-called "ecological crisis" facing humankind has been greatly exaggerated

11. The earth is like a spaceship with very limited room and resources

12. Humans were meant to rule over the rest of nature

13. The balance of nature is very delicate and easily upset

14. Humans will eventually learn enough about how nature works to be able to control it

15. If things continue on their present course, we will soon experience a major ecological catastrophe

---

[7] Agreement with the eight odd-numbered items and disagreement with the seven even-numbered items indicate pro-NEP responses.

BIF

Your task is to choose the identification, a or b, that best describes the behaviour for you. Simply place a checkmark next to the option you prefer. Be sure to respond to every item. Please mark only one alternative for each pair. Remember, mark the description that you personally believe is more appropriate for each pair. (12 questions)

1. Making a list
   o Getting organized
   o Writing things down

2. Reading
   o Following lines of print
   o Gaining knowledge

3. Cleaning the house
   o Showing one's cleanliness
   o Vacuuming the floor

4. Caring for houseplants
   o Watering plants
   o Making the room look nice

5. Locking a door
   o Putting a key in the lock
   o Securing the house

6. Filling out a personality test
   o Answering questions
   o Revealing what you're like

7. Taking a test
   o Answering questions
   o Showing one's knowledge

8. Greeting someone
   o Saying hello
   o Showing friendliness

9. Resisting temptation
   o Saying "no"
   o Showing moral courage

10. Eating
    o Getting nutrition
    o Chewing and swallowing

11. Talking to a child

  o Teaching a child something

  o Using simple words

12. Pushing a doorbell

  o Moving a finger

  o Seeing if someone's home

Random topic Questionnaire

(Likert 5 point scale - On a scale of 0-5, please respond to the questions below (0= totally agree…5 = totally disagree).

☐ RD

Please answer the following question to the best of your ability

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
	1	2	3	4	5
Even people who do not work should have guaranteed their access to health care					
I like living lightly (in a minimalistic fashion)					

Demographics :

Your age group :

Below 18

18 – 30

31 – 40

41- 60

Do not wish to respond

Gender : Male   / Female / _____   / _____ / Do not wish to respond

Income Level :

'If you are currently employed, what is your best estimate of your usual monthly income? →Less than $400, $400-$800, More than $800, Prefer not to respond),

(What is your best estimate of your family's total household income over the past 12 months? →No Income, Less than $20,000, $20,000 - $49,999, $50,000 - $99,999, $100,000 or more, Prefer not to respond)].

Contact Email address :

Appendix A7

Emotion	Anger	Sadness	Grief	Disgust	Contempt	Guilty	Shame
# Response (out of 28)	27	27	25	22	21	24	23
Average Score of emotion intensity (range: 0 - 5)	3.6	4.2	3.7	3.5	3.6	3.9	3.8
Std. Dev (emotion intensity)	1.0	0.7	0.6	0.9	0.7	1.0	1.1
% Response >= 4 (range 0 - 5) of emotion intensity	56%	89%	64%	55%	52%	71%	57%

Table 9.1 - PILOT Survey Part 1 - Data and Descriptive Statistics of emotions elicited

Appendix A8 - Correlation Matrix between emotions (Study # 1)

Emotion	Anger	Sadness	Grief	Disgust	Contempt	Guilty	Shame
Anger	1.00						
Sadness	0.32	1.00					
Grief	0.13	0.53	1.00				
Disgust	0.49	-0.05	-0.28	1.00			
Contempt	0.41	-0.03	0.12	0.19	1.00		
Guilty	-0.11	0.12	-0.36	0.15	-0.21	1.00	
Shame	0.22	0.34	-0.01	0.10	-0.38	0.51	1.00

Table 9.2 - Correlation Matrix between emotions (Study # 1)

Appendix A9

Emotion	Anger	Sadness	Grief	Disgust	Contempt	Guilt	Shame
# Response (out of 32)	30	29	28	24	23	27	25
Average Score (range 0 -5)	3.6	4.2	3.8	3.6	3.6	3.7	3.7
Std. Dev	0.9	0.8	0.6	0.9	0.7	1.1	1.1
% Response>=4 (range 0 - 5)	53%	86%	64 %	58%	57%	63%	56%

Table 9.3 - PILOT Survey Part 2 - Data and Descriptive Statistics of emotions elicited

Appendix A10

	Anger	Sadness	Grief	Disgust	Contempt	Guilty	Shame
Anger	1.00						
Sadness	0.41	1.00					
Grief	0.26	0.53	1.00				
Disgust	0.49	0.04	-0.17	1.00			
Contempt	0.43	0.03	0.17	0.22	1.00		
Guilty	-0.23	-0.02	-0.49	0.04	-0.25	1.00	
Shame	0.10	0.25	-0.13	0.08	-0.38	0.56	1.00

Table 9.4 - Correlation Matrix between emotions (Study # 2)

Appendix A11

Choice Exeperiment_Part2

Consent Form
Part 2 - Consumer Decision Making Experiment :
In this part, you will be asked to watch a video, answer some Likert (Rating) Questions, and finally make a product choice. You will be virtually endowed with a sum of funds (See instructions before product Choice for details) . The product purchase choice you will be make should reflect the choice you would make in real life for such a product. You will be part of a draw where 1 in every 20 participants will receive a gift card, proportionate to the leftover from the virtual funds and the respective product category/feature.

Study Name: Consumer Decision Making (Part 2)
Researcher and Principal Investigator name: Rahul Bose
Program: M.A. in Interdisciplinary Studies – York University
Contact Details – rbose92@yorku.ca

Purpose of the Research:
Our research is aimed at understanding choice behaviour for consumer products within an allotted time to test the drivers of economic decision making.
The research will be conducted on an online platform using 'Qualtrics survey tool'.

What You Will Be Asked to Do in the Research:
The survey will consist of two parts. The first part will elicit your response for twenty questions related to various personality traits. Additionally, you will be requested to provide your demographic information. Your contact email id will also be solicited for the researcher so we can contact you within a week for the second part of the survey and finally for potential reward distribution. The Second Part will entail the display of a short video clip (about 3-5 minutes) and consequent feedback about the video followed by hypothetical purchase choices from a given set of options. Both parts of the survey are self-administered. The total duration for the survey (both parts combine) is expected not to exceed 15 minutes.
The entire survey will be conducted on Qualtrics survey tool (an online platform, through the Psychology department, YorkU server), maintaining privacy and confidentiality of the data collected. The email id you provide will only be used for continuity of the experiment, between the pre-test and main survey (that are separated within one week of time) and for contacting the participant after the end of the study, for sending the e-gift cards (for those who get selected in the draw). Anonymity will be strictly maintained, as the only data related to the individual participant is the provided email ID. Participants are free to use their main or alternate email IDs, but they should remember this email ID will be used to notify the participant of the second part of the survey within one week's time.
Participants will be endowed with an initial virtual fund at the beginning of second part of the survey. Hypothetical purchase decisions in the second part of the survey will entitle participants to virtual rewards which have a chance to being converted to a real reward afterward. Upon completing both parts of the survey, participants will be

eligible to win gift cards proportionate to their virtual rewards based on a draw (Ranging from 5-25), with a probability of 1 in 20 (or better).

Risks and Discomforts:
We do not foresee any risks or discomfort from your participation in the research, as the survey is only of very short duration and divided into two parts separated by a week. Participants are free to stop participation at any time.

Benefits of the Research and Benefits to You:
In return for your participation of time (total of about 10-15 mins), you will have a chance to get rewards (gift cards) through a lottery draw as described above. Also, your participation provides you with an experiential learning opportunity to gain first-hand knowledge of research that is conducted in your field of study, to supplement your current program of study at YorkU.

Voluntary Participation and Withdrawal: Your participation in the study is completely voluntary and you may choose to stop participating at any time. Your decision not to volunteer, to stop participating, or to refuse to answer particular questions will not influence the nature of the ongoing relationship you may have with the researchers or study staff, or the nature of your relationship with York University either now, or in the future. While watching the video clips (3-5 mins), in case of any feeling of inconvenience or discomfort, you are free to withdraw from the survey without any implications.
If you decide to stop participating, you may withdraw without penalty, financial or otherwise, but you will not be eligible to receive the gift card lottery draw.In the event you withdraw from the study, all associated data collected will be immediately destroyed wherever possible.

