



**MARCHE POLYTECHNIC UNIVERSITY**  
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**Doctoral School of Management and Law – XXIX Cycle**

**BEING GREEN IS A MATTER OF IMPLICIT  
ATTITUDES AND MIND-SET.**  
**AN APPLICATION OF IMPLICIT ASSOCIATION TEST  
AND CONSTRUAL LEVEL THEORY ON SUSTAINABLE  
CONSUMPTION.**

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There is a crack, a crack in everything

That's how the light gets in.

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# 1. Introduction

## 1.1. Relevance and aim of the research

Consumer behaviour is key to the impact that society has on the environment. The actions that people take and the choices they make – to consume certain products and services rather than others or to live in certain ways - all have direct and indirect impacts on the environment, as well as on personal (and collective) well-being. This is why encouraging sustainable consumer behaviour has become a growing topic of interest in the marketing literature (Karmarkar & Bollinger 2015) and it has been identified as one of the more pressing research topics (Mick 2006).

Over the last 40 years, sustainable and environmental issues have been explored by scholars from different disciplinary backgrounds including economics, marketing, psychology, management, environmental sciences, and sociology. Most of the academic research focused on the behavioural aspects and on the consequences of overconsumption (Stern 2000; Steg & Vleg 2009). Within this research stream, extant research primarily focused on the private sphere, taking into account behaviours such as recycling (Corral-Verdugo 1997; Guagnano, Stern & Dietz 1995; Oreg & Katz-Gerro 2006; Schultz, Oskamp & Mainieri 1995), waste reduction (Ebreo & Vining 2001), water conservation (Corral-Verdugo et al. 2008), energy conservation (Abrahamse et al. 2005; Gatersleben et al. 2002; Kaiser et al. 2005; Nordlund & Garvill 2002; Poortinga et al. 2004), and green or eco-friendly purchasing (Kahn 2007; Nordlund & Garvill 2002; Stern 2000; Young et al. 2010).

However, a significant problem that comes out in this context is the weak relationship between consumers' positive attitudes towards the societal and environmental concerns, and their actual behaviour as individuals, generally known as the attitude-behaviour gap or attitude-action gap (Blake 1999; Kennedy et al. 2009; Kollmuss & Agyeman 2002; Young et al. 2010; Diamantopoulos et al. 2003; Manieri et al. 1997; Gupta & Ogden 2009; Vermeir & Verbeke 2006). This discrepancy between expressed intention and action is of growing concern to academics, policymakers and social institutions that seek to reduce the harmful effects of human existence on the planet (Kennedy et al. 2009).

From the academic perspective, many theoretical frameworks have been developed to explain the gap between the possession of environmental knowledge and environmental

awareness, and displaying pro-environmental behaviour. Although many hundreds of studies have been done, no definitive answers have been found challenge (De Pelsmacker et al. 2005; Carrigan & Attalla 2001; Kollmuss & Agyeman 2002; Fennis et al. 2011). As stated by Kollmuss and Agyeman (2002), the answer to the questions “*Why do people act environmentally and what are the barriers to pro-environmental behaviour?*” is extremely complex. Scholars agree in affirming that a gap between stated intentions (or attitudes) and actual behaviour exists and they still stress that narrowing this gap represents a challenge (De Pelsmacker et al. 2005; Carrigan & Attalla 2001; Kollmuss & Agyeman 2002; Fennis et al. 2011).

Striving to explore the problem and provide some useful insights for marketers and policy-makers, the academic literature has also addressed it from multiple perspectives. The challenge was to contribute to understanding issues like, why consumers act (or fail to act) in a sustainable way; what factors influence their decision-making process; how much consumers care for environmental and sustainable issues, and most importantly, are their attitudes congruent with their actual behaviour? In order to address to this relevant issue, extant research has applied different models, such as the Theory of Planned Behaviour (TPB) (Ajzen 1991), an extension of Fishbein and Ajzen’s Theory of Reasoned Action (TRA), the Norm-Activation Model (NAM) (Schwartz 1977) and its spin-off, the Value-Belief-Norm theory (VBN) (Stern et al. 1999; Stern 2000). However, as scholars suggest, no current model seems solely sufficient to account for the complexity of these behaviours (Gifford et al. 2011).

Despite this increasing attention, there is limited research specifically devoted to consumers’ attitude and behaviours toward eco-friendly packaging. Most studies on packaging focused, indeed, on its communicative characteristics (e.g., labelling, functionality, colour, size), which seem to have a great influence on consumers’ intention to buy (Roper & Parker 2006; Silayoi & Speece 2007; Orth & Malkewitz 2008). As a consequence, research on consumers’ environmental preferences for packaging remain scarce (Lindh et al. 2016) and lack a clear conceptualization in consumer behaviour literature (Magnier & Crié 2015).

Therefore, new research is needed in order to create knowledge on sustainable packaging, to understand and stimulate consumers’ choice of it and consequently to give strategical and practical implications to companies and policy makers. Recent researches



demonstrate that ecologically responsible packaging can positively influence purchase intentions and brand evaluations, allowing for a deeper understanding of consumers' preferences and behaviours (Rokka & Uusitalo 2008; van Birgelen et al. 2009; Koenig-Lewis et al. 2014; Alboretti-Giancristoforo & Bordignon 2016; Fernqvist et al. 2015; Magnier & Criè 2015; Magnier & Schoormans 2015). However, very few attempts focused on packaging materials per se.

This thesis attempts to fill this gap by investigating the role of implicit attitudes and mental construal level in consumers' evaluations of sustainable packaging.

As previously stated, attitudes are crucial for understanding and predicting pro-environmental behaviour. However, marketers have traditionally measured attitudes by reference to verbalised expressions of respondents, allowing for recorded results to be influenced by perceived social norm, among other things. Moreover, stated intention often does not correlate with subsequent behaviour, causing the well-known attitude-behaviour gap.

Following this, social psychologists started to consider attitudes not only to be labile and stable but also to form deliberately and operate automatically (Greenwald & Banaji 1995; Wilson et al. 2000; Fazio & Olson 2003; Perugini 2005). In particular, it has been suggested that attitudes often exist outside of conscious awareness and control (Greenwald & Banaji 1995), and they are able to shape people's automatic reactions to attitude objects and consequently their interactions with them.

Central to the understanding of implicit cognition is the capture of individuals' automatically activated evaluations in an indirect and associative manner. In this regard, social psychologists started to develop implicit measures, for assessing evaluative associations without requiring the respondent to introspect on their feelings (Nosek & Greenwald 2009), and thus for obtaining evaluations that were distinct from self-report (Nosek et al. 2007).

Implicit measures of attitude developed from the 1990s include methodologies as the evaluative priming (Fazio et al. 1995), the Implicit Association Test (Greenwald et al. 1998), the Go/No-Go Association Task (Nosek & Banaji 2001), the Extrinsic Affective Simon Task (De Houwer 2003) and the Affect Misattribution procedure (Payne et al. 2005). Among them, the Implicit Association Test (IAT) has gained considerable support

in the social psychology literature because of its psychometric qualities. It has also found growing support in the consumer behaviour literature (Dimofte 2010; Fazio & Olson 2003; Nosek, Greenwald, & Banaji 2007).

Construal level theory (CLT) explains how psychological distance influences mental representation, judgment, and choice (Liberman & Trope 1998; Trope & Liberman 2003; Trope & Liberman 2010). Psychological distance can vary in terms of time, space, social distance, probability, or any dimension that removes consumers from focusing on themselves in the here and now. Social distance is how familiar another person is to an individual, temporal distance refers to how near or far in time an event occurs whether that event is in the past or future, spatial distance is how physically near or far an event or object is from a person, and hypothetical distance signifies how likely or unlikely an event is to occur (Bar-Anan, Liberman & Trope 2006).

As psychological distance on any of these dimensions increases, consumers are more likely to represent objects and events in high-level, abstract, and global terms that emphasize fundamental properties (e.g., superordinate categories, key attributes, primary reasons for performing an activity). Conversely, as psychological distance on any of these dimensions decreases, consumers are more likely to represent objects and events in low-level, concrete, and local terms that emphasize peripheral issues (e.g., subordinate categories, peripheral attributes, secondary reasons for performing an activity). In other words, mental representations can be arranged along a vertical continuum of abstraction, from low to high. According to CLT, individuals use concrete, low-level construals to represent near events and abstract, high-level construals to represent distant events (Trope & Liberman 2003; Trope & Liberman 2010).

## 1.2. Contribution of the thesis

The thesis contributes to current marketing knowledge on sustainable consumption by expanding the application of implicit attitudes and Construal Level Theory (CLT) into a new domain, such as consumers' evaluation of environmentally friendly packaging.

From a theoretical point of view, the first study has been designed to investigate the relationship between explicit (i.e., self-reported) and implicit (i.e., automatic) consumers' attitudes toward sustainable packaging. Main contribution lies on showing whether Implicit Association Test (IAT) has the potential to more fully explain pro-environmental behaviour or its rejection. Furthermore, the study contributes by answering the call for more research using implicit measures in marketing field to demonstrate their usefulness to a wider audience (Dimofte 2010). In accordance with this, the goal of the first study is a deeper comprehension of the link between implicit and explicit attitudes, that may shed light on the well-known attitude-behaviour gap, since sustainable behaviours, such as buying organic products, are driven not only by rational choices but are also grounded in affective, moral and unconscious motives outside of conscious awareness and control. The application of IAT to consumer behaviour can overcome the limited ability of self-reported measures of attitudes to predict behavioural intention and actual behaviour. Moreover, marketing scholars (Nevid 2010) have also recognised the need for new measures in assessing implicit attitudes. However, especially in the field of sustainable consumption, very limited attempts have been made (Beattie & Sale 2011; Koenig Lewis & Palmer 2015).

Therefore, we aim at contributing to this gap, identifying differences between unconscious and publicly expressed attitudes with respect to the an ecologically friendly food packaging. The purpose is double since we want to adopt a very new methodology in the marketing field and thus contributing to the academic literature on sustainable packaging. According to this, the thesis investigates consumers' attitudes towards buying products, which incorporate sustainable packaging, following these hypotheses:

H1a: We predicted that implicit and explicit attitudes toward compostable packaging are higher positive than implicit and explicit attitudes toward plastic packaging.

H1b: We predict that correlations between implicit and explicit attitude towards compostable packaging differ in the two food categories (healthy vs unhealthy). More

specifically, we predict no correlation between implicit and explicit attitude towards compostable packaging in the case of unhealthy food and a significant correlation between implicit and explicit attitude towards compostable packaging in the case of healthy food.

H1c: We hypothesized that gender differences would emerge when considering implicit and explicit attitudes toward compostable and plastic packaging in the two food categories (healthy vs unhealthy). More specifically, we predicted that women would show higher positive implicit attitude than male in the case of healthy food.

Studies two and three contribute to the extant literature on CLT and sustainable consumption, by exploring how psychological distance affects behavioural intentions toward sustainable packaging, and further if this effect is linked by the presence of benefits associations (self-other). In particular, some scholars have interestingly investigated the existence of a fit in communication framings between CLT and benefits associations and how this can be an alternative explanation to the success or failure of sustainable products. This is consistent with the idea that sustainable consumption can be considered as a social dilemma, since it often implies a trade-off between immediate personal benefits and delayed collective benefits (van Dam & Fischer 2015). Previous research has demonstrated that consumers' mind-sets (abstract vs. concrete) can systematically influence the importance of product benefits. Consumers in a concrete mind-set have been shown to prefer products offering more tangible, personal benefits (Goldsmith & Dhar 2008); whereas consumers in an abstract mind-set prefer products whose benefits meet higher order goals (Fishbach & Dhar 2005). However, empirical research concerning which type of marketing appeals (self-benefit or other-benefit) would be better able to encouraging green consumption behaviours is inconclusive (Green & Peloza 2014).

Building on this, Study 2 and 3 offer a deeper understanding of how a specific match in message framing and construal level provides the identified benefits. Findings of Study 2 and 3 highlight the conditions under which consumers will be more (or less) likely to report positive intentions toward compostable packaging. Furthermore, this work demonstrates that the congruence (vs. incongruence) between individuals' mental representation and the benefits is determinant in evaluating a green product, such a sustainable packaging. In particular, the purpose is to show if the fit between the level of

construal and benefits associations can be proved with regard to sustainable packaging choice. Therefore, we hypothesises that:

H2: When individuals form an abstract representation, highlighting other-benefits (i.e., environmental benefits) may make a sustainable packaging more appealing, because that framing fits with abstract, higher-order values associated with helping the environment.

H2a: Consumers' intentions are more positive when an abstract mind-set and other benefits are combined, rather than a concrete mind-set and other-benefits.

H2b: Consumers' willingness to pay more is more positive when an abstract mind-set and other benefits are combined, rather than a concrete mind-set and other-benefits.

H3: When individuals form a concrete representation, highlighting self-benefits (i.e., healthy and economic benefits) may make a sustainable packaging more appealing, because the framing is congruent with a desire to satisfy more immediate concrete needs.

H3a: Consumers' intentions are more positive when a concrete mind-set and self-benefits are combined, rather than an abstract mind-set and self-benefits.

H3b: Consumers' willingness to pay more is more positive when a concrete mind-set and self-benefits are combined, rather than an abstract mind-set and self-benefits.

Table 1 summarises the theoretical contributions and explicitly links them to the research objectives.

Table 1: Research objectives and contributions

Research Objectives	Hypotheses	Theoretical Contribution	Managerial Implications
<p>Investigate the relationship between explicit (i.e., self-reported) and implicit (i.e., automatic) consumers' attitudes toward sustainable packaging.</p>	<p>H1a: We predicted that implicit and explicit attitudes toward compostable packaging are higher positive than implicit and explicit attitudes toward plastic packaging.  H1b: We predict that correlations between implicit and explicit attitude towards compostable packaging differ in the two food categories (healthy vs unhealthy). More specifically, we predict no correlation between implicit and explicit attitude towards compostable packaging in the case of unhealthy food and a significant correlation between implicit and explicit attitude towards compostable packaging in the case of healthy food.  H1c: We hypothesized that gender differences would emerge when considering implicit and explicit attitudes toward compostable and plastic packaging in the two food categories (healthy vs unhealthy). More specifically, we predicted that women would show higher positive implicit attitude than male in the case of healthy food.</p>	<p>Main contribution lies on showing whether Implicit Association Test (IAT) has the potential to more fully explain pro-environmental behaviour or its rejection. Furthermore, the study contributes by answering the call for more research using implicit measures in marketing field to demonstrate their usefulness to a wider audience (Dimofte 2010).</p>	<p>IAT could represent a useful measurement tool to integrate in the process of evaluating attitudes towards sustainable behaviours. Quantitative questionnaire-based methods may allow respondents to modify or falsify their self-reported answer, in order to elicit desired social impressions. Thus, with the use of this method, participants are less able to misreport their implicit attitudes, allowing researchers to identify those who are experiencing some internal psychological conflict towards this behaviour.</p>
<p>Exploring how psychological distance affects behavioural intentions toward sustainable packaging, and further if this effect is linked by the presence of benefits associations (self-other).</p>	<p>H2a: Consumers' intentions are more positive when an abstract mind-set and other benefits are combined, rather than a concrete mind-set and other-benefits.  H2b: Consumers' willingness to pay more is more positive when an abstract mind-set and other benefits are combined, rather than a concrete mind-set and other-benefits.  H3a: Consumers' intentions are more positive when a concrete mind-set and self-benefits are combined, rather than an abstract mind-set and self-benefits.  H3b: Consumers' willingness to pay more is more positive when a concrete mind-set and self-benefits are combined, rather than an abstract mind-set and self-benefits.</p>	<p>Main contribution lies on offering a deeper understanding of the conditions under which consumers will be more (or less) likely to report positive intentions toward compostable packaging. Furthermore, it demonstrates that the congruence (vs. incongruence) between individuals' mental representation and the benefits is determinant in evaluating a green product, such as sustainable packaging.</p>	<p>Studies 2 and 3 highlight the importance of advertisement appeal in green purchase intention for current businesses. In this sense, marketers and managers should be aware that consumers are more concerned about other-benefits than self-benefits for green products. However, firms offering green products should also consider the mind set of the consumer when determining their product messaging. For instance, in their advertisements marketers should highlight the role of green products in protecting the environment, when consumers are considering purchases for more distant future use, since their mind-set is likely to be more abstract.</p>

### 1.3. Structure of the thesis

This thesis is organised as follows. Chapter 2 provides an overview of theoretical and empirical work on sustainable consumption. This includes a review of the definition of sustainable consumption from both the academic and institutional point of view. After presenting some recent data concerning sustainable consumption patterns at the European level, the main theoretical contributions in studying this topic are described. In doing so, we provide a synthesis of the extant literature on pro-environmental and green behaviours. In addition, this section explores in a deeper way the attitude-behaviour gap within environmental consumerism. The aim is to highlight main limitations that scholars recognise in the attitude-behaviour relationship.