Confidentiality:
Your data will be safely stored in a locked facility and only the researcher will have access to this information. The experiment will be conducted on Qualtrics (within the YorkU server). The collected data will be coded with a randomized generated participant number, and the associated data from questionnaires and testing will be safely stored on password protected computers and only research staff will have access to this information. Thus, all information will be held in confidence, The email ID you provide will not appear in any report or publication of the research and it will not be stored in the data-repository. All data will be kept under password protection in a secured server of YorkU, with no planned destruction data (since the data will be anonymous and will be used for your future research since this is the first stage of a longer research agenda).
Confidentiality will be provided to the fullest extent possible by law.
The email ID you provide will only be used for continuity of the experiment, between the pre-test and main survey (that are separated within a week of time) and for contacting the participants after the end of the study, for sending them the e-gift cards (for those who get selected in the draw). Since the email addresses will be collected by Qualtrics during the pre-test survey, they will be temporarily stored with the pre-test answers and respective alpha-numeric codes. Once all data has been collected at the end of the summer, the email field will be removed from the pre-test data that was collected and it will be stored separately for proof of payment purposes. At no time will participant names be collected in order to ensure anonymity. The data collected in this research project may be used – in an anonymized form - by members of the research team in subsequent research investigations exploring similar lines of inquiry. Such projects will still undergo ethics review by the HPRC, our institutional REB. Any secondary use of anonymized data by the research team will be treated with the same degree of confidentiality and anonymity as in the original research project.
The researcher acknowledges that the host of the online survey (Qualtrics) may automatically collect participant data without their knowledge (i.e., IP addresses). Although this information may be provided or made accessible to

the researchers, it will not be used or saved without participant's consent on the researcher's system. Further, because this project employs e-based collection techniques, data may be subject to access by third parties as a result of various security legislation now in place in many countries and thus the confidentiality and privacy of data cannot be guaranteed during web-based transmission.

Questions About the Research? If you have questions about the research in general or about your role in the study, please feel free to contact me at rbose92@yorku.caor my supervisor, Vinod Goel at vgoel@yorku.ca and/or Neil Buckley at nbuckley@yorku.ca

This research has received ethics review and approval by the Delegated Ethics Review Committee, which is delegated authority to review research ethics protocols by the Human Participants Review Sub-Committee, York University's Ethics Review Board, and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions about this process, or about your rights as a participant in the study, please contact the Sr. Manager & Policy Advisor for the Office of Research Ethics, 5th Floor, Kaneff Tower, York University (telephone 416-736-5914 or e-mail ore@yorku.ca).

Online Consent:

By clicking below I acknowledge my consent to participate in this study conducted by Rahul Bose of York University (MA IS program 2019-2021). I have understood the nature of this project and wish to participate. I am not waiving any of my legal rights but clicking on the submit button below indicates my consent.

○   I consent (1)

End of Block: Informed Consent Form

Start of Block: Block 6

Q11 Please enter the alpha numeric ID that you received via your email

_____

End of Block: Block 6

Start of Block: Sad_Guilt Condition

Video_Turning Point You will now be shown a video. Please watch carefully :

Q10 Timing

First Click (1)
Last Click (2)
Page Submit (3)
Click Count (4)

Green Movie Clip You will now be shown a video. Please watch carefully:

Q21 Timing

First Click (1)
Last Click (2)
Page Submit (3)
Click Count (4)

Rate Emotions Please rate your emotions on a scale of 0-5 for all the emotions listed below (0 being no or low intensity , 5 being very high intensity of felt emotion)

	0	1	2	3	4	5

Sad ()	
Angry ()	
Fear ()	
Guilt ()	
Disgust ()	
Contempt ()	
Envy ()	
Pride ()	

Page Break

self responsibility How responsible did you feel for having brought about the events that were occurring in this situation? (0 - **YOU** being not at all responsible, and 5 - **YOU** being highly responsible)

	0	1	2	3	4	5
1 ()						

Other Responsibility How responsible did you think someone or something other than yourself was for having brought about the events that were occurring in this situation? (0 - **THEY** being not at all responsible, and 5 - **THEY** being highly responsible)

	0	1	2	3	4	5
6 ()						

Other Control To what extent did you feel that **circumstances beyond anyone's control** determined what was happening in this situation? (0 - being to no extent at all , and 5 - being to a great extent)

	0	1	2	3	4	5
1 ()						

Self Control To what extent did **you** feel that **you could influence** what was happening in this situation? (0 - being to no extent at all , and 5 - being to a great extent)

	0	1	2	3	4	5

1 ()
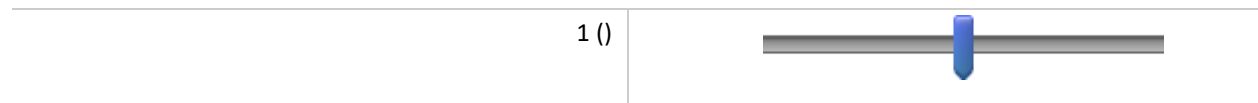
Situational Control To what extent did you feel that **someone other than yourself** was controlling what was happening in this situation? (0 - being to no extent at all , and 5 - being to a great extent)

	0	1	2	3	4	5

1 ()
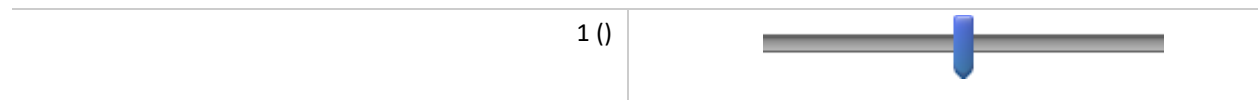
End of Block: Antecedent - Controllability

Start of Block: Hedonic product

Q24 You will now be asked to make a product choice between two consumer products. You will be virtually endowed with a total of 10$ of virtual funds to start with and from which to make your virtual purchase choice. The product choice you make should reflect the choice you would make in real life for such a product. To incentivize your choice you will be part of a draw where 1 in 20 participants will receive a gift card. Winners will be notified at the completion of data collection. To make your product decision more realistic, the winners will receive a gift card from a company with qualities consistent with their product choice and the gift card amount will be proportionate to what is leftover from the virtual funds after the virtual price is paid for the product you chose. [Please **note the countdown timer of 1 min 30 seconds** below and please **make your product choice_ within the given time**.]

Page Break

X→   X→

Q9 Click on the product you would choose to purchase and then click the submit arrow button in the bottom right of the page

○   Image:Coffeea large text (1)

○   Image:Coffee b large text (2)

Q9 Timing

First Click (1)
Last Click (2)
Page Submit (3)
Click Count (4)

Q25 You will now be asked to make a product choice between two consumer products. You will be virtually endowed with a total of 20$ of virtual funds to start with and from which to make your virtual purchase choice. The product choice you make should reflect the choice you would make in real like for such a product. To incentivize your choice you will be part of a draw where 1 in 20 participants will receive a gift card. Winners will be notified at the completion of data collection. To make your product decision more realistic, the winners will receive a gift card from a company with qualities consistent with their product choice and the gift card amount will be proportionate to what is left over from the virtual funds after the virtual price is paid for the product you chose. [Please note the countdown timer of **1min 30 seconds** below and please **make your product choice within the given time.**]

Page Break —————————————————————————————————

Q10 Click on the product you would choose to purchase and then click the submit arrow button in the bottom right of the page

○   Image:Detergent A   (1)

○   Image:Detergent B   (2)

Q10 Timing

First Click (1)
Last Click (2)
Page Submit (3)
Click Count (4)

End of Block: Utilitarian Product

Start of Block: Semi hedonic utilitarian

Q26 You will now be asked to **make a product choice between two consumer products.** You will be virtually **endowed with a total of 40$ of virtual funds** to start with and from which to make your virtual purchase choice. The product choice you make should reflect the choice you would make in real life for such a product. To incentivize your choice you will be part of a draw where 1 in 20 participants will receive a gift card. Winners will be notified at the completion of data collection. To make your product decision more realistic, the winners will receive a gift card from a company with qualities consistent with their product choice and the gift card amount will be proportionate to what is leftover from the virtual funds after the virtual price is paid for the product you chose. [Please note the countdown timer of **1 minute 30 seconds** on the next page and please **make your product choice within the given time**.]

Page Break ────────────────────────────────

Q15 Click on the product you would choose to purchase and then click the submit arrow button in the bottom right of the page

○　　Image:T-shirt A (1)

○　　Image:T-shirt B (2)

Q16 Timing

First Click (1)
Last Click (2)
Page Submit (3)
Click Count (4)

End of Block: Semi hedonic utilitarian

Start of Block: Survey End Block

Q6 Thank you for your time

End of Block: Survey End Block

Appendix A12

	EC	BIF	Risk
Low	11	9	19
Med	87	56	65
High	17	50	31
Total	115	115	115

Table 9.5 - Distribution Pattern of Participants on EC, BIF and Risk Levels (Treatment)

Appendix A13

	EC~BIF	BIF ~ RP	EC ~ RP	
Correlation coefficient	-0.06	0.01	-0.12	No Correlation exists among these variables

Table 9.6 - Correlation Coefficients between EC-BIF-Risk Propensity Levels

Appendix A14

Demographic Stats	Male	Female	Other	sub-total		
Age Group 1(below 18)	0	1	0	1	1%	
Age Group 2 (18 - 25)	25	39	1	65	57%	*Mostly Young Respondents*
Age Group 3 (26 - 35)	9	25	0	34	30%	
Age Group 4 (above 35)	4	11	0	15	13%	
Total	38	76	1	115		
	33%	66%	1%			
Mostly Female respondents (2/3rd)						

Table 9.7 - Age and Gender Distribution pattern among survey respondents

Appendix A15

Choice Experiment_N1_Cf

Consent Form **Study Name:** Consumer Decision Making
Researcher and Principal Investigator name: Rahul Bose
Program: M.A. in Interdisciplinary Studies – York University
Contact Details – rbose92@yorku.ca

Purpose of the Research:
Our research is aimed at understanding choice behaviour for consumer products within an allotted time to test the drivers of economic decision making.
The research will be conducted on an online platform using 'Qualtrics survey tool'.

What You Will Be Asked to Do in the Research:
 The survey consists of two sections. The first section will elicit your response related to various personality traits. Additionally, you will be requested to provide your demographic information. Your contact email id will also be solicited for the researcher so we can contact for potential reward distribution. The Second section will entail the display of a short video clip (about 30 seconds) and consequent feedback about the video followed by hypothetical purchase choices from a given set of options. Both parts of the survey are self-administered. The total duration for the survey is expected not to exceed 15 minutes.
 The entire survey will be conducted on Qualtrics survey tool (an online platform, through the Psychology department, YorkU server), maintaining privacy and confidentiality of the data collected. The email id you provide will only be used for contacting the participant after the end of the study, for sending the e-gift cards (for those who get selected in the draw). Anonymity will be strictly maintained, as the only data related to the individual participant is the provided email ID. Participants are free to use their main or alternate email IDs, but they should remember this email ID will be used to notify the participant for sending the gift card in the scenario their name gets selected in the draw.
 Participants will be endowed with an initial virtual fund at the beginning of second part of the survey. Hypothetical purchase decisions in the second part of the survey will entitle participants to virtual rewards which have a chance to being converted to a real reward afterward. Upon completing both sections of the survey, participants will be eligible to win gift cards proportionate to their virtual rewards based on a draw (Ranging from 5-25), with a probability of 1 in 20 (or better).

 Risks and Discomforts:
 We do not foresee any risks or discomfort from your participation in the research, as the survey is only of very short duration and divided into two parts separated by a week. Participants are free to stop participation at any time.

 Benefits of the Research and Benefits to You:
 In return for your participation of time (total of about 10-15 mins), you will have a chance to get rewards (gift cards) through a lottery draw as described above. Also, your participation provides you with an experiential learning opportunity to gain first-hand knowledge of research that is conducted in your field of study, to supplement your current program of study at YorkU.

 Voluntary Participation and Withdrawal: Your participation in the study is completely voluntary and you may choose to stop participating at any time. Your decision not to volunteer, to stop participating, or to refuse to answer particular questions will not influence the nature of the ongoing relationship you may have with the researchers or study staff, or the nature of your relationship with York University either now, or in the future.
 While watching the video clips (30 seconds), in case of any feeling of inconvenience or discomfort, you are free to withdraw from the survey without any implications.
 If you decide to stop participating, you may withdraw without penalty, financial or otherwise, but you will not be eligible to receive the gift card lottery draw. In the event you withdraw from the study, all associated data collected will be immediately destroyed wherever possible.

 Confidentiality:
 Your data will be safely stored in a locked facility and only the researcher will have access to this information. The experiment will be conducted on Qualtrics (within the YorkU server). The collected data will be coded with a randomized generated participant number, and the associated data from questionnaires and testing will be safely stored on password protected computers and only research staff will have access to this information. Thus, all information will be held in confidence, The email ID you provide will not appear in any report or publication of the

research and it will not be stored in the data-repository. All data will be kept under password protection in a secured server of YorkU, with no planned destruction data (since the data will be anonymous and will be used for your future research since this is the first stage of a longer research agenda).

 Confidentiality will be provided to the fullest extent possible by law.

 The email ID you provide will only be used for contacting the participants after the end of the study, for sending them the e-gift cards (for those who get selected in the draw). At no time will participant names be collected in order to ensure anonymity. The data collected in this research project may be used – in an anonymized form - by members of the research team in subsequent research investigations exploring similar lines of inquiry. Such projects will still undergo ethics review by the HPRC, our institutional REB. Any secondary use of anonymized data by the research team will be treated with the same degree of confidentiality and anonymity as in the original research project.

 The researcher acknowledges that the host of the online survey (Qualtrics) may automatically collect participant data without their knowledge (i.e., IP addresses). Although this information may be provided or made accessible to the researchers, it will not be used or saved without participant's consent on the researcher's system. Further, because this project employs e-based collection techniques, data may be subject to access by third parties as a result of various security legislation now in place in many countries and thus the confidentiality and privacy of data cannot be guaranteed during web-based transmission.

 Questions About the Research? If you have questions about the research in general or about your role in the study, please feel free to contact me at rbose92@yorku.ca or my supervisor, Vinod Goel at vgoel@yorku.ca and/or Neil Buckley at nbuckley@yorku.ca

 This research has received ethics review and approval by the Delegated Ethics Review Committee, which is delegated authority to review research ethics protocols by the Human Participants Review Sub-Committee, York University's Ethics Review Board, and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions about this process, or about your rights as a participant in the study, please contact the Sr. Manager & Policy Advisor for the Office of Research Ethics, 5th Floor, Kaneff Tower, York University (telephone 416-736-5914 or e-mail ore@yorku.ca).

 Online Consent:

 By clicking below I acknowledge my consent to participate in this study conducted by Rahul Bose of York University (MA IS program 2019-2021). I have understood the nature of this project and wish to participate. I am not waiving any of my legal rights but clicking on the submit button below indicates my consent.

○   I consent (1)

End of Block: Informed Consent Form

Start of Block: Block 6

Q1 Please enter your email id (This will be used to contact you in the scenario you get selected in the draw for the gift card)

_____

BIF questionnaire Your task is to choose the identification, a or b, that best describes the behaviour for you. Simply place a checkmark next to the option you prefer. Be sure to respond to every item. Please mark only one alternative for each pair. Remember, mark the description that you personally believe is more appropriate for each pair.

_X→_

Q1 Making a list

○   Getting Organized (1)

○   Writing things down (0)

_X→_

Q2 Reading

○   Following lines of print (0)

○   Gaining Knowledge (1)

_X→_

Q3 Cleaning the house

○   Showing one's cleanliness (1)

○   Vacuuming the floor (0)

161

X→

Q4 Caring for houseplants

    ○   Watching plants (0)

    ○   Making the room look nice (1)

X→

Q5 Filling out a personality test

    ○   Answering questions (0)

    ○   Revealing what you're like (1)

X→

Q6 Taking a test

    ○   Answering questions (0)

    ○   Showing one's knowledge (1)

X→

Q7 Greeting someone

    ○   Saying hello (0)

    ○   Showing friendliness   (1)

X→

Q8 Voting

○   Influencing the election (1)

○   Marking a ballot (0)

X→

Q9 Resisting Temptation

○   Saying "no" (0)

○   Showing moral courage (1)

X→

Q10 Eating

○   Getting nutrition (1)

○   Chewing and Swallowing (0)

X→

Q11 Talking to a child

○   Teaching a child something (1)

○   Using simple words (0)

Q12 Pushing a doorbell

○   Moving a finger (0)

○   Seeing if someone's home (1)

Demographics Please select the age group you fall in

○   Below 18 (1)

○   18-25 (2)

○   26-35 (3)

○   Above 35 (4)

Gender Please select your gender

○   Male (1)

○   Female (2)

○   Non-binary / third gender (3)

○   Other (4)

Page Break

EC For each one, please indicate your preferred response. Be sure to respond each item.

	Agree (4)	Strongly Agree (5)	Strongly Disagree (1)	Disagree (2)	Neutral (3)
1. We are approaching the limit of the number of people the earth can support (1)	○	○	○	○	○
2. Humans have the right to modify the natural environment to suit their needs (2)	○	○	○	○	○
3. When humans interfere with nature it often produces disastrous consequences (3)	○	○	○	○	○
4. Human ingenuity will insure that we do NOT make the earth unlivable (4)	○	○	○	○	○
5. Humans are severely abusing the environment (5)	○	○	○	○	○

6. The earth has plenty of natural resources if we just learn how to develop them (6)

○　　　○　　　○　　　○　　　○

7. Plants and animals have as much right as humans to exist (7)

○　　　○　　　○　　　○　　　○

8. The balance of nature is strong enough to cope with the impacts of modern industrial nations (8)

○　　　○　　　○　　　○　　　○

9. Despite our special abilities humans are still subject to the laws of nature (9)

○　　　○　　　○　　　○　　　○

10. The so-called "ecological crisis" facing humankind has been greatly exaggerated (10)

○　　　○　　　○　　　○　　　○

11. The earth is like a spaceship with very limited room and resources (11)

○　　　○　　　○　　　○　　　○

12. Humans were meant to rule over the rest of nature (12)	○	○	○	○	○
13. The balance of nature is very delicate and easily upset (13)	○	○	○	○	○
14. Humans will eventually learn enough about how nature works to be able to control it (14)	○	○	○	○	○
15. If things continue on their present course, we will soon experience a major ecological catastrophe (15)	○	○	○	○	○

Rk Please tick on the scale, where the value 0 means: 'not at all willing to take risks' and the value 10 means 'very willing to take risks'

How do you see yourself : are you generally a person who is fully prepared to take risks or do you avoid taking risks?