Chapter 3 presents the theoretical background, on which our hypotheses are built on. Since the thesis is focused on consumers' intentions and attitude towards compostable (sustainable) packaging, we start this chapter presenting the main academic contributions that focus on this particular topic. The purpose is to underline extant research and possible gaps. Then, two different sections are devoted to showing theoretical approaches that could be useful in understanding sustainable (or pro-environmental) behaviours. The first one concerns the relation between implicit and explicit attitudes, and the main methodologies used to assess the automatic (i.e., implicit) associations. The second section presents the application of Construal Level Theory (CLT) in studying pro-environmental behaviours. At the end of these two sections, main hypotheses are developed.

Chapter 4 describes the objectives and methodological design of three studies, including aim, design, data collection procedure, methodology, and measures. Consequently, chapter 5 presents empirical findings of the three studies.

To conclude, Chapter 6 discusses the implications of these findings for theory and practise. The research limitations and strength, as well as the directions for future research, are also presented in this final chapter.

## 2. Literature review

The aim of this chapter is to provide an overview of the main theoretical and empirical work on sustainable consumption. This includes a review of the definition of sustainable consumption from both the academic and institutional point of view. The first section, also, presents some recent data concerning sustainable consumption patterns at the European level, since we want to contextualise the phenomenon, in order to understand its impact on our daily lives. Then, the main theoretical contributions in studying sustainable and pro-environmental are described. In doing so, we provide a synthesis of the extant literature on pro-environmental and green behaviours. In addition, the section explores in a deeper way the attitude-behaviour gap within environmental consumerism, stressing the centrality of attitude construct. The aim is to highlight main limitations that scholars recognise in the attitude-behaviour relationship. To conclude, the chapter presents the main theoretical framework used in investigating this topic.

### 2.1. Sustainable consumption: an overview

#### 2.1.1. The concept of sustainable consumption: a “working definition”

Over the last few decades, consumption of goods and services has increased to unexpected levels worldwide, leading to depletion of natural resources, loss of biodiversity and rapid environmental deterioration.

There is a global consensus that necessary changes in human behaviour, and cultural practices are needed to reduce the effects of overconsumption. Individuals are becoming more aware that the age of undisturbed consumerism is coming to an end and that their individual behaviours have a direct impact on the surrounding environment and the lives of future generations.

Moreover, environmental and sustainable issues, as well as the consequences of consumption and production, have become the focus of political and public attention. Several programs and initiatives have been developed by policy makers to improve more sustainable practices. In this regard, the European Union has put in place a broad range of environmental legislation to protect and enhance the quality of the environment.



For these reasons, before presenting the main academic contributions on sustainable consumption literature, we want to contextualise this phenomenon, in order to understand its impact on our daily lives. We start presenting the main definition developed by institutions, and then we report some recent data about sustainable and environmental consumption at the European level.

The first and best-known definition of sustainable development has been formulated by the Brundtland Commission of the United Nations in its report “Our Common Future” (United Nations, 1987), where sustainable development is defined as *“development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs”*.

Several years later, at the United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992, sustainable consumption and production (SCP) was recognised as an overarching theme to link environmental and development challenges. The conference’s final report, Agenda 21, states that the primary cause of the continued deterioration of the global environment is the unsustainable patterns of consumption and production.

The debate continued in 1994 at the Oslo Symposium on Sustainable Consumption. In this circumstance, a working definition of sustainable consumption has been provided: *“the use of goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardize the needs of future generations”* (Norwegian Ministry of the Environment, 1994).

The abovementioned definition has been widely cited in previous works on sustainable and green consumer behaviour, but its actual typology has rarely been clarified.

Accordingly, as reported in the Oslo Roundtable on Sustainable Production and Consumption (1994), *“sustainable consumption is an umbrella term that brings together a number of key issues, such as meeting needs, enhancing the quality of life, improving resource efficiency, increasing the use of renewable energy sources, minimizing waste,*

*taking a life cycle perspective and taking into account the equity dimension. Integrating these component parts is the central question of how to provide the same or better services to meet the basic requirements of life and the aspirations for improvement for both current and future generations, while continually reducing environmental damage and risks to human health”.*

In this regard, the United Nations Environmental Programme (UNEP) suggested a categorization of sustainable consumer behaviours according to the human`s life “functions” (UNEP 2002). In particular, categories recognised concern nutrition (e.g. food waste reduction, organic food, local food, etc.), mobility (e.g. use of environmentally friendly transport, fuels and vehicles, car sharing, etc.), housing (e.g. sustainable building, energy and water conservation, recycling, etc.), clothing (e.g. preference for ethical clothing, organic fabrics, etc.), education (e.g. teaching sustainable living, promoting sustainability, etc.), health (e.g. healthy and environment-friendly lifestyles) and leisure (e.g. sustainable tourism, leisure practices with low resource intensity, etc.).

To fully understand the impact of sustainable consumption in consumers’ everyday lives, we report some recent statistical data regarding the main environmental consumption patterns as developed by the European Environment Agency and by Eurostat. In doing so, we present the main results concerning the households’ consumption.

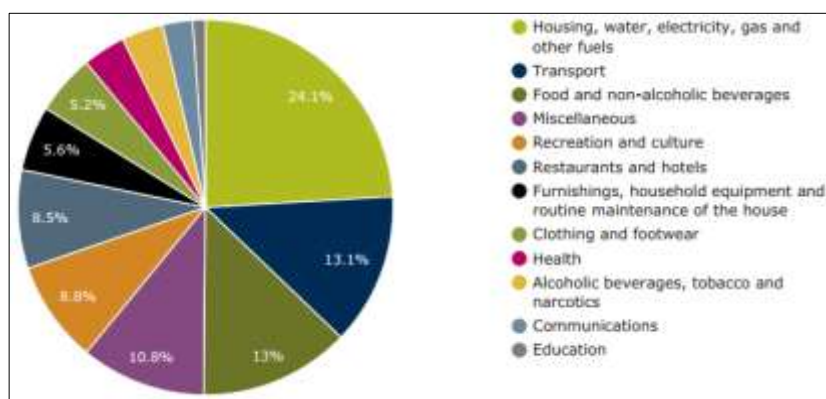
As reported by the European Environment Agency, consumption of goods and services in EU member countries is a major driver of global resource use and associated environmental impacts. European consumption (food and drink, housing, mobility and tourism) is resulting in an increasing share of environmental pressures and impacts worldwide owing to burgeoning global trade. In particular, between 1990 and 2010 in the EU-27, consumption expenditure increased by 33% and households spend between two and six times more than the public sector. The negative environmental effects of goods consumed in Europe are global - resource extraction, production, processing, and transportation impact other regions.

In this line, European policy has only recently begun to address the challenge of unsustainable consumption patterns. European initiatives such as the Integrated Product Policy and the Ecodesign Directive (2009/125/EC) aimed to reduce the environmental

impacts of goods, including their energy consumption, throughout their entire life-cycle. Also, EU policies also stimulate innovation-friendly markets with the EU Lead Market Initiative.

As reported in the State of the Environment Report (SOER 2015), household consumption expenditure in Europe increased by 23% in 1996-2012, contributing to rises in some environmental pressures. Three broad consumption categories - housing and utilities, mobility, and food - account for approximately half of European household expenditure (figure 1) and more than two-thirds of the direct and indirect environmental pressures are caused by household consumption.

*Figure 1: Share of expenditure on household consumption categories*

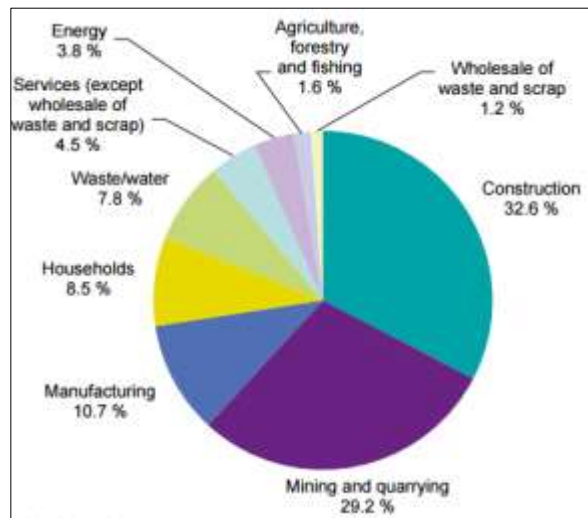


Source: SOER 2015 – The European environment - state and outlook 2015

Within the three main categories, we decide to report some specific data regarding consumption patterns such as waste, recycling, and alike. In some cases, data are presented at the aggregated level.

Starting from waste generation at the European scale, as reported by Eurostat in the Statistical Book “Energy, transport and environment indicators (2015)”, in 2012 the total waste generated in the EU-28 amounted to 2.515 million tonnes, where households account for 8% of the total (figure 2)

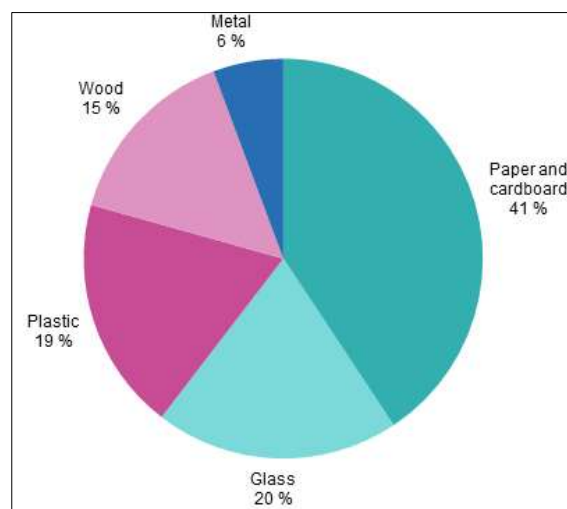
Figure 2: Waste generation by economic activities and households, EU-28, 2012 (%)



Source: Eurostat (2015), Statistical Book “Energy, transport and environment indicators”

An interesting aspect of waste generation is the one regarding packaging waste. Since this thesis will adopt a focus on sustainable packaging consumption, we decide to report some European data regarding it. As reported by Eurostat (2015), in 2013, 156.9 kg of packaging waste was generated per inhabitant in the EU-28. In particular, figure 3 shows that ‘paper and cardboard’, ‘glass’, ‘plastic’, ‘wood’ and ‘metal’ are the most common types of packaging waste in the EU-28, while other materials represent less than 0.3 % of the total volume of packaging waste generated.

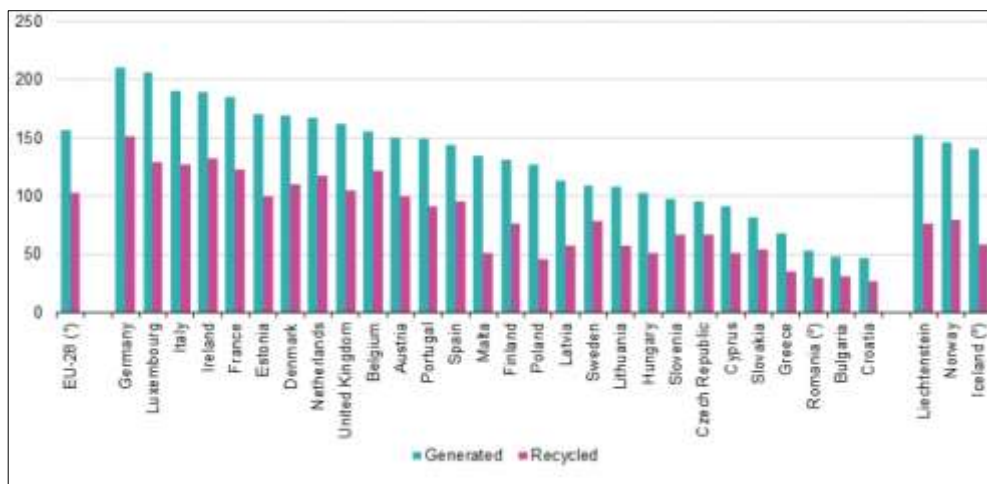
Figure 3: Shares of packaging waste generated by weight, EU-28, 2013



Source: Eurostat (2015)

Strictly linked to this aspect is the one concerning recycling. While for the 2005–2013 period the packaging waste generated shows a slow decline, the recycling and recovery volume in 2013 was significantly higher than in 2005. Figure 4 gives an overview of the data reported by the EU Member States in 2013 on the overall generation and recycling of packaging per inhabitant. The Member States that joined the EU before 2004 showed the highest amount of packaging waste generated except Greece. Of these EU Member States, Austria, Portugal, Spain, Finland and Sweden showed a significantly lower amount of packaging waste generated (all under 150 kg/inhabitant). Romania, Bulgaria and Croatia (53 kg, 48 kg and 47 kg/inhabitant, respectively) exhibited the EU’s lowest amounts of generated packaging waste. Estonia had the highest figure (170 kg/inhabitant) for packaging waste generation among the Member States that joined the EU after 2004.

*Figure 4: Volume of overall packaging waste generated and recycled per inhabitant, 2013*



Source: Eurostat (2015)

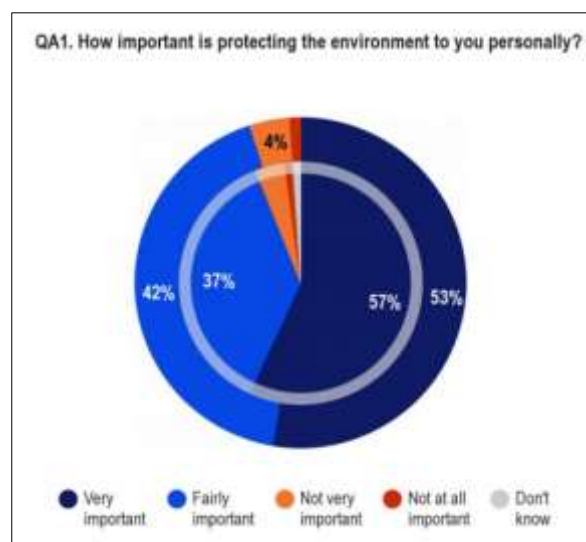
Another interesting topic in sustainable consumption is the one regarding consumers’ attitudes towards the issue of sustainable consumption and more precisely the so-called attitude-behaviour gap. As we will see in the next section, the attitude-behaviour gap in environmental consumerism regards the consumers’ inconsistency between their concern about the environment (attitude) and their regular engagement into sustainable buying (behaviour).