	0 1 2 3 4 5 6 7 8 9 10
1 ()	━━━━━━━━━━▮━━━━━━━━━

RD Please answer the following question to the best of your ability

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
	1	2	3	4	5
Even people who do not work should have guaranteed their access to health care ()			‖		
I like living lightly (in a minimalistic fashion) ()			‖		
At work, boss should treat his/her subordinate fellows like his/her equals ()			‖		
I do not buy a new phone if my old phone functions ()			‖		
Natural resources should be equitably distributed ()			‖		

End of Block: Demographics

Start of Block: Video Block

Video_NYC Please click / press Play to watch the video. The page will auto advance in 45 seconds

Timer Timing

First Click (1)
Last Click (2)
Page Submit (3)
Click Count (4)

End of Block: Video Block

Start of Block: Emotions

170

Rate Emotions Please choose the relevant emotion that you currently feel after watching the video

○   Neutral / Indifferent (1)

○   Sad (2)

○   Anger (3)

○   Fear (4)

○   Guilty (10)

○   Disgust (11)

○   Contempt (12)

○   Envy (13)

○   Pride (15)

End of Block: Emotions

Start of Block: Hedonic Product

Q24 You will now be asked to make a product choice between two consumer products. You will be virtually endowed with a total of 10$ of virtual funds to start with and from which to make your virtual purchase choice. The product choice you make should reflect the choice you would make in real life for such a product. To incentivize your choice you will be part of a draw where 1 in 20 participants will receive a gift card. Winners will be notified at the completion of data collection. To make your product decision more realistic, the winners will receive a gift card from a company with qualities consistent with their product choice and the gift card amount will be proportionate to what is leftover from the virtual funds after the virtual price is paid for the product you chose. [Please **note the countdown timer of 1 min 30 seconds** below and please **make your product choice within the given time**.]

Page Break

Q9 Click on the product you would choose to purchase and then click the submit arrow button in the bottom right of the page

○   Image:Coffeea large text (1)

○   Image:Coffee b large text (2)

Q9 Timing

First Click (1)
Last Click (2)
Page Submit (3)
Click Count (4)

End of Block: Hedonic Product

Start of Block: Survey End Block

Q6 Thank you for your time

End of Block: Survey End Block

Appendix A16

	EC	BIF	Risk
Low	4	25	35
Med	158	71	76
High	3	69	54
Total	165	165	165

Table 9.8 – Distribution Pattern of Participants on EC, BIF and Risk Levels (Control)

Demographic Stats	Male	Female	Other	sub-total	% of total	
Age Group 1(below 18)	10	16	0	26	16%	
Age Group 2 (18 - 25)	63	64	0	127	77%	*Mostly Young Respondents*
Age Group 3 (26 - 35)	2	8	0	10	6%	
Age Group 4 (above 35)	0	2	0	2	1%	
Total	75	90	0	165		
% of Total	45%	55%	1%		100%	
Mostly Female respondents						

Table 9.9 - Age and Gender Distribution pattern among survey respondents (control)

Appendix A17

The table below illustrates the respective choice behaviours (EV- Environmentally Friendly option, vs NEV – Non-environment Friendly option) for the collapsed group in comparison to the individual videos. As can be clearly seen, the proportion of responses with EV is quite identical in the individual treatment groups (82% for Animation and 71% for Deforestation) and hence in the collapsed group as well (76%).

Treatment group (Stimulus)	EV	% Of total	NEV	% Of total	Total
Collapsed	71	76%	22	24%	93
Animation	37	82%	8	18%	45
Deforestation	34	71%	14	29%	48

Table 9.10 - Behaviour – Stimulus Response Data: Treatment Conditions (Animation / Deforestation)

The Table 9.11 below indicates the supporting descriptive statistics on intensity of felt emotions, and the rationale for the dominant cluster (Sadness, Anger and Guilty) of emotions chosen for this study as 'Eco-Emotion'.

Choice of Emotion (Individual vs. Mixed / Group) based on Intensity of felt emotions

6-point scale	sad	angry	guilt	disgust	fear	contempt
Collapsed version (Response from both visuals combined)						
Moving	4.032	3.613	3.616	3.487	3.396	3.194
Average	**4.03**	**3.19**	**3.62**	3.10	3.03	2.18
Std. Dev	0.91	1.39	1.29	1.46	1.35	1.51
# response	19	21	20	18	21	30
# response <	5	29	18	32	34	47
# response >	69	43	55	43	38	16
Median	4.00	3.00	4.00	3.00	3.00	2.00

Table 9.11 - Descriptive Stats of individual Emotion Ratings on Likert scale

Appendix A18

The dominant emotions are filtered from the table above, based on the mean, standard deviation of intensity of individual emotions, and tabulated below (Table 9.12).

	Top 3 Emotions		
6-point scale (0-5)	sad	angry	guil
Collapsed version (Response from both visuals combined)			
Average Score of Intensity	4.0	3.19	3.6
Std. Dev of Intensity	0.9	1.39	1.2
Moving Average of Intensity	4.0	3.61	3.6
Median Score of Intensity	4	3	4

Table 9.12 - Top 3 emotions descriptive Stats

To have a minimum level of significant arousal (a cut off level of 3.5 moving average, on a 0-6 scale) is considered. Given this criterion, the combination of "**sadness + anger + guilt**", met the required benchmark.

Choosing the cluster of emotions based on frequency of responses

Since the participants reported varying scores on each emotion and not on any singular emotion in isolation, the top 3 emotions were also considered for selection as a cluster (Eco Emotions), in

addition to the average intensity scores (as shown above), based on the number of responses reporting high intensity (see Table 9.13 below).

	Sad	ang	guilt	disgus	fear	conte
Hi Intensity (# responses)	88	64	75	61	59	46
Lo Intensity (# responses)	5	29	18	32	34	47

Table 9.13 - # of responses for each emotion based on emotional intensity

Further, for the chosen top 3 emotio**ns in the cluster, the Table 9.14 below shows additional details of score breakdown for intensity of emotions.**

Emotion (Hi Intensity)	Sad	angry	guilt
>3 (# Responses)	69	43	55
=3 (# Responses)	19	21	20
Total Hi Intensity (# Responses)	88	64	75
<3 (# Responses)	5	29	18

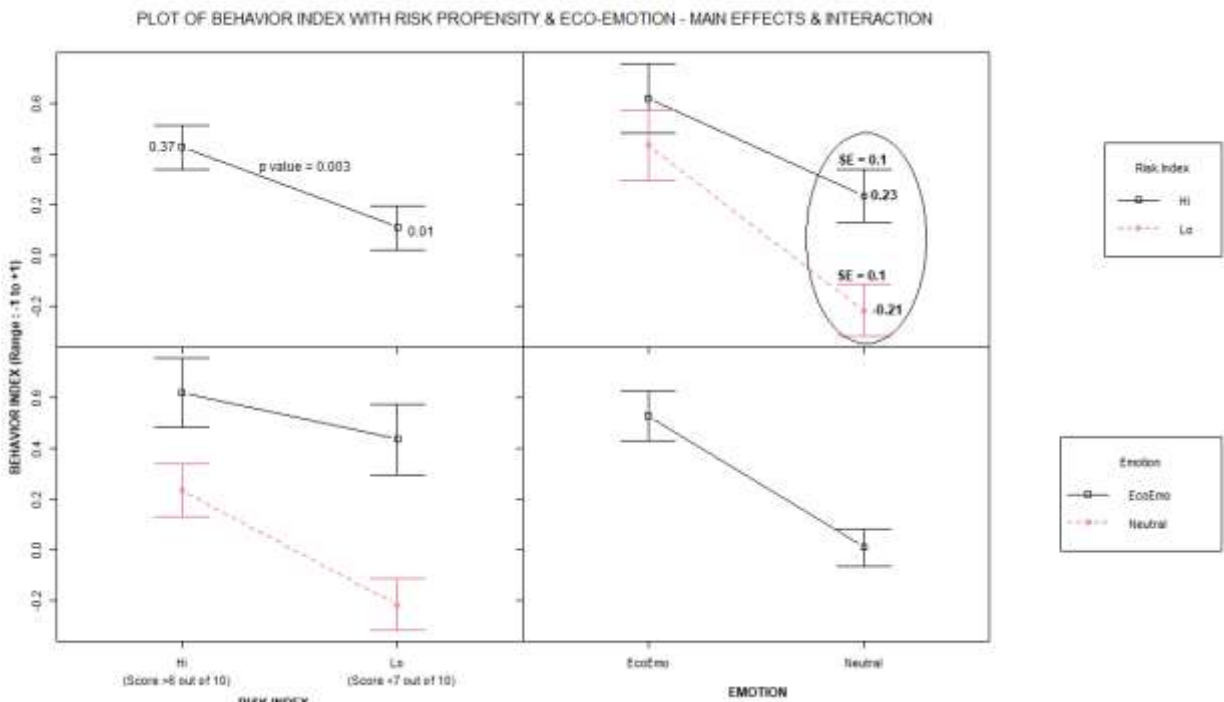**Table 9.14 - Response Frequency Analysis of Intensity of selected emotion**

Appendix A19

PLOT OF BEHAVIOR INDEX WITH RISK PROPENSITY & ECO-EMOTION - MAIN EFFECTS & INTERACTION

Figure 23 : Main Effect & Interaction Plot between Choice Behaviour and Risk Propensity & Eco-Emotions

Appendix A20

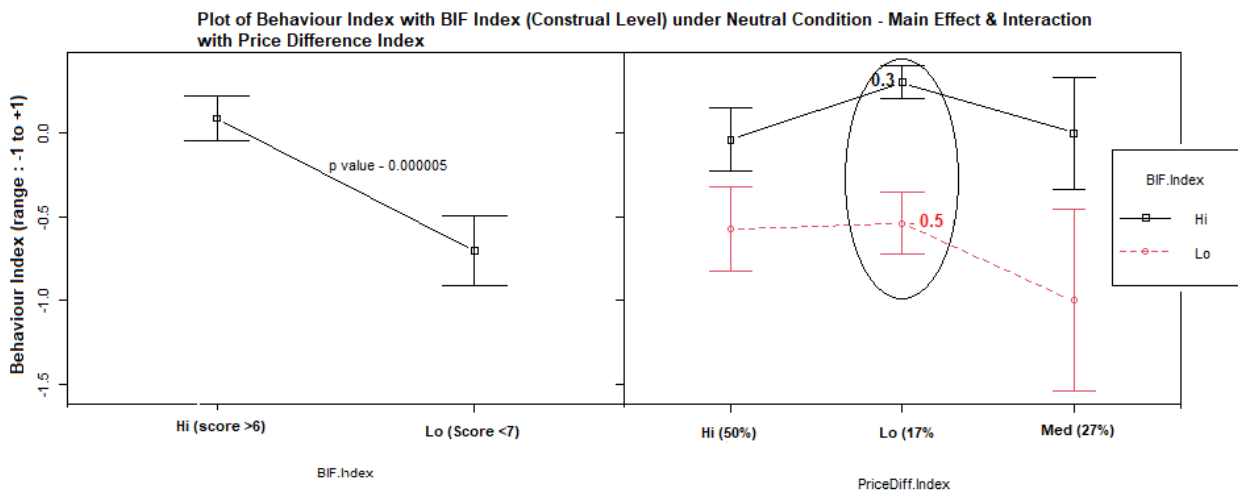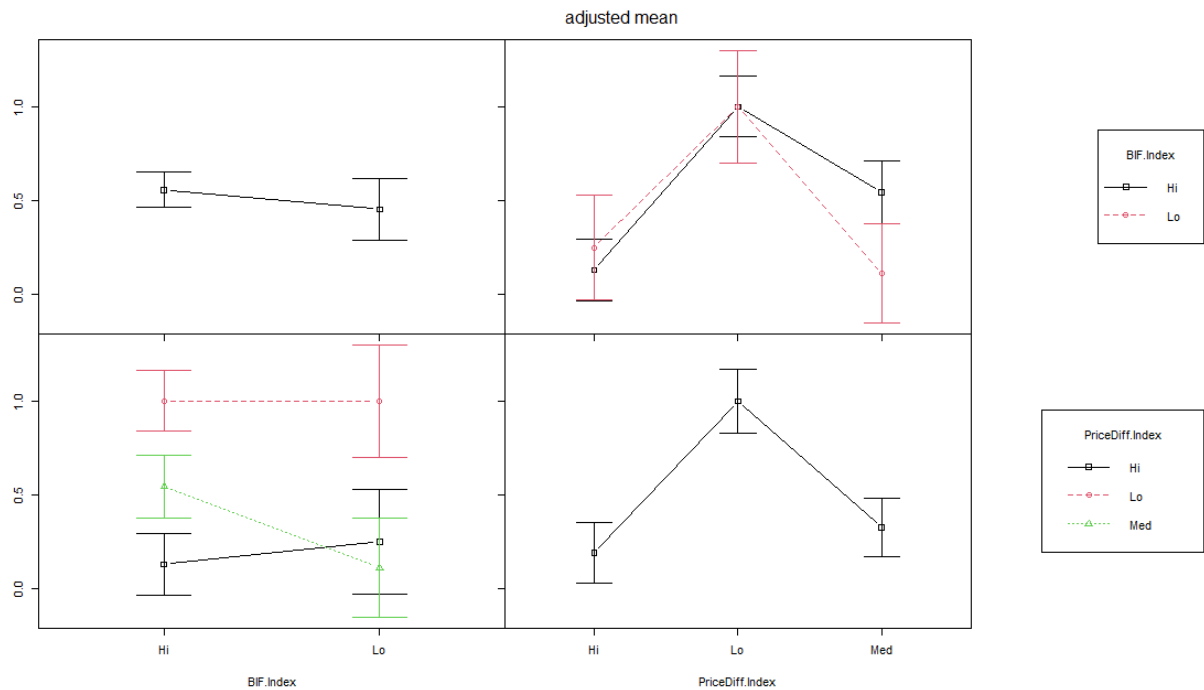Plot of Behaviour Index with BIF Index (Construal Level) under Neutral Condition - Main Effect & Interaction with Price Difference Index

Figure 24 : Main Effect & Interaction Plot between Choice Behaviour and Construal Level & Price Difference Index

Appendix A21

Figure 25 : Plot of Behaviour Index with BIF Index (construal level) under stimulated condition – Main effect and interaction with price difference index

Price Diff Index	BIF Score (EV)	BIF Score (NEV)	Mean BIF Score	% Difference in BIF Score(EV) ~ BIF Score(NEV)
Hi	7.38	8.38	7.80	-12%
Lo	8.56		8.56	----
Med	8.19	6.66	7.74	23%

Table 9.15 - BIF Score for Choice Behaviour across various Price Levels

Appendix A22

Appraisal Dimension Category	Intensity of Appraisal Dimensions	Eco Emotion Intensity Scores	
	Index (Hi > 3 vs. Low <4)	Mean	Std. Error
Self-Responsibility (Internal LOC)	Hi	3.84	0.11
	Lo	3.13	0.16
Self-Controllability (Internal LOC)	Hi	3.91	0.13
	Lo	3.32	0.13
Other Responsibility (External LOC)	Hi	3.68	0.10
	Lo	3.09	0.28
Other Controllability (External LOC)	Hi	3.68	0.14
	Lo	3.55	0.14

Table of Means and Standard Errors of Eco-Emotion for various dimensions on High and Low levels