Due to its relevance, this aspect has also been analysed by the European Commission, through specific reports in order to capture the main attitudes and behaviours that European citizens pose with respect to sustainable and environmental issues.

The latest report presented by the European Commission is the Special Eurobarometer (N. 295), titled “Attitudes of European citizens towards the environment” and conducted in 2014. The goal of this survey was to analyse the general attitudes and behaviours towards the environment, reporting citizens’ impressions of the environment and environmental problems, and asking them how they think these issues might be addressed.

Key findings show that almost all Europeans say that protecting the environment is important to them personally, and over half say it is “very important”. Half or more of Europeans also say that they are worried about air pollution and water pollution, while over four in ten are concerned about the impact on health from chemicals in everyday products and the growing amount of waste. In particular, compared with the 2011 survey, there is a slight change in emphasis, since 53% of Europeans (-4 percentage points since 2011) now believe that it is “very important” to them, and 42% (+5pp) believe it is “fairly important” (figure 5).

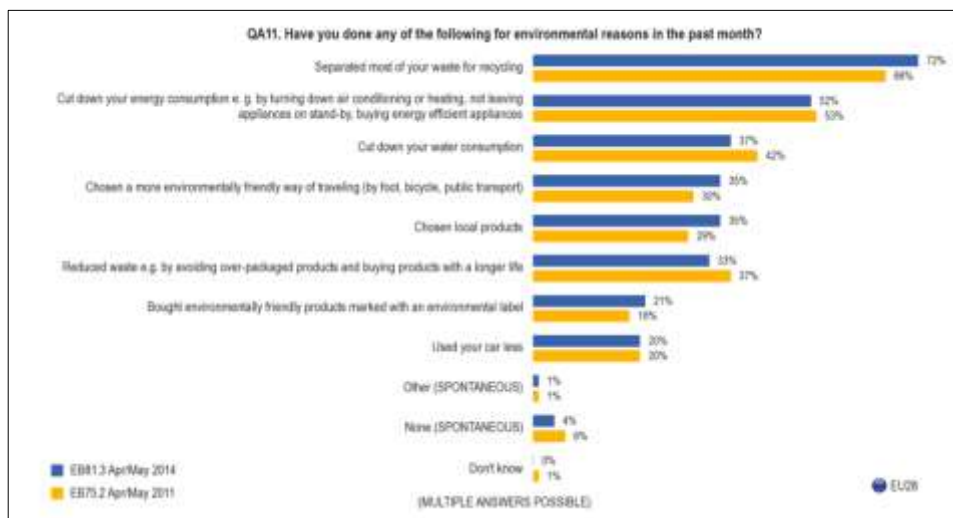
*Figure 5: General attitudes of Europeans towards the environment*



Source: Special Eurobarometer (2014), Attitudes of European citizens towards the environment

Regarding specific attitudes and behaviours of European citizens towards environmental issues, results show that most of them believe they can play a role in protecting the environment. According to this, Europeans implement environmentally-friendly behaviours in their everyday lives such as recycling and cutting down on energy consumption (figure 6). Consistently to previous reports (2011; 2007), separation of waste for recycling (72%, +6pp compared to 2011), cutting down energy consumption (52%, -1pp), and cutting down water consumption (37%, -5pp) were the three most common activities. Roughly a third of respondents also chose a more environmentally-friendly way of travelling (35%, +5pp), chose local products (35%, +6pp), or reduced waste (33%, -4pp). Around a fifth of people bought environmentally-friendly products (21%, +3pp), or used their car less (20%, unchanged). It is noteworthy that the percentage of respondents stating they undertook “None” of the activities declined to 4%, down from 6% in 2011 and 9% in 2007.

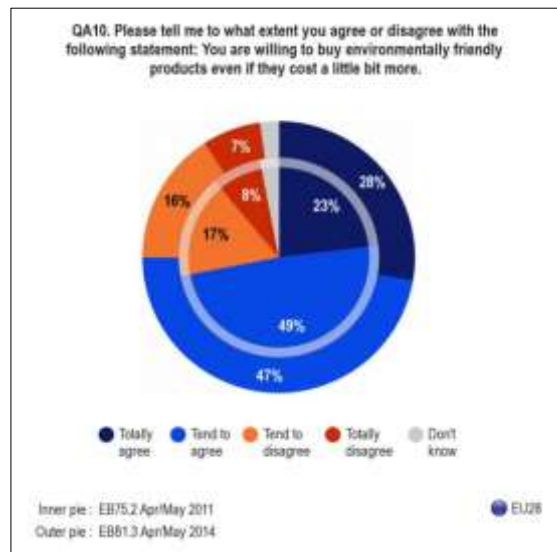
Figure 6: Behaviour and priorities regarding the environment



Source: Special Eurobarometer (2014), Attitudes of European citizens towards the environment.

A focus on Europeans’ willingness to pay more for or to buy environmentally-friendly products has been conducted in all the reports (2014, 2011, 2007), to understand the relations between their intentions and behaviours and possible gaps. Indeed, even if a positive attitude (or intention) towards paying more for or buying environmentally-friendly products is reported in all of them, a gap between Europeans’ intentions and actual behaviours still exist and it can be recognised confronting data regarding actions done in the past month (figure 6) and attitudes (figure 7).

Figure 7: Attitudes towards environmentally-friendly products



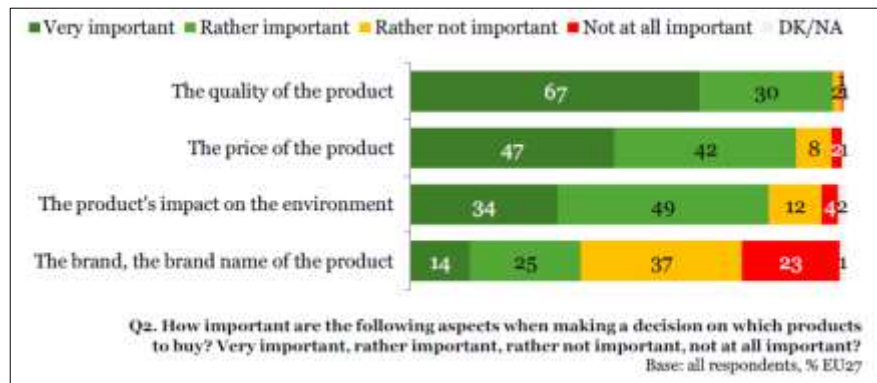
Source: Special Eurobarometer (2014), Attitudes of European citizens towards the environment.

Results on attitudes clearly show that three-quarters of respondents (75%) agree that they would be willing to buy environmentally-friendly products. However, only 21% of respondents report having bought environmentally-friendly products in the last month, confirming that the largest share, nearly 50%, says they are willing to switch to green consumption but have not crossed the threshold between intention and action.

Similar results are the ones reported in the Flash Eurobarometer Survey (2009), titled “Europeans’ attitudes towards the issue of sustainable consumption and production” (Flash N. 256), conducted to examine EU citizens’ knowledge and levels of concern about sustainable consumption and production. Particularly interesting are the findings concerning the environmental impact as a deciding factor when buying products (figure 8). Results show that slightly more than 8 in 10 EU citizens answer that a product’s impact on the environment is an important element when deciding which products to buy (49% “rather important” and 34% “very important”); only 4% say this is not important at all. However, the environmental impact appears to be somewhat less important than a product’s quality or price: virtually all respondents (97%) say that quality is an important element when buying something and 89% say the same about the price of a product. Furthermore, two-thirds answer that the former aspect is very important and almost one in two (47%) say the same about the latter. Surprisingly, almost 6 in 10 interviewees rate environmental impact as more important than a product’s brand name in terms of influencing their product purchasing decisions.



Figure 8: Importance of various aspects of products when deciding which ones to buy



Source: Flash Eurobarometer Survey (2009), "Europeans' attitudes towards the issue of sustainable consumption and production" (Flash N. 256)

### 2.1.2. Main academic contributions in studying sustainable consumption

Over the last 40 years, sustainable and environmental issues have been explored by scholars from different disciplinary backgrounds including economics, marketing, psychology, management, environmental sciences, and sociology.

As a result, a variety of terms have been used to refer to consumer behaviours that reflect the broader and longer-term impacts of consumption on society and/or on the environment (Luchs & Mooradian 2012), such as “sustainable consumption” (Kilbourne et al. 1997; Luchs et al. 2011; Schäfer et al. 2011; Wolff and Schönherr 2011); “socially responsible consumption” (Webster 1975; Antil 1984); “responsible consumption” (Fisk 1973); “green consumption” (Peattie 2010), and “pro-environmental behaviour” (Stern 2000; Steg & Vlek 2009).

Within the academic literature, some of these definitions refer specifically to social issues (e.g. ethical behaviours), others focus on environmental issues (e.g. pro-environmental behaviours), while some refer to both. Despite scholars often used the terms sustainable consumption, pro-environmental behaviour, environmental behaviour, environmentally-sustainable behaviour, and environmentally-friendly behaviour interchangeably (Thøgersen & Ölander 2002), a proper clarification is required in order to understand differences and commonalities and more importantly factors that influence sustainable-environmentally behaviours. Therefore, in this section, we aim at presenting the main definitions of sustainable, pro-environmental and green consumption and at showing very briefly factors that promote or inhibit these behaviours.

According to Kilbourne and colleagues (1997), sustainable consumption can be defined as the one that “minimizes environmental effects, considers the needs of future generations, and produces a better quality of life” (p.5). In the same line is the definition by Luchs and colleagues (2011), for whom sustainable consumption can be defined as “consumption that simultaneously optimizes the environmental, social, and economic consequences of consumption in order to meet the needs of both current and future generations” (p.2). In particular, the authors showed which are the sustainable day-to-day consumption behaviours that consumer faces when trying to consume sustainably. Within the stage of purchase, consumers can opt for buying green products or environmentally-friendly products, for choosing pre-owned or used products, for renting and alike. Regarding the usage stage, particularly important are those behaviours that aim at

reducing overall usage of scarce resources (e.g. electricity, water, energy), while at the final stage of consumption, that is disposition, recycling seems to be the most established behaviour.

Despite some scholars stress that sustainable consumption is a complex issue and a lack of a congruent definition still exists (Dolan 2002; Schaefer & Crane 2005; Mont & Plepys 2008), its relevance in the academic debate is well documented. Over the last years, literature reviews, articles, and special issues have been published in order to contribute at the comprehensions of this phenomenon (Leonidou & Leonidou 2011; Prothero et al. 2001; McDonagh & Prothero 2014).

Within this research stream, most of the academic research focused on the environmental aspects and on the consequences of overconsumption, entailing the development of the literature on environmentally or pro-environmental behaviours (Stern 2000; Steg & Vleg 2009). According to this, we can consider pro-environmental behaviours as a way that could be crucial in altering individuals' behaviour and in turning society towards sustainability.

Similarly to the literature on sustainable and environmental issues, a proliferation of terms have been used, especially in the environmental psychology, including “pro-environmental behaviours” (Bamberg & Moser 2007; Steg et al. 2014), “responsible environmental behaviours” (Cottrell 2003; Hines, Hungerford & Tomera 1986; Vaske & Kobrin 2001), “environmentally responsible behaviours” (De Young 2000), “ecological behaviours” (Gray, Borden & Weigel 1985; Kaiser et al. 1999), “conservation behaviours” (Gosling & Williams 2010; Kaiser, Hubner & Bogner 2005), “environmentally supportive behaviours” (Huddart-Kennedy et al. 2009), and “environmentally significant behaviours” (Stern 2000).

In this regard, particularly relevant is the contribution of Stern (2000), who defined environmentally significant behaviour based on its impact: “the extent to which it changes the availability of materials or energy from the environment or alters the structure and dynamics of ecosystems or the biosphere itself” (p. 408). According to the author, this construct is heterogeneous and multi-dimensional, since it includes both public and private sphere behaviours. Private sphere refers to “the purchase, use, and disposal of personal and household products that have environmental impact” (pp. 409-

410), such as purchase of personal and household goods/services (e.g. energy for the home, travel), the use of environment-related goods (e.g. heating and cooling at home), household waste disposal, and green consumerism (e.g. buying recycled products and organic foods). Conversely, the public sphere is defined as behaviour that affects the environment directly through committed environmental activism (e.g. active involvement in environmental organisations and demonstrations) or indirectly by influencing public policies (e.g. petitioning on environmental issues) (p.409). Steg and Vlek (2009, p. 309) termed pro-environmental behaviour as “behaviour that harms the environment as little as possible, or even benefits the environment”. These two definitions share the notion that consumers behave to protect or cause less damage to the environment than do the alternatives.

Academic literature on pro-environmental behaviour primarily focused on the private sphere, taking into account specific behaviours such as recycling (Corral-Verdugo 1997; Guagnano, Stern & Dietz 1995; Oreg & Katz-Gerro 2006; Schultz, Oskamp & Mainieri 1995), waste reduction (Ebreo & Vining, 2001), water conservation (Corral-Verdugo et al. 2008), energy conservation (Abrahamse et al. 2005; Gatersleben et al., 2002; Kaiser et al., 2005; Nordlund & Garvill, 2002; Poortinga et al., 2004), environmentally-conscious transportation (Kaiser et al., 2005; Oreg & Katz-Gerro, 2006; Poortinga et al., 2004) and green or eco-friendly purchasing (Kahn 2007; Nordlund & Garvill, 2002; Stern, 2000; Young et al. 2010). Again, similar behaviours taken into account in the literature on sustainable consumption have been explored in this research stream.

Regarding green consumption, Pettie (2010) stated that “green consumption is a problematic concept” (p. 197), since it overlaps other concepts, such as ethical (Carrigan et al. 2004; De Pelsmacker et al. 2005), sustainable, or responsible consumption, thus leading to a lack of clarity and consistency in notions of green consumption. However, the author also stressed that even if green consumption behaviour involves some form of pro-environmental behaviour, “research is needed that more strongly integrates sustainability principles into consumption behaviour to move beyond simply reducing environmental impacts” (p. 219).

Since the focus of our work will be on consumers’ choice of a product with a sustainable packaging, thus an environmentally-friendly product, we will use terms such as sustainable or pro-environmental behaviour interchangeably.

To conclude this part, we briefly report the main factors that scholars recognised as able to promote or inhibit sustainable-environmentally behaviours. A deeper understanding of the construct of environmental behaviour will be reported in the next paragraph, where main theories, variables, and measurements will be investigated.

Several attempts in different disciplines have been made to understand which factors predict environmentally behaviours (Hines et al. 1986; Stern 2000; Kollmuss & Agyeman 2002; Bamberg & Moser 2007; Steg & Vlek 2009; Leinoudou & Leinoudou 2011; Gifford & Nilsson 2014). These include visualising the problem at the macro scale and therefore focusing on the non-psychological factors, such as geophysical conditions and political influences (Gifford & Nilsson 2014). Conversely, attempts focused on psychological influences have proposed some main models of pro-environmental concern and behaviour, as the Theory of Planned Behaviour (Ajzen 1991), the Value-Belief-Norm Model (Stern 2000), Norm Activation Theory (Schwartz 1977) and the Focus Theory of Normative Conduct (Cialdini, Reno & Kallgren 1990).

Among these attempts, particularly relevant are the contributions of Stern (2000) and Steg and Vlek (2009). According to Stern (2000), causal variables can be grouped into four major types. The first one is attitudinal factors, which include norms, beliefs, and values. A second major type is external or contextual forces, which include interpersonal influences, community expectations, advertising, government regulations, legal and institutional factors, and other various features of the broad social, economic, and political context. Personal capabilities are a third type of causal variable, while the final one is represented by habits or routine.

Similarly, Steg and Vleg (2009) divided the factors into motivational, contextual and habitual factors. Within the first category, we can identify perceived costs and benefits, moral and normative concerns, and affect, which have been mostly investigated in the literature. These three research paths suggest different perspectives in an attempt to explain individual motivations toward pro-environmental behaviours.

The first perspective (perceived costs and benefits) considers “the assumption that individuals make reasoned choices and choose alternatives with highest benefits against lowest costs (e.g., in terms of money, effort and/or social approval)” (p.311). To show this, Fishbein and Ajzen (1975) and Ajzen and Fishbein’s (1980) Theory of Reasoned

Action, as well as Ajzen's (1991) Theory of Planned Behaviour frameworks have been widely applied in environmental behaviour studies (e.g., Bamberg & Schmidt 2003; Heath & Gifford 2002; Mannetti, Pierro & Livi 2004; Kaiser & Gutscher 2003).

Moral and normative frameworks look at the role of values, moral, and normative aspects in determining environmental behaviours. Theories about values, altruism and environmental concerns, such as New Environmental Paradigm (Dunlap & Van Liere 1978; Dunlap et al. 2000), Theory of Normative Conduct (Cialdini, Kallgren & Reno 1990), Norm-Activation Model (Schwartz 1977; Schwartz & Howard 1981), and Value-belief-norm Theory of environmentalism (Stern et al. 1999; Stern 2000), are good examples of these frameworks.

Following these previous works, Gifford and Nilsson (2014) reported, in a recent review, 18 personal and social factors. The personal factors include childhood experience, knowledge and education, personality and self-construal, sense of control, values, political and world views, goals, felt responsibility, cognitive biases, place attachment, age, gender and chosen activities. The social factors include religion, urban-rural differences, norms, social class, proximity to problematic environmental sites and cultural and ethnic variations.

Table 2 summarises the main references within sustainable consumption academic literature. This summary reveals which approach has dominated the literature.

Table 2: Summary of the main literature on sustainable consumption

Representative selection of studies	Main theoretical framework adopted
<p>Antil 1984; Abrahamse et al. 2005; Bamberg &amp; Moser 2007; Bamberg &amp; Schmidt 2003; Belz &amp; Peattie 2009; Blake 1999; Carrigan et al. 2004; Cialdini et al. 1990; Corradi et al. 2013; Corral-Verdugo 1997; Corral-Verdugo et al. 2008; Cottrell 2003; De Groot &amp; Steg 2007; De Groot &amp; Steg 2008; De Pelsmacker et al. 2005; De Young 2000; Diamantopoulos et al. 2003; Dolan 2002; Ebreo &amp; Vining 2001; Ertz et al. 2016; Fisk 1973; Gatersleben et al. 2002; Gifford &amp; Nilsson 2014; Gleim &amp; Lawson 2014; Gosling &amp; Williams 2010; Gray, Borden &amp; Weigel 1985; Guagnano, Stern &amp; Dietz 1995; Gupta &amp; Ogden 2009; Heath &amp; Gifford 2002; Hines et al. 1986; Huddart-Kennedy et al. 2009; Johnstone &amp; Hooper 2016; Kahn 2007; Kaiser &amp; Gutscher 2003; Kaiser et al. 1999; Kaiser et al. 1999; Kaiser et al., 2005; Kennedy et al. 2009; Kilbourne et al. 1997; Kollmuss &amp; Agyeman 2002; Kormos &amp; Gifford 2014; Laroche et al. 2001; Leonidou &amp; Leonidou 2011; Leonidou, Leonidou, &amp; Kvasova 2010; Loibl, Kraybill, &amp; DeMay 2011; Luchs &amp; Mooradian 2012; Luchs et al. 2011; Manieri et al. 1997; Mannetti, Pierro &amp; Livi 2004; McDonagh &amp; Prothero 2014; McKeercher et al. 2010; Mont &amp; Plepys 2008; Nordlund &amp; Garvill, 2002; Oreg &amp; Katz-Gerro, 2006; Peattie 2010; Polonsky et al. 2012; Poortinga et al. 2004; Prothero et al. 2001; Richetin, Conner, &amp; Perugini 2011; Rokka and Uusitalo 2008; Schaefer &amp; Crane 2005; Schäfer et al. 2011; Schultz, Oskamp &amp; Mainieri 1995; Steg &amp; Vlek 2009; Steg 2008; Steg et al. 2014; Stern 2000; Thøgersen &amp; Ölander 2002; Thøgersen &amp; Ölander 2006; Vaske &amp; Kobrin 2001; Vermeir &amp; Verbeke 2006; Webster 1975; Wolff and Schönherr 2011; Young et al. 2010.</p>	<p>Theory of reasoned action (TRA) (Ajzen &amp; Fishbein 1980; Fishbein &amp; Ajzen 1975)  Theory of planned behaviour (TPB) (Ajzen, 1991)  Norm activation model (NAM) (Schwartz, 1977)  New environmental paradigm (NEP) (Dunlap and Van Liere, 1978)  Universal value types (Schwartz, 1994)  Value-belief-norm theory (VBN) (Stern et al., 1999)</p>

## 2.2. The “attitude-behaviour” gap in sustainable consumption

In the previous section, we showed how encouraging sustainable consumer behaviour is a growing topic of interest in the academic literature (Karmarkar & Bollinger 2015) and has been identified as one of the more pressing research topics (Mick 2006). As stated before, sustainable and environmental issues have been explored by scholars from different disciplinary backgrounds including economics, marketing, psychology, management, environmental sciences, and sociology.

In addition, environmental and sustainable issues have become relevant for policy maker. Environmental challenges such as climate change are caused by unsustainable patterns of human activity, and they will demand large-scale changes to everyday life across all sectors of society. Moreover, there is now increasing evidence that the people and institutions have become much more aware of global warming, climate change, and environmental risks. In this regard during the last years, governments and organisations have made significant efforts, to implement policies and actions that encourage a more sustainable consumption and production (SCP).

However, a significant problem that comes out in this context is the weak relationship between consumers’ positive attitudes towards the societal and environmental concerns, and their actual behaviour as individuals, generally known as the attitude-behaviour gap or attitude-action gap (Blake 1999; Kennedy et al. 2009; Kollmuss & Agyeman 2002; Young et al. 2010; Diamantopoulos et al. 2003; Manieri et al. 1997; Gupta & Ogden 2009; Vermeir & Verbeke 2006). This discrepancy between expressed intention and action is of growing concern to academics, policymakers and social institutions that seek to reduce the harmful effects of human existence on the planet (Kennedy et al. 2009).

From the political and institutional perspective, according to recent research on Europeans’ and Americans’ attitude toward environmental concern (Peycheva et al. 2014), it emerges that environmental problems concern both Europeans (90%) and Americans (80%). However, it appears they do not affect them enough to make personal expenses for environmental protection: the number of those willing to cut their standard of living or to pay higher prices and taxes to protect the environment is extremely limited (around 20% of Americans; around 10% of Europeans). In the same line the European report titled “Attitudes of European citizens towards the environment” (Special Eurobarometer 416, 2014), where results on attitudes clearly show that three-quarters of



European respondents (75%) agree that they would be willing to buy environmentally-friendly products. However, only 21% of respondents report having bought environmentally-friendly products in the last month, confirming that the largest share, nearly 50%, says they are willing to switch to green consumption but have not crossed the threshold between intention and action. Slightly different the results on Americans' attitude toward the environment shown in the study by The Associated Press-NORC Center for Public Affairs Research and The Yale School of Forestry & Environmental Studies (2015): many Americans incorporate pro-environmental behaviours into their everyday routines, with 82% having at least one environmentally friendly shopping, eating, or transportation habit as part of their lifestyle.

From the academic perspective, many theoretical frameworks have been developed to explain the gap between the possession of environmental knowledge and environmental awareness, and displaying pro-environmental behaviour. Although many hundreds of studies have been done, no definitive answers have been found (De Pelsmacker et al. 2005; Carrigan & Attalla 2001; Kollmuss & Agyeman 2002; Fennis et al. 2011). As stated by Kollmuss and Agyeman (2002), the answer to the questions: "*Why do people act environmentally and what are the barriers to pro-environmental behaviour?*" is extremely complex. Scholars agree in affirming that a gap between stated intentions (or attitudes) and actual behaviour exists (LaPiere 1934; Wicker 1969; Mittal 1988; Belk et al. 2005; De Pelsmacker et al. 2005; Carrigan & Attalla 2001; Kollmuss & Agyeman 2002; Fennis et al. 2011) and they still stress that narrowing this gap represents a challenge.

The value-action gap (attitude-behaviour gap) is a term used to describe the gap that can occur when the values or attitudes of an individual do not correlate to their actions. Blake (1999) referred to the value-action gap "to signify in general terms the differences between what people say and what people do" (p.275). This phenomenon has been widely documented within both the social psychology field and the ethical consumerism sub-field (Carrington et al. 2014; Carrington et al. 2010) as well as the sustainable consumerism sub-field (Blake 1999; Kennedy et al. 2009; Kollmuss & Agyeman 2002; Young et al. 2010; Diamantopoulos et al. 2003; Belz & Peattie 2009; Manieri et al. 1997; Gupta & Ogden 2009; Vermeir & Verbeke 2006). However, as stated before, decades of research on environmental attitudes have shown equivocal results regarding their ability

to predict consistent behaviour. In this regard, some authors mention a 30 to 3 ratio, based on the idea that out of a 30% of respondents that state their intentions to buy sustainable or environmentally products, only a 3% will translate this into actual action (Young et al. 2010; Davies et al. 2012).

In order to fully comprehend this inconsistency, we show the main limits that scholars recognise in the attitude-behaviour relationship and those specifically related to pro-environmental behaviours.

The most widely known definition of attitude is the one by Allport (1935, p. 810) who defined attitude as "... a mental and neural state of readiness, organised through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related". Early research in social psychology assumed that attitude was the key to understanding human behaviour (Thomas & Znaniecki 1918; Watson 1925). However, some investigators demonstrated that people might say one thing and do another, suggesting an inconsistency between attitudes and related behaviour (e.g. LaPiere 1934; Wicker 1969). In this regard, an important review by Wicker (1969) contributed to the scepticism concerning the attitude construct. After conducting his review over thirty contemporary studies, he reached the following conclusion regarding the strength of the attitude-behaviour relation (p. 65): "Taken as a whole, these studies suggest that it is considerably more likely that attitudes will be unrelated or only slightly related to overt behaviours than that attitudes will be closely related to actions. Product-moment correlation coefficients relating the two kinds of responses are rarely above .30, and often are near zero".

One of the main concerns on the validity of attitudes in predicting behaviours is what Ajzen and Fishbein (2005) defined "evaluative inconsistency", that is, a failure of general attitudes to predict a given behaviour with respect to the object of the attitude (e.g., Himelstein & Moore 1963; Rokeach & Mezei 1966; Warner & DeFleur 1969). Social psychologists agree in affirming that attitudes correlate with behaviour only to the extent that the predictor and criterion are measured at compatible levels of generality or specificity regarding their target, action, context, and time elements (Ajzen & Fishbein 1977, 2005).

Consistently to this point, a number of theorists have proposed that the intention to perform a behaviour, rather than attitude, is the closest cognitive antecedent of actual behavioural performance (Fishbein & Ajzen 1975). An intention expresses a person's willingness to perform a certain behaviour and captures motivational factors that influence behaviour. Much of the research on the intention-behaviour relation and the determinants of intention was made in the context of the Theory of Reasoned Action (TRA) (Ajzen & Fishbein 1980; Fishbein & Ajzen 1975) and the Theory of Planned Behaviour (TPB) (Ajzen 1991). Several meta-analyses of the empirical literature have provided evidence to show that intentions can be predicted with considerable accuracy from measures of attitudes toward the behaviour, subjective norms, and perceived behavioural control or self-efficacy (Armitage & Conner 2001; Albarracín et al. 2001; Shepherd, Hartwick, & Warshaw 1988).

Another significant and slightly different attempt in understanding the relation between attitudes and behaviour is the one by Fazio (1990), who proposed a sophisticated model (MODE - motivation and opportunity as determinants of attitude-behaviour relation) to explain the moderation effect of an attitude's strength and accessibility. Starting from the definition of attitude as “a learned association in memory between an object and a positive or negative evaluation of that object, and attitude strength as equivalent to the strength of this association” (Fazio, 1990), the MODE model assumes that attitudes can be activated either in a deliberate or in an automatic way. Thus, automatic attitude activation occurs when a strong link is established in memory between the attitude object and a positive or negative evaluation. The stronger the attitude, the more likely it is that it will be automatically activated and, hence, be chronically accessible from memory. Consequently, attitudes easily accessible from memory are better predictors of specific behaviours than weak, inaccessible attitudes (Fazio 1990).

Main limitations in attitude construct deal with its measurement and the so-called response biases. Long before it became evident that attitudes were poor predictors of behaviour, scholars were concerned with the validity of verbal attitude measures. It was argued that such measures might be systematically distorted or biased and, thus, may not reflect a person's true attitude (e.g., Campbell 1950; Cook & Selltiz 1964; Guilford 1954; Fazio 2007). The earliest and most frequently cited response bias is the tendency to give socially desirable responses on attitude and personality inventories (Bernreuter 1933;

Lenski & Leggett 1960; Vernon 1934). Furthermore, in accordance with the MODE model, explicit measures may not be able to capture the associative and automatic character of attitudes, an automatic process being defined as a process, which does not require any effort, which is initiated spontaneously, and which cannot be avoided (Fazio, 1990). In the same vein, Greenwald and Banaji (1995) suggest a conceptual distinction between self-reported evaluations derived from introspective effort (“explicit attitudes”), and automatic evaluations, which may occur outside of conscious awareness (“implicit attitudes”). Consequently, social psychologists have shown considerable interest in a variety of “new implicit measures” (Petty, Fazio, & Briñol 2009) which tap evaluative associations stored in memory automatically and unconsciously, without the need for conscious introspection. Implicit measures of attitude developed from the 1990s include methodologies described as evaluative priming (Fazio et al. 1995), the Implicit Association Test (Greenwald et al. 1998), the Go/No-Go Association Task (Nosek & Banaji 2001), the Extrinsic Affective Simon Task (De Houwer 2003) and the Affect Misattribution Procedure (Payne et al. 2005). Among these, the Implicit Association Test (IAT) has gained considerable support in the social psychology literature because of its psychometric qualities. It has also found growing support in the consumer behaviour literature (Dimofte 2010; Fazio & Olson 2003; Nosek, Greenwald & Banaji 2007).

This previous part allows us to better understand how attitude-behaviour gap has been explored within the environmental domain and more precisely how environmental behaviours have been investigated by scholars. As reported by Gupta and Ogden (2009, p.378), attitude-behaviour gap in environmental consumerism deals with different aspects such as:

- low correlations among environmental behaviours;
- different levels of specificity in the attitude-behaviour measures;
- effects of external variables;
- and lack of measurement reliability and validity (Mainieri et al. 1997).