ANOVA Tables and Main effect plots for Internal and External LOC dimensions vs Eco-Emotions
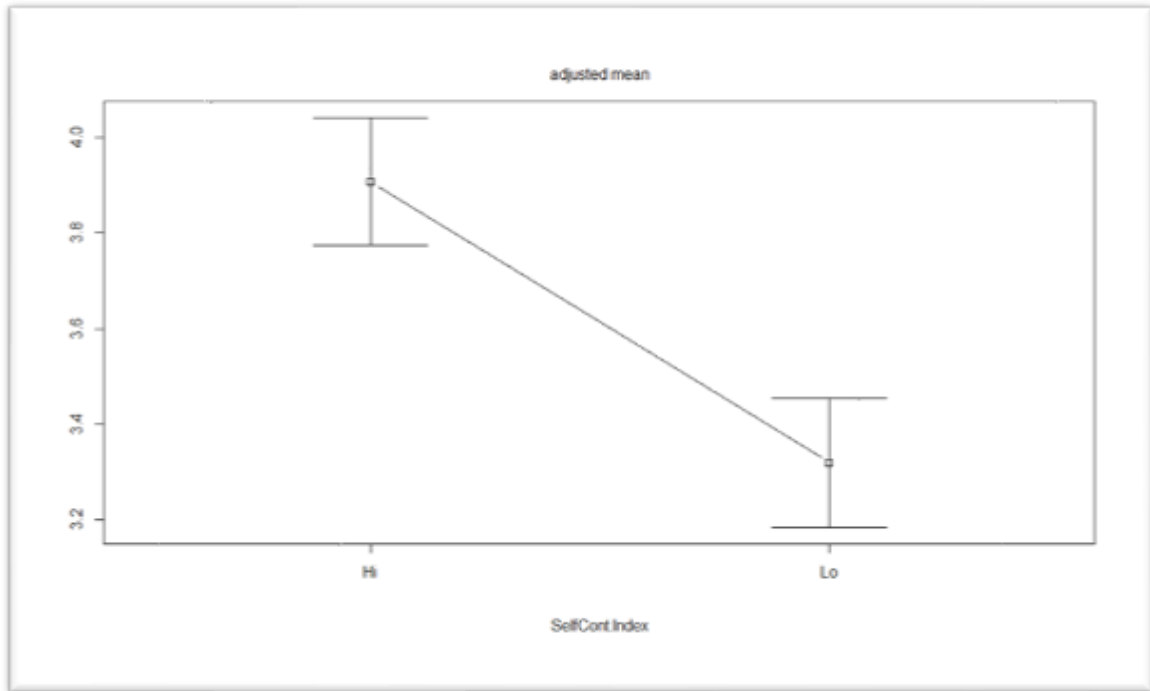
a) Self-Responsibility
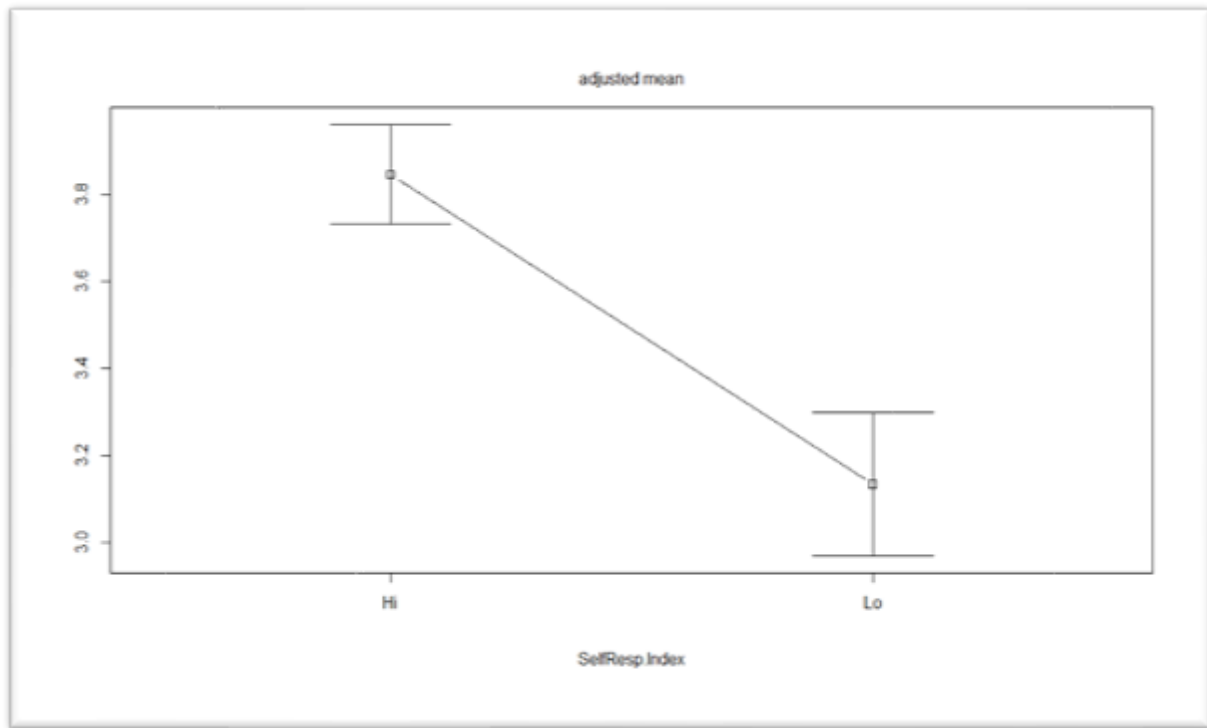
Self-Responsibility Plot with Eco Emotion (Significant)

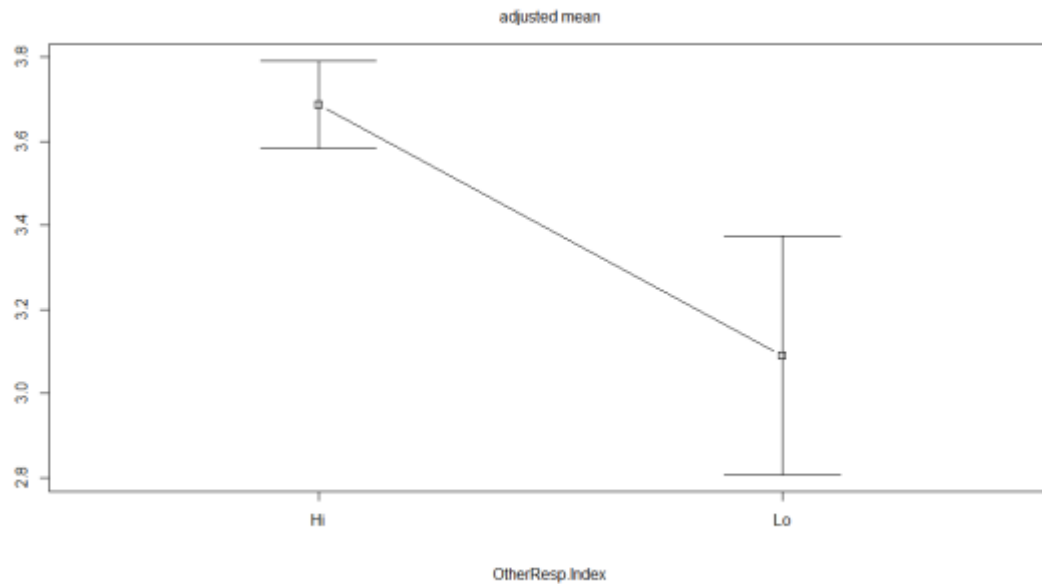**Remark – High arousal of Eco-Emotion from High Self Responsibility**

b) <u>Self-Controllability</u>

Self-Controllability Plot with Eco Emotion (Significant)

**Remark: High Arousal of Eco-Emotion with high Self-controllability is observed**

c) Other-Responsibility

adjusted mean

OtherResp.Index

Other-Responsibility Plot with Eco Emotion (Marginally Significant at 95% confidence level)

Remark: There is a relationship (marginally significant) between intensity of Eco-Emotion arousal with Other Responsibility, possibly due to the element of anger in the Eco-Emotion, attributed to action of others.

d) Other Controllability

adjusted mean
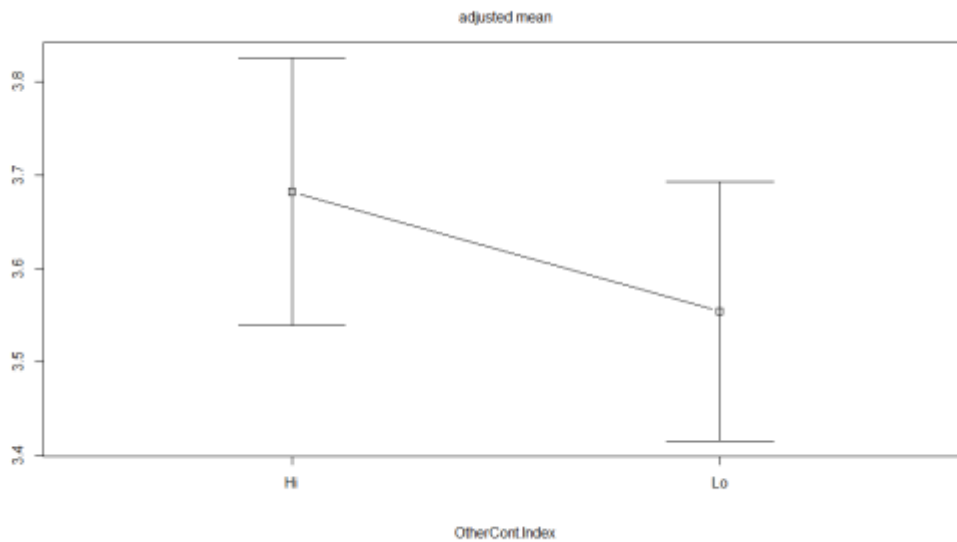
Other Controllability Plot with Eco Emotion (not significant)

Remark: No significance is observed between Eco-Emotion and Other Controllability

Conclusion – There is a significant antecedent relationship of high Eco-Emotion arousal with internal LOC dimensions, whereas there is also a moderate level of significance with Other Responsibility. The Correlation coefficients (refer Table below) corroborate these findings (Appendix A19)

Appendix A23

```
> cor(ISproj_con_2_subset1)
                SelfResp  SelfControl  OtherResp  OtherControl
SelfResp       1.00000000  0.49280888  0.4982416  -0.03080423
SelfControl    0.49280888  1.00000000  0.1833319  -0.05345581
OtherResp      0.49824158  0.18333186  1.0000000  -0.11920040
OtherControl  -0.03080423 -0.05345581 -0.1192004   1.00000000
```