Regarding the first point, past research has shown that pro-environmental behaviours performed by the same individual are not significantly correlated: someone who supports one type of environmental behaviour may not necessarily participate in others (Kahn 2007). For example, Thøgersen and Ölander (2006) find consumers’ recycling behaviour does not necessarily relate to their use of alternative green transportation. McKercher and

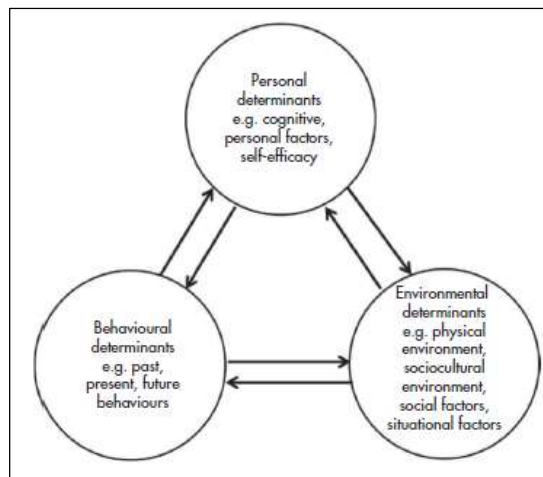
colleagues (2010) find that while international tourists in Hong Kong expressed intentions to behave in pro-environmental ways, they are less willing to alter their behaviour when it comes to cutting air travel to reduce their carbon footprints. Oreg and Katz-Gerro (2006) find that, across 27 countries, environmental attitudes influenced sustainable behaviours (e.g., recycling, reduced driving, and alike) differently.

The second point is strictly linked to what we presented before as the “evaluative inconsistency”. As stated by Kaiser and colleagues (1999, p.5), the possible lack of measurement correspondence between environmental attitude and ecological behaviour is well recognised, and it can be summarized as follows: if one’s environmental attitude is assessed generally, “the behavioural criterion should be equally general or comprehensive” (Weigel et al. 1974, p.728). However, academic research seems to be rather disappointing (Bamberg 2003). Reviews of the many studies analysing the direct empirical relationship between environmental concern and behaviour all agree in the conclusion that this relation is low to moderate. In this regard, Hines and colleagues (1986-1987), in their meta-review, found stronger correlations between attitudes toward a specific environmental behaviour and the frequency of that behaviour than between general environmental concern and related environmental behaviour. Similar results in Bamberg and Moser meta-review (2006), where attitude seems to have a low-moderate impact both on intentions ( $\beta = 0.29$ ) and on behaviour ( $\beta = 0.15$ ).

About the effect of external variables, as we have seen in the previous section (§2.1.2), scholars agree in affirming that both personal and social factors can moderate and mediate this gap (Corradi et al. 2013; Gleim & Lawson 2014; Ertz et al. 2016; Johnstone & Hooper 2016; Steg & Vlek 2009). Among them we can mention: economic factors (Steg 2008), availability of products and services (Steg 2008), habits (Loibl, Kraybill, & DeMay 2011), perceived behavioural control (Richetin, Conner, & Perugini 2011), social and personal norms (Cialdini et al. 1990; Schwartz 1977), values and beliefs (Schwartz 1992; Stern et al. 1995; De Groot & Steg 2007, 2008), contextual factors such as the availability of recycling facilities, the quality of public transport, the market supply of goods, or pricing regimes (Steg & Vlek 2009), socio-demographic variables (Laroche et al. 2001; Diamantopoulos et al. 2003); individuality (attitude and temperament), responsibility (locus of control), and practicality (lack of time, lack of money, and lack of information) (Blake 1999). Johnstone and Hooper (2016) reported a schematisation of

the behavioural, personal and environmental determinants of green behaviours and their relations (figure 9).

*Figure 9: Determinants of green behaviours*



Source: Adopted from Johnstone and Hooper (2016)

Last point concerning attitude-behaviour gap in environmental literature deals with the measurement of environmental attitudes and behaviours that may affect the interpretation of their relationship (Mainieri et al. 1997). The broader survey methodology literature suggests that self-reports are only weakly associated with actual behaviour (Kormos & Gifford 2014). Inaccuracies may stem from a variety of sources. For example, self-report measures may be prone to exaggeration. Some evidence suggests that individuals tend to over-report their pro-environmental behaviour (Barr 2007; Fuj et al. 1985; Warriner et al. 1984), and social desirability bias has been suggested as a cause for this over-reporting and thus an important limitation of self-report measures of pro-environmental behaviour (Randall & Fernandes 1991; Carrigan & Attalla 2001; Auger & Devinney 2007). Social desirability bias is when consumers over-report their attitudinal preferences and purchase intentions when responding to ethical and environmental issues in order to appear more socially responsible (Johnstone & Hooper 2016). Another disadvantage of self-report measures is that they are subjective by nature since descriptors widely used, such as “often”, may mean different things to different participants (Kormos & Gifford 2014). In addition, some scholars suggested that self-reports may largely reflect individuals' perceptions of their behaviour or behavioural intentions rather than objective behaviour. Another aspect concerns the object under measurement. In this regard, within much of the environmental focused research using the TRA framework (Abdul-Muhmin 2007;

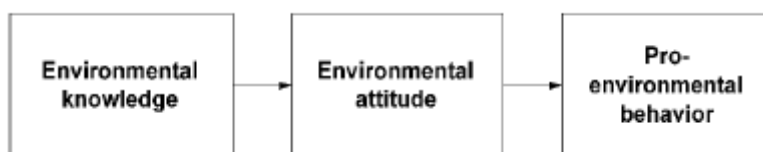
Bang et al. 2000), researchers have tended to focus on intentions rather than actual behaviours, with the assumption that intentions determine behaviours, although Davies et al. (2002) suggests that intentions might not translate into actual behaviour. To address this potential inconsistency, some environmental marketing researchers have examined behaviour rather than intentions (Polonsky et al. 2012; Leonidou, Leonidou, & Kvasova 2010) following what suggested by Rokka and Uusitalo (2008).

### 2.3. Main theoretical models in studying pro-environmental behaviours

In accordance with previous parts, it appears evident that environmentally significant behaviour is dauntingly complex, both in its variety and in the causal influences on it. Therefore, a wide range of theories in the literature has been applied to environmental behaviour studies (e.g., Vining & Ebreo 2002; Steg & Vlek 2009), mostly focused on individual motivations. Among the models widely used in studying pro-environmental or green behaviours, we can mention the Theory of Planned Behaviour (TPB) (Ajzen 1991), an extension of Fishbein and Ajzen's Theory of Reasoned Action (TRA), the Norm-Activation Model (NAM) (Schwartz 1977) and its spin-off, the Value-Belief-Norm theory (VBN) (Stern et al. 1999; Stern 2000). However, as scholars suggest, no current model seems solely sufficient to account for the complexity of these behaviours (Gifford et al. 2011).

According to Kollmuss and Agyeman (2002, p.241), the oldest and simplest models of pro-environmental behaviour were based on a linear progression of environmental knowledge leading to environmental awareness and concern (environmental attitudes), which in turn was thought to lead to pro-environmental behaviour (figure 10). These rationalist models assumed that educating people about environmental issues would automatically result in more pro-environmental behaviour. However, they were soon proven to be wrong, leading scholars to apply more sophisticated models.

*Figure 10: Early models of pro-environmental behaviour*



Source: Kollmuss and Agyeman (2002)

It has been argued that knowledge about the environment must be present for environmentally responsible consumer behaviour to occur (Hines, Hungerford, & Tomera 1986; Maloney & Ward 1973; Schlegelmilch et al. 1996). Environmental knowledge is defined as “general knowledge of facts, concepts, and relationships concerning the natural environment and its major ecosystems” (Fryxell & Lo 2003, p. 48). Therefore, environmental knowledge involves what people know about the environment and the key relationships leading to environmental impacts (Mostafa 2007).



Environmental knowledge can be general in nature, such as awareness of environmentally friendly products, or more specific knowledge on issues such as recycling or carbon offset programs (Schahn & Holzer 1990). Past research indicates that consumers who have greater environmental knowledge are more likely to act in a positive way (Gram-Hanssen 2010; Hines et al., 1986; Mostafa 2007; Pickett-Baker & Ozaki 2008).

Another important construct, central in investigating pro-environmental behaviour, is the one of environmental attitude. This construct have been defined as a psychological tendency expressed by evaluating the natural environment with some degree of favour or disfavour (Milfont 2007; Milfont & Duckitt 2010). In addition, it is strictly linked to the construct of environmental knowledge, since the latter has been identified one of the main antecedents in forming positive or negative environmental attitudes.

Despite a large number of environmental attitudes measures, only three have been widely used and had their validity and reliability assessed (Dunlap & Jones 2003; Fransson & Gärling 1999). These are the Ecology Scale (Maloney & Ward 1973; Maloney, Ward, & Braucht 1975), the Environmental Concern Scale (Weigel & Weigel 1978), and the New Environmental Paradigm (NEP) Scale (Dunlap & Van Liere 1978; Dunlap et al. 2000). These three scales examine multiple phenomena or expressions of concern, such as beliefs, attitudes, intentions and behaviours, and concerns about various environmental topics, such as pollution and natural resources.

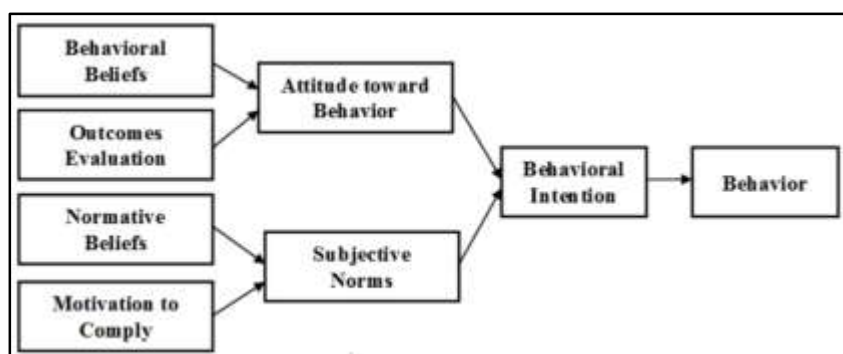
#### *2.2.2.1. Theory of Reasoned Action (TRA) and Theory of Planned Behaviour (TPB)*

The Theory of Reasoned Action (TRA) (Fishbein & Ajzen 1975) and the Theory of Planned Behaviour (TPB) (Ajzen 1991) focus on theoretical constructs concerned with individual motivational factors as determinants of the likelihood of performing a specific behaviour. TRA and TPB assume that human beings are basically rational and make systematic use of information available to them when making decisions. Moreover, both assume the best predictor of behaviour is behavioural intention, which in turn is determined by attitude toward the behaviour and social normative perceptions regarding it. TPB is an extension of the TRA and includes an additional construct: perceived control over performance of the behaviour.

These theories have been found able to explain and to predict a number of different behaviours (Armitage and Conner 2001; Sheeran 2002), including pro-environmental behaviours (e.g., Polonsky et al. 2012; Abrahamse & Steg 2009; Bamberg & Moser 2007; Heath & Gifford 2002). In particular, TRA and TPB have proven to be successful in explaining various types of environmental behaviour, including travel mode choice (Bamberg & Schmidt 2003; Heath & Gifford 2002; Verplanken et al. 1998), household recycling (Kaiser & Gutscher 2003), waste composting (Mannetti, Pierro, & Livi 2004), the purchasing of energy-saving light bulbs, use of unbleached paper, water use, and meat consumption (Harland et al. 1999).

The Theory of Reasoned Action (TRA) assumes that individuals behave in a rational manner to achieve favourable results and to avoid disappointing others by confounding their expectations. The starting point for this theoretical development is the expectancy-value construction: people behave according to their beliefs about the outcomes of their behaviour and the values they attach to those outcomes (Jackson 2005). TRA is based on the proposition that an individual's behaviour is determined by the individual's behavioural intention (BI) to perform that behaviour, which provides the most accurate prediction of behaviour (Fishbein & Ajzen 1975). Moreover, behavioural intention is a function of two factors: one's attitude toward the behaviour (A) and subjective norm (SN) (figure 11).

*Figure 11: Theory of Reasoned Action*



Source: Fishbein and Ajzen (1975)

Attitude toward the behaviour is defined as “a person’s general feeling of favourableness or unfavourableness for that behaviour” (Ajzen & Fishbein 1980). Subjective Norm is defined as a person’s “perception that most people who are important to him think he should or should not perform the behaviour in question” (Ajzen & Fishbein 1980).

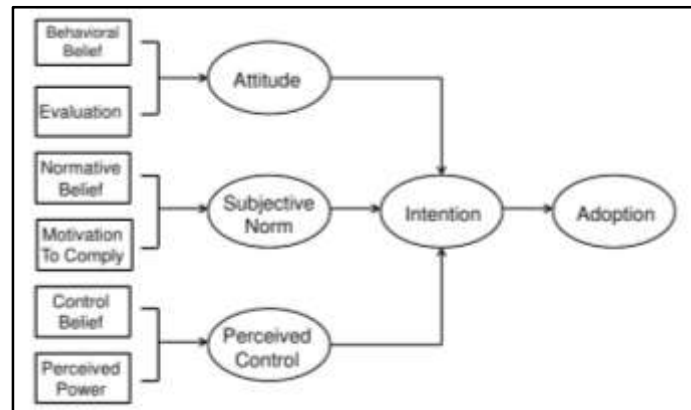
Attitude toward behaviour is a function of the product of one's salient belief (B) that performing the behaviour will lead to certain outcomes, and an evaluation of the outcomes (E), i.e., rating of the desirability of the outcome. Thus, a person who holds strong beliefs that positively valued outcomes will result from performing the behaviour will have a positive attitude toward the behaviour. Conversely, an individual who holds strong beliefs that negatively valued outcomes will result from the behaviour will have a negative attitude. Attitude thus is defined as  $A = \sum B_i E_i$ .

Subjective Norm is a function of the product of one's normative belief (NB) which is the "person's belief that the salient referent thinks he should (or should not) perform the behaviour" (Ajzen & Fishbein 1980), and his/her motivation to comply (MC) to that referent. A person who believes that certain referents think she should perform a behaviour and is motivated to meet expectations of those referents will hold a positive subjective norm. Conversely, a person who believes these referents think she should not perform the behaviour will have a negative subjective norm, and a person who is less motivated to comply with those referents will have a relatively neutral subjective norm. Thus, Subjective Norm can be defined as  $SN = \sum NB_i MC_i$ .

One main limitation of this theory has been recognised in the fact that the predictive validity of the TRA becomes problematic if the behaviour under study is not under full volitional control (Sheppard et al. 1988).

The Theory of Planned Behaviour (TPB) (Ajzen 1991) is an extension of the TRA specifically to those situations in which actions are not under volitional control. The specific modification is to include a new variable known as perceived behavioural control (PBC) as an additional indicator of both intention and action (figure 12).

Figure 12: Theory of Planned Behaviour



Source: Ajzen (1991)

According to the TPB, three major factors influenced intentions to perform a given behaviour: a favourable or unfavourable evaluation of the behaviour (attitude toward the behaviour), perceived social pressure to perform or not perform the behaviour (subjective norm), and self-efficacy in relation to the behaviour (perceived behavioural control). PBC is defined as “the person’s belief as to how easy or difficult performance of the behaviour is likely to be” (Ajzen & Madden 1986). PBC is a function of control beliefs (CB) and perceived facilitation (PF). Control belief is the perception of the presence or absence of requisite resources and opportunities needed to carry out the behaviour. Perceived facilitation is one’s assessment of the importance of those resources to the achievement of outcomes (Ajzen & Madden 1986). PBC can be defined as  $PBC = \sum CB_i PF_i$ .

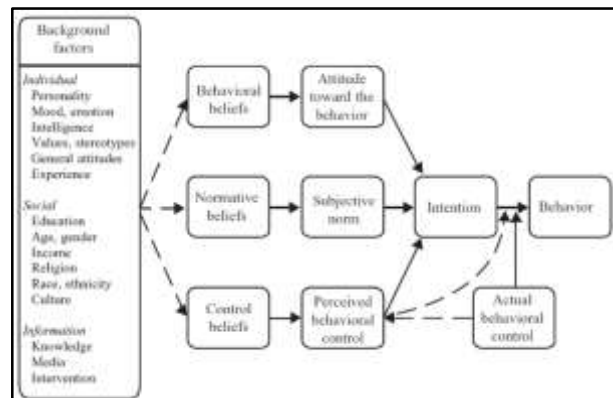
Ajzen’s inclusion of perceived control (Ajzen 1991) was based in part on the idea that behavioural performance is determined jointly by motivation (intention) and ability (behavioural control). A person’s perception of control over behavioural performance, together with intention, is expected to have a direct effect on behaviour, particularly when perceived control is an accurate assessment of actual control over the behaviour and when volitional control is not high. The effect of perceived control declines and intention is a sufficient behavioural predictor in situations in which volitional control over the behaviour is high (Madden, Ellen & Ajzen 1992). Generally, the more favourable the attitude and subjective norm, and the greater the perceived behavioural control, the stronger should be the person’s intention to perform the behaviour in question. To

conclude, according to Ajzen and Fishbein (2005, p.194), fundamental assumptions of this model are:

1. intention is the immediate antecedent of actual behaviour;
2. intention, in turn, is determined by attitude toward the behaviour, subjective norm, and perceived behavioural control;
3. these determinants are themselves a function, respectively, of underlying behavioural, normative, and control beliefs;
4. behavioural, normative, and control beliefs can vary as a function of a wide range of background factors.

Figure 13 shows all background factors and antecedents of intentions and behaviour (Ajzen & Fishbein 2005).

Figure 13: The theories of reasoned action and planned behaviour.



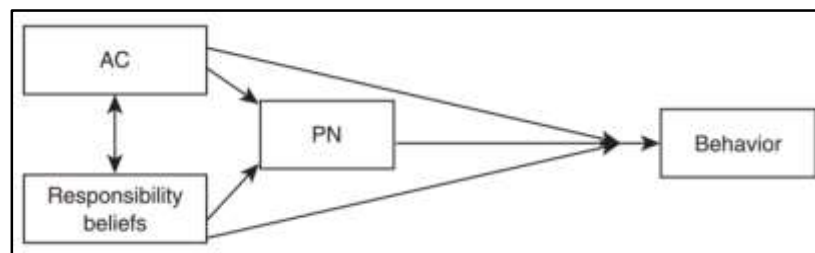
Source: Ajzen and Fishbein 2005

#### 2.2.2.2. Norm Activation Theory (NAT)

A second theoretical framework applied to pro-environmental behaviours has its origin in models of altruism, empathy, and prosocial behaviour (Kollmuss & Agyeman 2002). Scholars indeed agree in affirming that pro-environmental behaviour is a particular case of prosocial behaviour because it also implies that people benefit others, whereas often, no direct individual benefits are received by engaging in these behaviours (De Groot & Steg 2009). Within this broad research stream, one of the main contributions is the one by Schwartz (1977; 1992).

Norm Activation Theory (NAT) or Norm Activation Model (NAM) (Schwartz 1977; Schwartz & Howard 1984) is one of the most widely applied models of moral behaviour. The original motivation of the theory was to provide a framework for understanding prosocial and altruistic behaviours. The basic premise of the theory is that personal norms are the only direct determinants of pro-social behaviours (figure 14).

Figure 14: Schwartz's (1977) Norm-Activation Theory



Source: Schwartz (1977)

According to the NAT, personal norms (PN) which are “feelings of moral obligation to perform or refrain from specific actions” (Schwartz & Howard 1984, p.191) result in prosocial actions. Personal norms form the core of this model, and they are activated when someone acknowledges that not acting pro-socially will lead to negative consequences for others or the environment (Awareness of Consequences; AC) and when someone feels responsible for these negative consequences (Ascription of Responsibility; AR). If the actor fails to activate personal norms, no actions will be recognised as appropriate, and no prosocial action will follow.

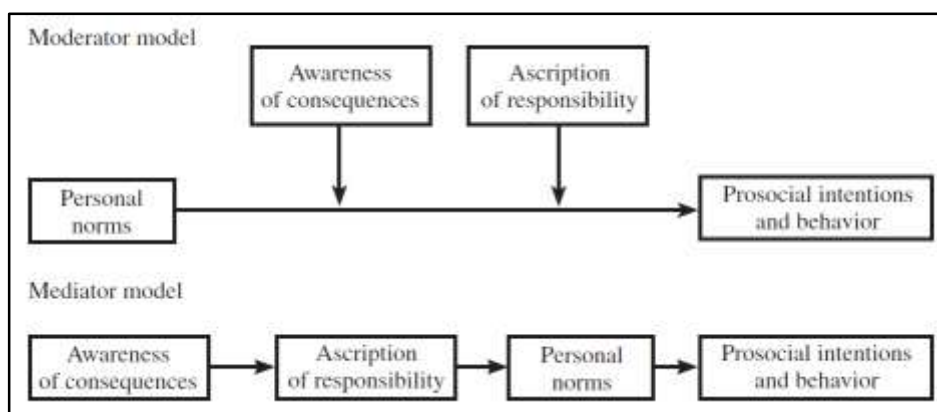
In this theory, norm activation begins with an individual's awareness of conceivably detrimental consequences and his/her ascription of responsibility for not acting pro-environmentally. This awareness activates a personal norm that determines whether

he/she should perform a particular action that prevents a harmful outcome (Cordano et al. 2011; De Groot & Steg 2009). The core concept of personal norm in Schwartz's theory is markedly different from the concept of subjective norm (social norm) embodied in the TRA: while expectations (and possible sanctions) stemming from social norms are anchored in the social environment, expectations and sanctions from personal norms stem from the individual's self (Jackson 2005).

Empirical evidence support the theory's applicability to a range of environmental issues: the NAM appeared to be successful in explaining various kinds of pro-environmental behaviours, including energy conservation (Osterhus 1997; Tyler, Orwin & Schurer 1982), willingness to pay for environmental protection (Guagnano 2001; Guagnano, Dietz & Stern 1994), pro-environmental political behaviour (Joireman et al. 2001; Stern et al. 1999), recycling (Bratt 1999; Hopper & Nielsen 1991; Vining & Ebreo 1992) and general pro-environmental behaviour (Nordlund & Garvill 2002; Schultz et al. 2005).

However, as stated by De Groot and colleagues (2007, p.106) empirical studies that use the NAM show different interpretations of the model. In essence, two interpretations of the NAM have been postulated: some scholars suggest that AC is an antecedent of AR, AR is an antecedent of PN, and PN influences behaviour (mediator model), whereas others assume that the influence of PN on prosocial behaviour is moderated by AC and AR (moderator model) (figure 15). Several studies have also extended the TPB with NAM variables, the personal norm concept in particular (Abrahamse & Steg 2009). However, results suggest that the explanatory power of the NAM concepts (in addition to TPB) may vary for different behaviours.

*Figure 15: Norm Activation Model of prosocial behaviour as moderator and mediator*



Source: De Groot and Steg (2009, p.427)

Another relevant attempt by Schwartz is the so-called Value Theory, which has been used as the base in Stern and colleagues' Value-Belief-Norm Theory (Stern et al. 1999; Stern 2000). Values make a significant and strong contribution to the explanation of different environmental beliefs and behavioural intentions (De Groot & Steg 2008). According to value-belief-norm theory (Stern, 2000; Stern et al., 1999), values are the first link in a causal chain influencing worldviews, awareness of negative consequences of behaviour, and ascription of personal responsibility for those consequences, thus activating personal norms that lead to ERB.

Schwartz (1992) defined a value as “a desirable trans-situational goal varying in importance, which serves as a guiding principle in the life of a person or other social entity” (p.21). The total number of values that people possess is relatively small. Therefore, about other antecedents of behaviour (e.g., attitudes), values provide an economically efficient instrument for describing and explaining similarities and differences between persons, groups, nations, and cultures (Rokeach 1973).

Schwartz's (1992) Value Theory posits that there are ten motivational value types, organised in two bipolar dimensions: Openness to Change vs. Conservation (in the sense of valuing tradition and conformity), and Self-Enhancement vs. Self-Transcendence (figure 16).

Figure 16: Schwartz' Value Theory



Source: Schwartz (1992)



The first dimension, openness to change versus conservatism, distinguishes values that stress independence, such as self-direction and stimulation, from values that emphasise tradition and conformity. In particular, it arrays values in terms of the extent to which they motivate people to follow their own intellectual and emotional interests in unpredictable and uncertain directions versus to preserve the status quo and the certainty it provides in relationships with close others, institutions, and traditions (Schwartz 1992, p.43).

The second dimension distinguishes a social or self-transcendent value orientation from an egoistic or self-enhancement value orientation. Whereas the first value orientation includes altruistic and biospheric values such as universalism and benevolence, the latter includes values that are related to pursuing personal interests, such as power and achievement. As defined by the author (Schwartz 1992, p.43), this dimension “arrays values in term of the extent to which they motivate people to enhance their own personal interests (even at the expense of others) versus the extent to which they motivate people to transcend selfish concern and promote the welfare of others, close and distant, and of nature”.

Two main aspects of Schwartz’s (1992) theory of human values concern the content of values and the structure of values. The content of value is its source of motivation, and the structure of values is the relationship between the values. Schwartz’s theory is based upon 57 single values, which can be abstracted into ten value types encompassing similar motivations (figure 17).

Figure 17: Schwartz’s 57 single values

Value type	Single values
Universalism	Broadminded, wisdom, social justice, equality, a world at peace, a world of beauty, unity with nature, protecting the environment
Self-direction	Creativity, freedom, independent, curious, choosing own goals, <i>self-respect</i>
Stimulation	Daring, a varied life, an exciting life
Hedonism	Pleasure, enjoying life, self-indulgent
Power	Social power, authority, wealth, preserving my public image, <i>social recognition</i>
Achievement	Successful, capable, ambitious, influential, <i>intelligent</i> ,
Security	Family security, national security, social order, clean, reciprocation of favors, <i>sense of belonging, healthy</i>
Tradition	Humble, accepting my portion in life, devout, respect for tradition, moderate
Conformity	Politeness, obedient, self-discipline, honoring of parents and elders
Benevolence	Helpful, honest, forgiving, loyal, responsible, <i>true friendship, mature love</i>

Source: Schwartz 1992

The second component of Schwartz's theory describes the relationships among the ten value types. The conflict and compatibilities between these values are such that behaviour consistent with one value may conflict with another value. The determining factor in the relationship between the values is whether or not their motivational goals are compatible (figure 18).

*Figure 18: Schwartz's value types and their motivational goals*

Value type	Motivational goal
Power	Social status and prestige, control or dominance over people and resources
Achievement	Personal success through demonstrating competence according to social standards
Hedonism	Pleasure and sensuous gratification for oneself
Stimulation	Excitement, novelty, and challenge in life
Self-direction	Independent thought and action – choosing, creating, exploring
Universalism	Understanding, appreciation, tolerance, and protection, for the welfare of all people and for nature
Benevolence	Preservation and enhancement of the welfare of people with whom one is in frequent personal contact
Tradition	Respect, commitment, and acceptance of the customs and ideas that traditional culture and religion provide
Conformity	Restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms
Security	Safety, harmony, and stability of society, of relationships, and of self

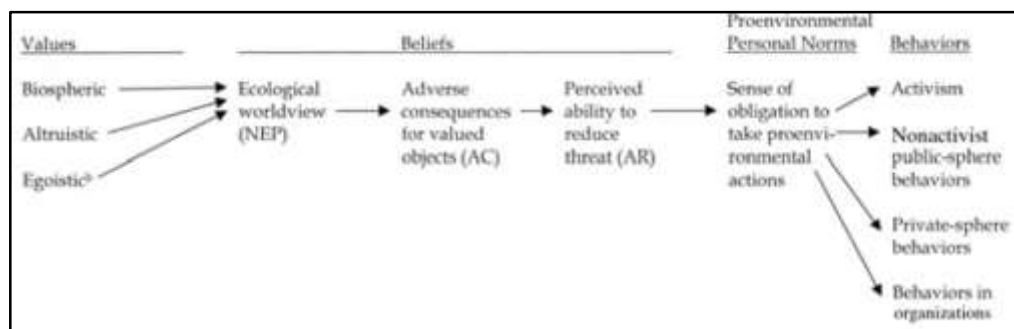
Source: Schwartz 1994

Although Schwartz theorised about how values are related to moral obligations, most of the empirical studies based on the NAM did not include values explicitly into the model. They only included AC and AR, or AC or AR (e.g., Eriksson, Garvill, & Nordlund 2006; Hopper & Nielsen 1991; Stern et al., 1999). Furthermore, the NAM does not explicate which values are relevant when explaining prosocial behaviour. However, research shows that especially the self-transcendent versus self-enhancement dimension is related to different types of environmental beliefs and behaviours because environmental behaviour often involves a conflict between immediate individual gains and long-term collective interests (Nordlund & Garvill 2002; Thøgersen & Ölander 2002; Stern 2000). Most studies have found that people with a dominant self-transcendent value orientation have stronger pro-environmental beliefs and are more likely to engage in pro-environmental behaviour than people who strongly prefer self-enhancement values (Bardi & Schwartz 2003; Cameron, Brown & Chapman 1998; Gärling et al. 2003; Karp 1996; Nordlund & Garvill 2002; Stern & Dietz 1994; Stern, Dietz & Guagnano 1998).

### 2.2.2.3. Value-Belief-Norm (VBN)

Value-Belief-Norm (VBN) theory (Stern 1999; Stern et al. 1999; Stern 2000) connects Value Theory, Norm-Activation Model, and the New Environmental Paradigm (NEP) viewpoint using a causal series of connected variables that lead to relevant behaviour. These connected variables in VBN are: (1) personal values (biospheric, altruistic, and egoistic), (2) ecological worldview (NEP), (3) awareness of undesirable consequences (AC), (4) ascription of responsibility to self (AR), and (5) personal norms (PN) for acting pro-environmentally (figure 19).

Figure 19: Value-Belief-Norm Theory of Environmentalist



Source: Stern 2000

According to VBN theory, environmental behaviour results from personal norms, i.e. a feeling of moral obligation to act pro-environmentally. These personal norms are activated by beliefs that environmental conditions threaten things the individual values (awareness of consequences, AC beliefs) and beliefs that the individual can act to reduce this threat (ascription of responsibility; AR beliefs). VBN theory proposes that AC and AR beliefs are dependent on general beliefs on human–environment relations (NEP) and on relatively stable value orientations. Therefore, VBN theory links NEP to the NAM by postulating that NEP is ‘a sort of ‘folk’ ecological theory from which beliefs about the adverse consequences of environmental changes can be deduced’ (Stern, 2000, p. 413).

As already shown, VBN theory consists of two sub-theories: (1) Schwartz’s model of human values, and (2) New Environmental Paradigm (NEP). The base of the VBN model is the values that explain environmentalism, which are represented to varying degrees in all individuals. Slightly different but strictly linked to the original model by Schwartz (1992), Stern and colleagues suggested three tenets of environmental value (Stern et al. 1999; Stern, Dietz & Kalof 1993). First, biospheric values are centered on non-human

species and the biosphere. Altruism constitutes a second value for individuals concerned about human welfare and it links to Schwartz's self-transcendence value. Finally, egoistic values are related to self-interest, in that individuals who wish to achieve this endpoint act favourably toward environmental preservation if they believe their personal well-being is threatened and act unfavourably if there are high (figurative) individual costs, thus corresponding to Self-Enhancement value clusters defined by Schwartz. Regarding the NEP scale, it is related to principles about living in harmony with or having mastery over natural and social worlds (Schwartz 1999). The NEP scale has appeared in a variety of forms: the original scale contained 12 survey items that tapped three facets of belief structure, including the balance of nature, limits to growth, and human rights to rule over the rest of nature (Dunlap & Van Liere 1978). The scale was later extended to 15 items by adding two other dimensions: rejection of human exemptionalism (which reflects the idea that humans are exempt from the constraints placed by nature) and the possibility of an eco-crisis.