Table 9.16 - Correlation Matrix among Antecedent Dimensions

Appendix A24: ANCOVA Analysis
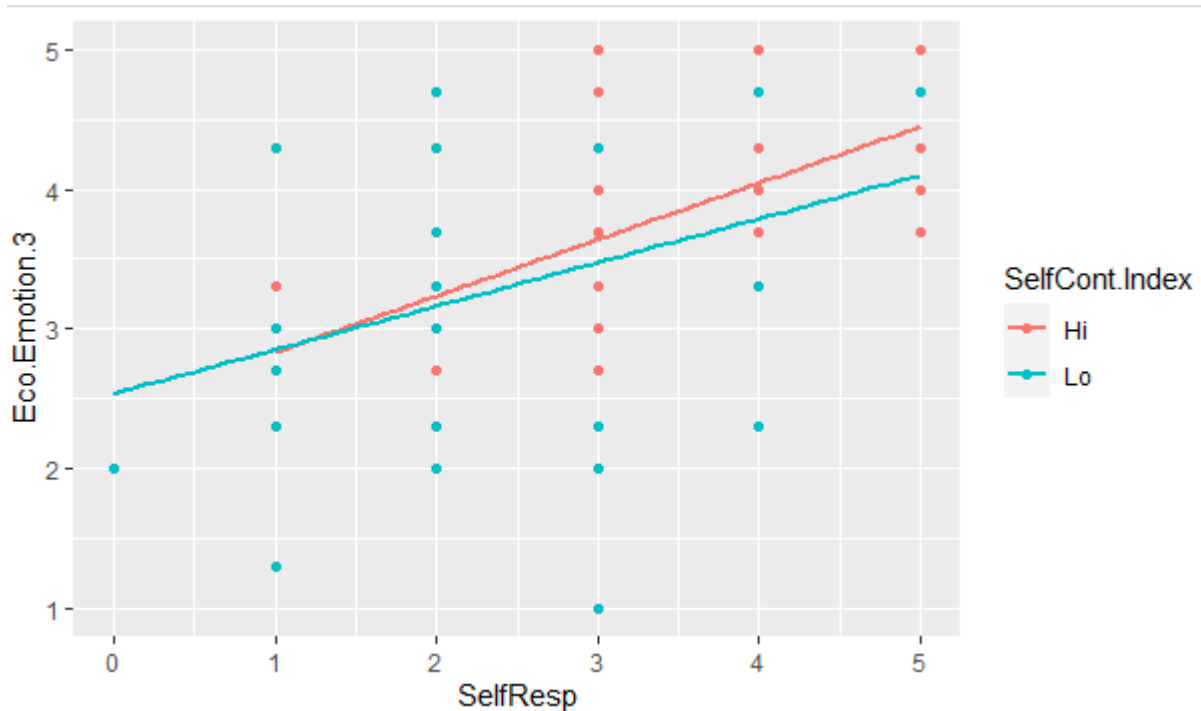
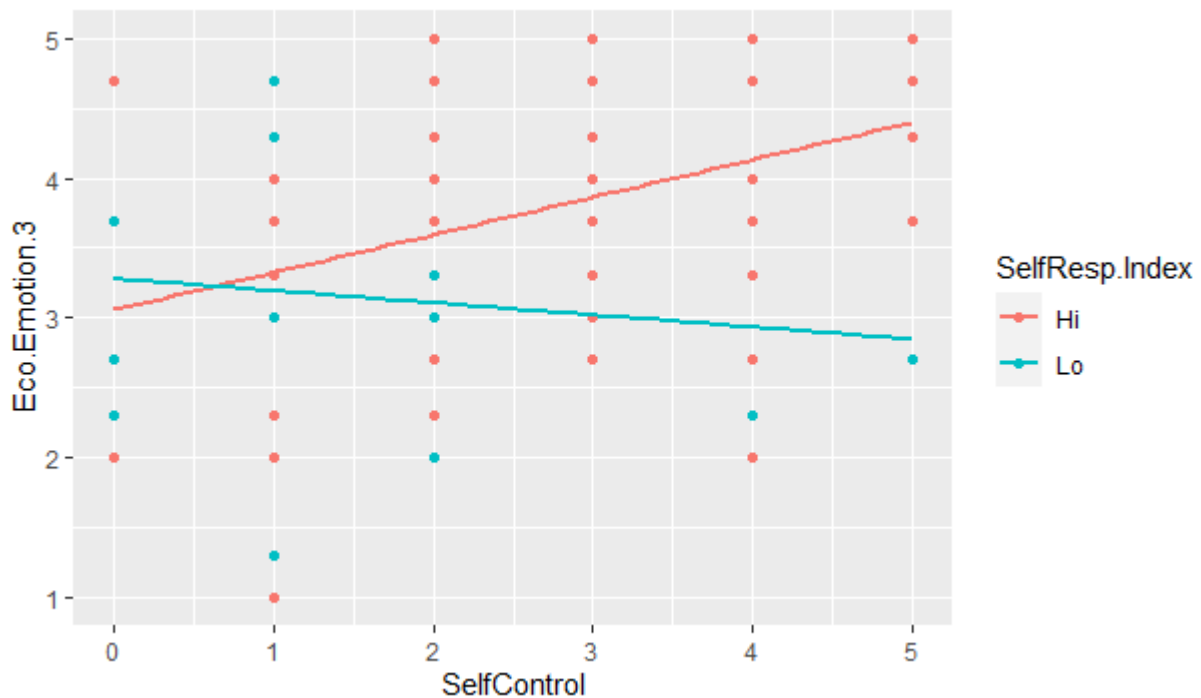**GG Plot: Eco-Emotion (DV) with Self-Responsibility (IV) and Self Control index (Co-Variate)**

Remarks: This plot shows that Self Responsibility has a positive impact on Eco-Emotion without any significant interaction effect of Self-Control (slopes seem almost equal)

```
> mod_LOC_Agency <- aov(Eco.Emotion ~ SelfResp* SelfCont.Index, data = ISproj_con_2)
> summary(mod_LOC_Agency)
                        Df Sum Sq Mean Sq F value   Pr(>F)
SelfResp                 1  21.80  21.801  31.528 2.21e-07 ***
SelfCont.Index           1   0.58   0.584   0.845    0.360
SelfResp:SelfCont.Index  1   0.24   0.238   0.344    0.559
Residuals               89  61.54   0.691
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Remarks; Self-Responsibility has a significant positive relationship on Eco-Emotion (p value <<0.05)

GG Plot: Eco-Emotion (DV) with Self Control (IV) and Self-Responsibility index (Co-Variate)

Remarks: This plot shows that Self-control has a positive impact on Eco-Emotion when Self Responsibility Index is high but a negative relationship when the Self Responsibility index is low, implying an interaction effect. The respondents seem to show more arousal based on their self-responsibility rather than self-control.

```
> ISproj_con_2_Full <- lm (Eco.Emotion ~ SelfControl* SelfResp.Index, data = ISproj_con
_2)
> anova(ISproj_con_2_Full)
Analysis of Variance Table

Response: Eco.Emotion
                           Df Sum Sq Mean Sq F value    Pr(>F)
SelfControl                 1 10.090 10.0896 13.5710 0.0003039 ***
SelfResp.Index              1  4.249  4.2490  5.7150 0.0189280 *
SelfControl:SelfResp.Index  1  3.658  3.6582  4.9205 0.0290854 *
Residuals                  89 66.169  0.7435
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Remarks: Self-Control has a significant relationship on Eco-Emotion (p value << 0.05) with a strong interaction effect of self-responsibility index (p value 0.029)
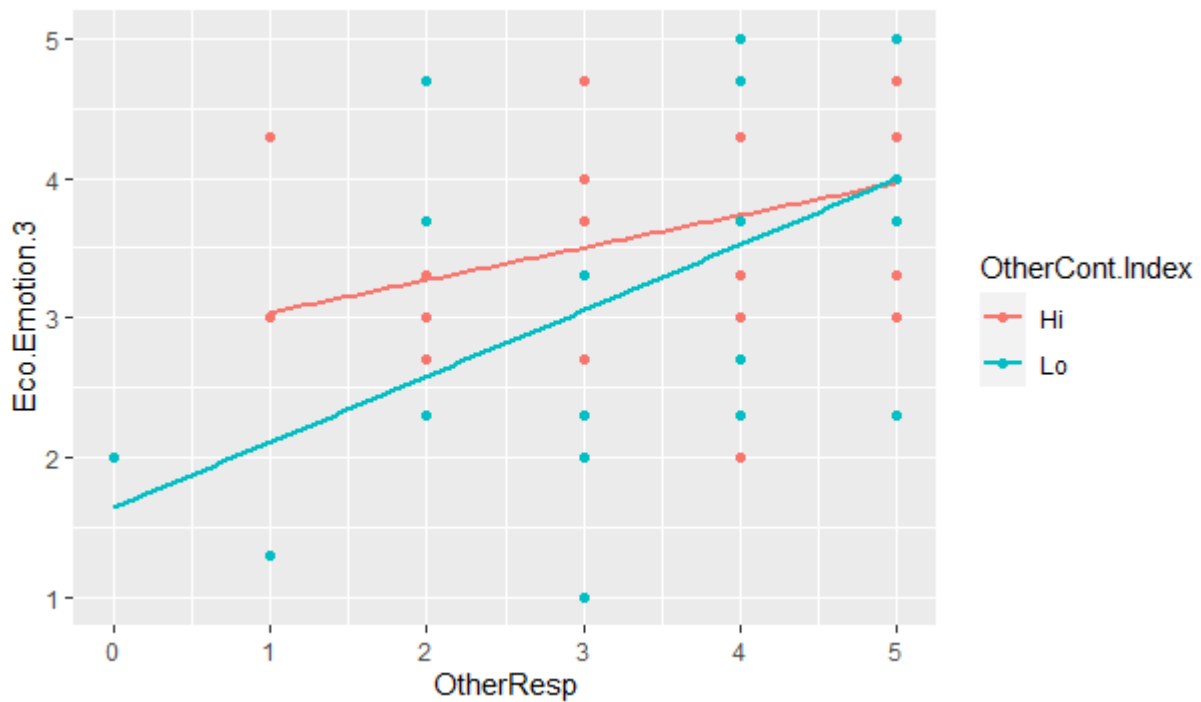
GG Plot: Eco-Emotion (DV) with Other Responsibility (IV) and Other Controllability index (Co-Variate)