VBN theory was successful in explaining various environmental behaviours, among which are consumer behaviour, environmental citizenship, willingness to sacrifice, and willingness to reduce car use (Stern et al. 1999; Nordlund & Garvill 2003). However, the substantial empirical literature supports many of the individual hypothesised relationships among the variables in the VBN theory, even though only a few studies test the full set of causal relationships (Stern et al. 2000).

### 3. Theoretical background and hypotheses development

This chapter aims at presenting the theoretical background, on which our hypotheses are built on. Since the thesis is focused on consumers' intentions and attitude towards compostable (sustainable) packaging, we start this chapter presenting the main academic contributions that focus on this particular topic. The purpose is to underline extant research and possible gaps. Then, two different sections are devoted to showing theoretical approaches that could be useful in understanding sustainable (or pro-environmental) behaviours. The first one concerns the relation between implicit and explicit attitudes, and the main methodologies used to assess the automatic (i.e., implicit) associations. The second section presents the application of Construal Level Theory (CLT) in studying pro-environmental behaviours. At the end of these two sections, main hypotheses are developed.

#### 3.1. Focus on Sustainable Packaging

The topic of sustainable and eco-friendly packaging is increasingly attracting the attention of academics and practitioners. Moreover, environmental consequences of packaging consumption have become the focus of political and public attention, as shown in the previous chapter (see § 2.1.).

Although the growing interest, research on consumers' environmental preferences for packaging remain scarce (Lindh et al. 2016) and lack a clear conceptualization in consumer behaviour literature (Magnier & Crié 2015). Different terms have been used when studying eco-friendly packaging, such as green packaging design, sustainable design, eco-design, design for the environment and environmentally conscious design (Boks & Stevels 2007). Moreover, most studies on packaging focused on its communicative characteristics (e.g. labelling, functionality, colour, size), which seem to have a great influence on consumers' intention to buy (Roper & Parker 2006; Silayoi & Speece 2007; Orth & Malkewitz 2008).

Therefore, new contributions are needed in order to create knowledge on sustainable packaging, to understand and stimulate consumers' choice of it and consequently to give strategical and practical implications to companies and policy makers. Consumers are increasingly demanding more environmentally friendly packaging in terms of reduced

packaging, or packaging which can be recycled or reused (Magnier & Schoormans 2015) and research into consumer attitudes on new packaging indicate that consumers now expect all packages to be environmentally friendly (Olsen, Slotegraaf, & Chandukala 2014).

However, few studies compared the importance of environmental product packaging with other relevant product attributes (Bech-Larsen 1996; Thøgersen 2000; Shiram & Forman 1993) and first attempts indicate that the functional packaging characteristics (convenience of use, design, and aesthetics) are those able to influence consumers' purchasing decisions, whereas environmental characteristics do not seem to have any practical importance.

In this regard, Shiram and Forman (1993) analyse the importance of a product's environmental attributes in relation to its other features (e.g. price, brand name, packaging) on customer preference and choice decisions. The study compares American and Dutch consumers to verify if cross-cultural differences exist among the different attributes as well as the different products. Through a conjoint analysis on three products (milk, washing machine and deodorants), the study shows that American and Dutch consumers rate environmental attributes differently. For instance, in the case of milk, American consumers seem to be extremely sensitive to the recyclability of the packaging, rated as the most important attribute, followed by the type of milk and its price, while Dutch consumers give more importance to the type of milk (low fat), the type of container (paper, glass, plastic) and its recyclability. Interestingly, the results show that both groups of consumers prefer paper container rather than the plastic container, which seems to have a negative correlation.

A similar study is the one by Bech-Larsen (1996), which investigates Danish consumers' attitudes towards food packaging and its environmental consequences. Based on four different studies, the paper shows that respondents tend to be more affected by taste and price attributes. Moreover, with regard to the packaging characteristics, the paper clearly demonstrates that the functional characteristics are those having the strongest influence on purchasing decisions, whereas the environmental ones hardly seem to be a reason for purchase. However, as suggested by the author "there is a group of consumers with strong preferences for sustainable packaging, so there is probably also a market for this type of packaging" (p.40).

Thøgersen study (2000) analyses Danish consumers' choice of environment-friendly packaging. The author, in his work, suggests that environment-friendly buying behaviour is based on moral reasoning rather than on economic ones and that personal norm is a strong predictor of consumers' propensity to choose environment-friendly packaging in the supermarket. However, results allow for further explanations, since "there are many other determinants of attention than personal norms, as indicated by the large unexplained rest variance". The structural analysis shows, indeed, that consumers sometimes do not choose environment-friendly packaging – or choose less of it than they would have preferred to do – due to lack of attention to the issue in the shopping situation, not allowing for a clear comprehension of the main decision drivers.

Differently to these previous studies, recent researches demonstrate that ecologically responsible packaging can positively influence purchase intentions and brand evaluations, allowing for a deeper understanding of consumers' preferences and behaviours (Rokka & Uusitalo 2008; van Birgelen et al. 2009; Koenig-Lewis et al. 2014; Alboretti-Giancristoforo & Bordignon 2016; Fernqvist et al. 2015; Magnier & Criè 2015; Magnier & Schoormans 2015). The main contributions of these studies lie in investigating the individual antecedents that can positively influence consumers' responses to ecological cues, among which ecological concern is one of the most studied. However, the studies do not present univocal results and, more specifically, explanations of the linkages between attitudes to ecologically responsible products and actual purchase behaviour remain incomplete (Koenig-Lewis et al. 2014). Furthermore, very few attempts have been made to clearly define the meaning of sustainable packaging as perceived by consumers.

Rokka and Uusitalo (2008) analyse the relative importance of green packaging when compared with other relevant product attributes (brand, price, package resealability). Adopting a choice-based conjoint analysis, the authors asked respondents to evaluate and make choices among different product alternatives having different attribute level compositions. In contrast to previous studies, results show that environment-friendly or ethical product aspects have a clear positive impact on consumer choices: the environmental packaging (carton package) seems to be the preferred product attribute, whereas both non-recyclable and plastic packages produce negative utility estimates (p.520). Regarding the other product attributes, not surprisingly, respondents rate price

attribute as equally important as the environmental packaging, preferring the least expensive product.

In the same line, the results by van Birgelen et al. (2009), within the context of beverage consumption, which suggest that consumers are willing to trade off various product attributes in favour of environment-friendly beverage packaging, except for taste and price. In other words, “consumers seem to be willing to turn toward ecological beverage packages, as long as the taste of the beverage and the price remain largely unchanged” (p.140). Furthermore, results suggest that environmental purchase and disposal decisions depend predominantly on the environmental awareness of consumers and on having an eco-friendly attitude.

Another attempt in understanding consumers’ choices with regard to eco-friendly packaging is the one by Koutsimanis et al. (2012). Using the same methodology of Rokka and Uusitalo study (2008) - a cluster and conjoint analyses - the study aims at understanding which packaging attributes (price, packaging material, size, shelf life, etc.) are considered to have an influence on consumer purchase decisions for food and, as a consequence, also on its consumption. Results show that, even if respondents seem to be concerned about the consequences of packaging material on food product quality and they rate containers made from bio-based materials as highly appealing, no significant differences exist between clusters either regarding the importance of package characteristics or preferred material as well as for the evaluated attribute “disposal method” (recyclable, compostable, trash bin).

Based on similar methodology is also the study by Arboretti Giancristofaro and Bordignon (2016), which investigates the influences of packaging features on consumer preferences, applying both conjoint analysis and the less known combination of uniform discrete and shifted binomial distributions (CUB) models. Among the selected packaging attributes (disposal, cookable, size, shape and shelf life), results show that biodegradable packaging and split packs have the highest positive feeling on consumers.

The role of the emotions and their importance in explaining consumers’ evaluations of pro-environmental packaging has been investigated by Koenig-Lewis et al. (2014) study. The main contribution of the paper lies in improving the debate about the role of affective and cognitive processes in informing consumers’ decisions to purchase products



incorporating ecologically responsible packaging. Interestingly, the paper finds evidence that consumers may not only act with rationality and logic when making ecologically responsible purchases and that affect may provide an important explanation of consumers' intention to buy such products. The study also confirms that in addition to emotions, environmental concern significantly influences purchase intention of pro-environmental packaging.

A more recent work, which aims to deeply understand packaging attributes influence on consumers' choices, is the one by Fernqvist et al. (2015). Unlike previous works, it is based on a qualitative methodology, in order to explore consumers' views on different aspects of packaging. Through three focus groups, the authors identify eight themes related to specific packaging features (packaging material; pack size; protection and preservation; convenience; price; communication and information; ethical perspectives; and novelty and innovation). Interestingly, results show that, among them, four aspects emerge as having more importance and the first one concerns packaging material. The interviews reveal strong concerns about packaging material as regards its properties and its environmental impact. Consumers tend to negatively perceive plastic as a material, defining it as "unhealthy", "bad for the environment" and "affluent", whereas paper bags are seen as being "homely", "nice" and giving a "feeling of healthiness". Strictly linked to this aspect is the one concerning ethical perspectives, which were mostly mentioned as an issue of information and communication.

Magnier and Schoormans (2015) investigate the interplay of visual appearance, verbal claim and environmental concern on consumers' reaction on sustainable packaging, assuming that they use the visually-processed design elements, such as material and colour, to categorise the package as a sustainable package. As suggested by the authors, consumers can only make the right categorization when the visual design elements clearly signal sustainability, and it can be the case when packages have an ecological look (e.g. carton-based packages). In line with previous studies, results show that consumers' responses to the visual appearance and verbal sustainability claims of the package depend on their level of environmental concern. More specifically, "when there is no ecological verbal sustainability claim displayed on the package, the ecological-looking package positively influences purchase intention only for consumers with high environmental concern, while there is no significant effect for those with a low level" (p.60).

Furthermore, results reveal that when the ecological verbal sustainability claim is congruent with the visual appearance of the package, both low environmental concern and high environmental concern consumers' responses tend to be more favourable, whereas it is not the same in the case of incongruence between visual appearance and verbal sustainability claim.

As stated before, research on sustainable packaging still lacks a clear conceptualization, and there is also a significant terminology gap between consumers and industry (Nordin et al. 2010). Even if some more technical attempts in defining sustainable packaging have been made, marketing research on this particular concept remains scarce, especially from the consumers' point of view. Consumers seem to perceive sustainable packaging simply in term of its recyclability, since this attribute appears to trump other sustainable attributes, including quantity of packaging material used, in determining choices for environmental-friendly packaging (Nordin et al. 2010).

Main contributions in the definition of sustainable packaging come from the efforts of several organizations such as the Sustainable Packaging Coalition (SPC) in the USA and Sustainable Packaging Alliance (SPA) in Australia, which aim at developing a common understanding within the industry, providing guidance in decision making as well as in shaping vision towards a more sustainable packaging system.

The SPA defines sustainable packaging based on four principles: effective, efficient, cyclic and safe, while the SPC defines it according to eight criteria. Sustainable packaging is then: beneficial, safe and healthy for individuals and communities throughout its life cycle; meets market criteria for performance and costs; is sourced, manufactured, transported and recycled using renewable energy; optimizes the use of recycled source material; is manufactured using clean production technologies and best practices; is made from materials healthy throughout the life cycle; is physically designed to optimize materials and energy; and is effectively recovered and utilized in biological and/or industrial closed loop cycles.

In the marketing field, instead, very few attempts have been made in this regard, calling for a deeper and clearer understanding of the consumers' point of view.

The study by Magnier and Crié (2015) tries to give a definition of the concept of eco-designed packaging, and proposes a consumer-led taxonomy of its cues, analysing

attitudinal and behavioural, positive and negative responses triggered by the perception of these signals, adopting in-depth interviews followed by a series of ten Zaltman Metaphor Elicitation Technique (ZMET) interviews. Results allow the authors to define the eco-designed packaging “as a design that evokes explicitly or implicitly the eco-friendliness of the packaging via its structure (e.g. materials, reduction or removal, recyclability, biodegradability or reusability), its graphical/iconographic cues (e.g.; colours, images/pictures, logos) or its informational cues (e.g.; claims, carbon footprints)” (p.361). Furthermore, they report how consumers value eco-designed packages, suggesting, in line with previous results, that product eco-friendliness does not only entail positive inferences and that many costs are associated with the purchase of green products. However, the authors stress the importance for brands to promote the adoption of eco-designed packaging, highlighting the benefits of convenience associated with this type of packaging (smaller garbage volume, ease of discarding empty containers, the possibility to reuse packaging). Moreover, protection of the environment through the economy of resources, protection of the well-being of others, and the acting to leave a cleaner planet are arguments that brands may be likely to use in order to drive favourable attitudinal and behavioural responses to their eco-designed packaging.

Another attempt in building new knowledge on this aspect is the one by Lindth et al. (2016). The study, based on a survey of Swedish consumers, aims to explore and provide insights on consumers’ perceptions and knowledge of environmental aspects of food packaging and elaborate on how these can contribute to or counteract environmentally sustainable development. In doing so, the authors address three main themes (consumer perceptions of overall packaging aspects, of the environmental sustainability of packaging in general, of the environmental sustainability of packaging related to food products). Open-ended and closed-ended questions have been adopted in order to have a deeper comprehension of the consumers’ perceptions. Indeed, the free text answers provide rich information and a picture of the consumers’ different views and thoughts expressed in their own words. Results confirm those of previous studies: consumers seem to be mainly affected by functional characteristics of the packaging (on an aggregated level 72% of the consumers responded that they considered one or several aspects that facilitate handling in their purchase). However, the second aspect concerns the packaging material (58% of the consumers claimed to consider material considerations). Interestingly results confirm those showed in Fernqvist et al. (2015) work, indicating that

consumers regarded paper-based packaging materials (79%) as the ones with the least negative environmental impact followed by glass (9%), whereas plastic (62%) and metal (30%) were regarded as having the greatest negative environmental impact (p.5). Moreover, Swedish consumers seem to consider the environmental impact of packaging an important attribute in choosing food products and they seem to be willing to pay extra for environmentally sustainable packaging.

To conclude, it can be noted that although the growing interest, research on consumers' preferences for sustainable packaging still remains scarce. Empirical research clearly shows that eco-friendliness of packaging is an attribute able to influence consumers' choices of green products. However, very few attempts focus on packaging materials per se. Following this, in order to contribute to extant academic literature, the aim of the thesis is to investigate the role of implicit attitudes and mental construal level in consumers' evaluations of sustainable packaging.

### 3.2. Explicit and Implicit attitudes

As stated in the previous chapter (see § 2.2.1.), attitudes are crucial for understanding and predicting consumer behaviour in general, as well as pro-environmental behaviour. However, marketers have traditionally measured attitudes by reference to verbalised expressions of respondents, allowing for recorded results to be influenced by perceived social norm, among other things. Moreover, as shown above, stated intention often does not correlate with subsequent behaviour, causing the well-known attitude-behaviour gap.