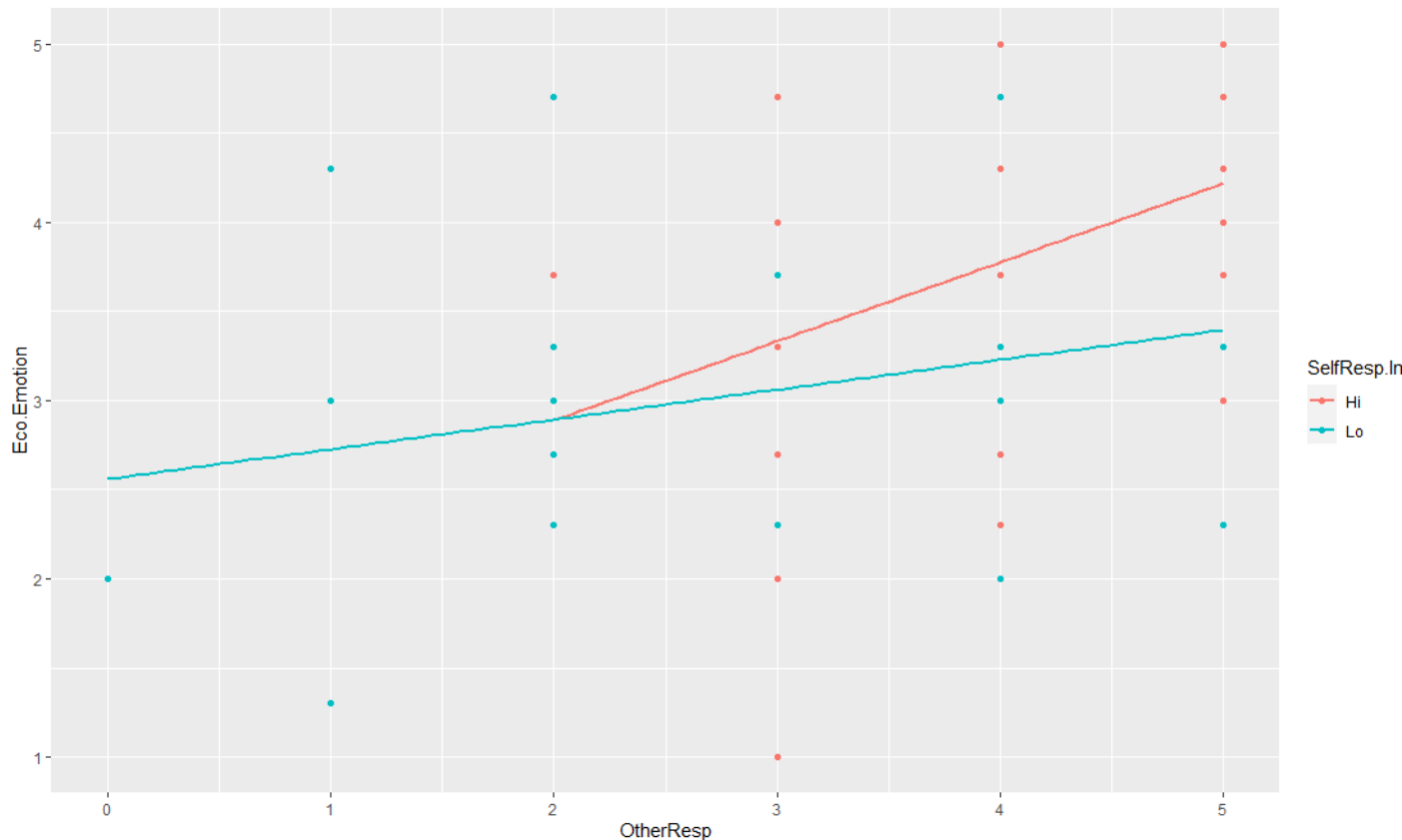**Remark: Though slopes are unequal, there exists no interaction effect of significance.**

```
> mod_LOC_Agency <- aov(Eco.Emotion ~ OtherResp* OtherCont.Index, data = ISproj_con_2)
> summary(mod_LOC_Agency)
                          Df Sum Sq Mean Sq F value  Pr(>F)
OtherResp                  1  15.91  15.913  21.730 1.1e-05 ***
OtherCont.Index            1   1.21   1.211   1.654   0.202
OtherResp:OtherCont.Index  1   1.87   1.868   2.551   0.114
Residuals                 89  65.17   0.732
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Remark: Other Responsibility shows no interaction effect from other-controllability (p=value 0.11).

GG Plot: Eco-Emotion (DV) with Other Responsibility (IV) and Self Responsibility index (Co-Variate)

**Remark: Though slopes are unequal, there exists no interaction effect of significance.**

```
> mod_LOC_Self <- aov(Eco.Emotion ~ OtherResp*SelfResp.Index, data=ISproj_con_2)
> summary(mod_LOC_Self)
                          Df Sum Sq Mean Sq F value   Pr(>F)
OtherResp                  1  15.91  15.913  23.122 6.15e-06 ***
SelfResp.Index             1   4.70   4.704   6.835   0.0105 *
OtherResp:SelfResp.Index   1   2.30   2.300   3.341   0.0709 .
Residuals                 89  61.25   0.688
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Remark: Other Responsibility shows marginally significant interaction effect with Self-Responsibility index (p=value 0.07 at 95% confidence level).
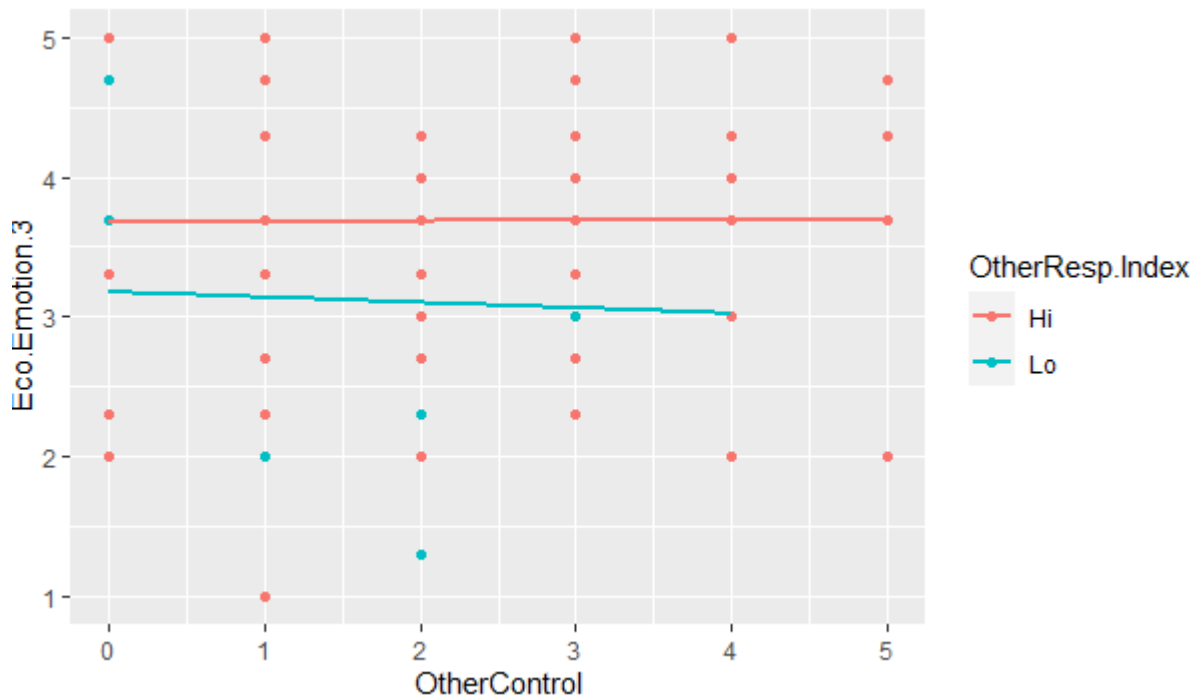
GG Plot: Eco-Emotion (DV) with Other Control (IV) and Other Responsibility index (Co-Variate)

Remark: No effect of Other Control on Eco-Emotion

```
> mod_LOC_Self <- aov(Eco.Emotion ~ OtherControl*OtherResp.Index, data=ISproj_con_2)
> summary(mod_LOC_Self)
                             Df Sum Sq Mean Sq F value Pr(>F)
OtherControl                  1   0.00   0.001   0.001 0.9767
OtherResp.Index               1   3.44   3.441   3.795 0.0546 .
OtherControl:OtherResp.Index  1   0.03   0.031   0.035 0.8528
Residuals                    89  80.69   0.907
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Remark: There is no relationship of Other-controllability with Eco-Emotion nor any interaction effect with other responsibility index.