As known, explicit measures rely on individuals' self-reported assessments of the specific attributes or their intentions regarding potential behaviours and choices they face. Responses are often registered on Likert scales, by means of which individuals select numerical values to express the degree to which they possess an attribute or plan to engage in a particular behaviour. This approach naturally assumes that individuals have conscious access to the relevant constructs in memory and that responses are not determined on the spot. However, as noted by Dimofte (2010) "if either of these assumptions is not satisfied, the validity of the respective item or scale suffers significantly" (924). For example, they may induce poor comprehension (due to complex or unclear wording), or social desirability (due to perceived pressure to provide socially acceptable answers).

In order to fill this gap, social psychologists started to consider attitudes not only to be labile and stable but also to form deliberately and operate automatically (Greenwald & Banaji 1995; Wilson et al. 2000; Fazio & Olson 2003; Perugini 2005). In particular, it has been suggested that attitudes often exist outside of conscious awareness and control (Greenwald & Banaji 1995), and they are able to shape people's automatic reactions to attitude objects and consequently their interactions with them. In this regard, Greenwald and Banaji (1995, p.8) defined implicit attitudes as "introspectively unidentified (or inaccurately identified) traces of past experience that mediate favourable or unfavourable feeling, thought, or action toward social objects".

Two main theoretical approaches have been adopted in explaining the relationship between explicit and implicit attitudes (Nosek 2005). On the one hand, the dual-attitude models (Wilson, Lindsay, & Schooler 2000; Strack & Deutsch 2004) postulate that an individual might hold two or more attitudes towards the same attitude object. Therefore, differences between implicit and explicit attitudes would be explained by suggesting that

these are entirely separate constructs, which are developed in different ways. On the other hand, the single attitude approach suggests that there is one attitude construct and implicit and explicit attitudes are actually just different ways of measuring the same thing. For this reason, it was suggested that implicit and explicit attitudes should actually be referred to as different implicit and explicit measures of attitudes (Fazio & Olson 2003).

With regard to the single model, we can state that Fazio's MODE (Fazio 1990; Fazio et al. 1982) is one of the best-known models that propose the existence of a single attitude construct (Fazio & Olson 2003).

As shown in section 2.2.1., starting from the definition of attitude as “a learned association in memory between an object and a positive or negative evaluation of that object, and attitude strength as equivalent to the strength of this association”, the MODE model assumes that attitudes can be activated either in a deliberate or in an automatic way. In particular, attitudes across people and objects necessarily vary with respect to their associative strength. This process has been defined as the *attitude-nonattitude continuum*, where at the non-attitude end of the continuum is the case of the individual lacking any a priori evaluative association to the object. Due to its novelty or its basis in a sphere of indifference for the individual, no relevant attitudinal representation is available in memory. As we move along the continuum, an evaluation is not only available but also is more strongly associated with the attitude object. The associated evaluation is activated automatically from memory upon mere observation or mention of the attitude object. According to this view, Fazio prefers to speak of implicit and explicit measures of attitude rather than implicit and explicit attitudes. Fazio and colleagues are the first that apply implicit procedures to the study of attitudes (Fazio et al. 1986), using a priming procedure to investigate the automatic activation of attitudes. This methodology was seminal because of its ability to reveal the automatic activation of evaluations toward an object, presented as a prime, by detecting the extent to which it facilitates or interferes with the subsequent judgment of a target word's valence.

As stated before, theories differ in terms of describing implicit and explicit social cognitions as comprising distinct mental representations (dual-models) (Strack & Deutsch 2004; Wilson et al. 2000) or being a product of distinct processes on a single mental representation (Fazio 1990; Fazio & Olson 2003). In the single-representation approach, implicit and explicit attitudes are conceived not as distinct mental entities, but

rather as distinct types of measure that can derive from a single form of underlying representation. However, some scholars stress that the question of single versus dual representations appears empirically irresolvable (Greenwald et al. 2009, p.32). As stated by Nosek and Smyth (2007), both can be used simultaneously without contradiction. In the same line, Greenwald and Nosek (2008, p.75) affirmed that “the empirical constructs implicit attitudes and explicit attitudes can reasonably be interpreted as deriving from either a single-representation or a dual-representation structure. No behavioural evidence can demand a conclusion that one view is right and the other is not”.

Within the spectrum of dual models, one main contribution is the one by Wilson and colleagues (2000). According to the authors (p.104), people change their attitude to A2, and this new attitude is stored in memory. However, people's original attitude, A1, is not replaced and remains in memory, resulting in what they call a dual attitude (Wilson et al. 2000). Moreover, they stated that explicit and implicit attitude toward the same attitude object could coexist in memory; also, when these dual attitudes exist the implicit attitude is activated automatically, whereas the explicit one requires more capacity and motivation to retrieve from memory. Linked to this point, the authors stressed that explicit attitudes change relatively easily, whereas implicit attitudes change more slowly.

As pointed out by Petty, Fazio and Briñol (2007), although there are several versions of the dual attitudes approach, some similarities can be identified. First, the dual attitudes (implicit and explicit) are thought to have separate mental representations that are stored in separate brain regions. A second common assumption is that the two attitudes stem from distinct mental processes. Implicit attitudes are said to result from relatively automatic associative processes whereas explicit attitudes stem from more deliberative propositional processes. Third, implicit and explicit attitudes are postulated to be relatively independent and to operate in different situations (Dovidio et al. 1997).

Nonetheless, the accumulated evidence suggests that implicit and explicit social cognition are not the same thing (Nosek 2007). This conclusion is strengthened by other lines of research, that show a psychometric evidence in affirming that implicit and explicit evaluations are related but distinct (Cunningham et al. 2001; Greenwald & Farnham 2000; Nosek 2007). Also, the dual-process theories, as shown, suggest distinct evaluative or related processes (Greenwald & Banaji 1995; Strack & Deutsch 2004; Wilson et al. 2000). Furthermore, there is neurological evidence that implicit and explicit

measures correspond with distinct cognitive processes (Cunningham et al. 2003; Cunningham et al. 2004; Phelps et al. 2000).

Beyond these different theoretical points of view, central to the understanding of implicit cognition is the capture of individuals' automatically activated evaluations in an indirect and associative manner. In this regard, social psychologists started to develop implicit measures, for assessing evaluative associations without requiring the respondent to introspect on their feelings (Nosek & Greenwald 2009), and thus for obtaining evaluations that were distinct from self-report (Nosek et al. 2007). Implicit measures of attitude developed from the 1990s, include methodologies as the evaluative priming (Fazio, Jackson, Dunton & Williams 1995), the Implicit Association Test (Greenwald et al. 1998), the Go/No-Go Association Task (Nosek & Banaji 2001), the Extrinsic Affective Simon Task (De Houwer 2003) and the Affect Misattribution procedure (Payne et al. 2005), as shown in section 2.2.1. Among them, the Implicit Association Test (IAT) has gained considerable support in the social psychology literature because of its psychometric qualities. It has also found growing support in the consumer behaviour literature (Dimofte 2010; Fazio & Olson 2003; Nosek, Greenwald & Banaji 2007). Numerous meta-analyses on the use of the IAT (Greenwald & Nosek 2009; Greenwald et al. 2009; Nosek et al., 2007) consistently highlight that implicit and explicit attitudes are positively correlated and that the implicit attitude is positively correlated with self-reported behaviour, attesting to its predictive validity. However, a weak relationship between implicit and explicit measures of attitude may indicate intra-psychic conflict, which in turn has a negative impact on the predictive power of the explicit measure. It has been shown that the strength of the implicit-explicit relationship varies across social objects suggesting that one or more factors moderate the relationship. In this regard, Nosek (2005) pointed out four different moderators: self-presentation concern (i.e. the tendency to distort or falsify a response to conform to the social norm); evaluative strength such as attitude importance and elaboration; dimensionality (the extent to which target objects conform to a simple, bipolar structure); and distinctiveness (the extent to which one's evaluation is perceived to differ from cultural norms). The most notable moderating effect is that of social desirability bias, as reported in section 2.2.1. IAT, as an indirect measure, can overcome social desirability bias: individuals with a high level of self-presentation may tend to falsify their responses relating to socially sensitive questions and this can result in a low correlation between implicit and explicit attitude.



In accordance with this, the goal of this thesis is to understand more about self-reported (i.e., explicit) and automatic (i.e., implicit) evaluations in the field of sustainable consumption, since sustainable behaviours, such as buying organic products, are driven not only by rational choices but are also grounded in affective, moral and unconscious motives outside of conscious awareness and control. For this reason, a deeper comprehension of the link between implicit and explicit attitudes may shed light on the well-known attitude-behaviour gap. The application of IAT to consumer behaviour can overcome the limited ability of self-reported measures of attitudes to predict behavioural intention and actual behaviour. Moreover, marketing scholars (Nevid 2010) have also recognised the need for new measures in assessing implicit attitudes. However, especially in the field of sustainable consumption, very limited attempts have been made (Beattie & Sale 2011; Koenig Lewis & Palmer 2015).

Therefore, we aim at contributing to this gap, identifying differences between unconscious and publicly expressed attitudes with respect to the an ecologically friendly food packaging. The purpose is double since we want to adopt a very new methodology in the marketing field and thus contributing to the academic literature on sustainable packaging. According to this, the thesis investigates consumers' attitudes towards buying products, which incorporate sustainable packaging, following these hypotheses:

H1a: We predicted that implicit and explicit attitudes toward compostable packaging are higher positive than implicit and explicit attitudes toward plastic packaging.

H1b: We predict that correlations between implicit and explicit attitude towards compostable packaging differ in the two food categories (healthy vs unhealthy). More specifically, we predict no correlation between implicit and explicit attitude towards compostable packaging in the case of unhealthy food and a significant correlation between implicit and explicit attitude towards compostable packaging in the case of healthy food.

H1c: We hypothesized that gender differences would emerge when considering implicit and explicit attitudes toward compostable and plastic packaging in the two food categories (healthy vs unhealthy). More specifically, we predicted that women would show higher positive implicit attitude than male in the case of healthy food.

### 3.3. Construal Level Theory: an overview

#### 3.3.1. The origin of Construal Level Theory

*“People directly experience only the here and now. It is impossible to experience the past and the future, other places, other people, and alternatives to reality. And yet, memories, plans, predictions, hopes, and counterfactual alternatives populate our minds, influence our emotions, and guide our choice and action. How do we transcend the here and now to include distal entities? How do we plan for the distant future, understand other people’s point of view, and take into account hypothetical alternatives to reality?”* (Trope & Liberman 2010, p.440).

These two above-mentioned questions represent the basis of Construal Level Theory (CLT) (Liberman & Trope 1998; Trope & Liberman 2003; Trope & Liberman 2010). CLT explores the mechanisms through which individuals are capable of experiencing and expressing reactions towards events that are not present in their immediate context. More specifically, according to CLT, we transcend the here and now by forming abstract mental construals of distal. This mental construal process is essential to recalling the past, empathising with others, imagining what could have been, and visualising future events: predictions, memories, and speculations are all mental constructions, distinct from direct experience (Trope & Liberman 2010). Each of these mental processes requires a detachment from the self, as it exists here and now (referred to as psychological distance). As defined by the authors, psychological distance is “a subjective experience that something is close or far away from the self, here, and now. Psychological distance is thus egocentric: Its reference point is the self, here and now, and the different ways in which an object might be removed from that point—in time, space, social distance, and hypotheticality—constitute different distance dimensions” (Trope & Liberman 2010, p. 440).

CLT has its origin in Liberman and Trope’s article (1998) on temporal construal theory, where the authors focused in particular on the way that temporal distance from future events influences representation and judgment. Going beyond this earlier theory, the authors treated temporal construal theory as a special case of a general theory of psychological distance, and they proposed a functional approach to construal levels, according to which mental construal processes serve to traverse psychological distances and switch between proximal and distal perspectives on objects.

The key premise of this theory is that distant objects, events, or individuals are classified or represented as abstract, intangible, unobservable, and broad concepts. In contrast, close objects, events, or individuals are represented with concrete, specific, observable, or discrete features. Moreover, CLT suggests that psychological distance is one important determinant of whether primary, essential characteristics or secondary, peripheral characteristics are used as the basis of evaluation. Therefore, things (events, objects, and people) with which one has had direct experience are viewed in proximal, concrete terms, while events, objects, and people who the person has not had direct experience with, are viewed in distal terms and more abstractly (Bar-Anan, Liberman & Trope 2006).

As reported by Trope and Liberman (2010) basic assumptions of this theory concern the definition of the level of construal and why and how it is related to psychological distance. Construal level theory builds on the basic idea that the same object or event can be mentally represented (or construed) at varying levels of abstraction (Trope & Liberman 2003). In other words, mental representations can be arranged along a vertical continuum of abstraction, from low to high. According to CLT, individuals use concrete, low-level construals to represent near events and abstract, high-level construals to represent distant events. Low-level construals are relatively unstructured, contextualised representations that include subordinate and incidental features of events. High-level construals, in contrast, are schematic, decontextualized representations that extract the gist from the available information (figures 20-21).

*Figure 20: High-Level and Low-Level Construals*

High-level construals	Low-level construals
Abstract	Concrete
Simple	Complex
Structured, coherent	Unstructured, incoherent
Decontextualized	Contextualized
Primary, core	Secondary, surface
Superordinate	Subordinate
Goal relevant	Goal irrelevant

Source: Trope and Liberman 2003, p.405

Figure 21: Examples of More Abstract (Higher-Level) Versus Concrete

Higher-level	Lower-level
Desirability concerns	Feasibility concerns
Broad categories	Exemplars or narrow categories
Gestalts	Details
Words	Pictures
Primary features	Secondary features
Broad traits	Specific behaviors
Dispositional information	Situational information
Aggregate information	Individualized information
Overarching goals, values, or ideologies	Situation-specific demands

Source: Soderberg et al. 2014, p.2

Moving from a concrete representation of an object to a more abstract representation involves retaining central features and omitting features that by the very act of abstraction are deemed incidental. As exemplified by the authors (Trope & Liberman 2010, p.441), moving from representing an object as a “cellular phone” to representing it as “a communication device” we omit information about size; moving from representing an activity as “playing ball” to representing it as “having fun,” we omit the ball.

As stated before, CLT suggests that the main factor that affects construal level is the psychological distance between the perceiver and her target: the greater the psychological distance, the more likely are perceivers to form high-level rather than low-level construals of objects and events (Bar-Anan, Liberman & Trope 2006). As stressed by Liberman and colleagues (2007), although psychological distance and construal levels are related, they are not the same. Level of construal has been conceptualized as a type of mental representation that is invoked by distance rather than as a distance dimension in its own right, while the term distance refers to dimensions that may be defined objectively, such as time, space, probability, and social agents (Liberman, Trope & Wakslak 2007, p.114). More specifically, psychological distance refers to the perception of when an event occurs, where it occurs, to whom it occurs, and whether it occurs, while construal levels refer to the perception of what will occur (the processes that give rise to the representation of the event itself) (Trope & Liberman 2010, p.442).

The second assumption of CLT concerns the linkage between the level of construal and psychological distance, according to which they influence each other: distance affects the level of mental construal, such that more distant objects will be construed at a higher level, and high-level construal leads to mind more distant objects. As underlined by the

authors (Liberman & Trope 2008), objects that are more distant on any dimension will be represented at a more abstract, higher level of construal, because higher-level constrictals capture those features of objects that remain relatively invariant with increasing distance. In the same way, forming and comprehending abstract concepts enable people to mentally transcend the currently experienced object in time and space, integrating other social perspectives, and considering novel and hypothetical examples. Empirical evidence for these associations has been found at the level of both implicit associations and explicit judgments and decisions. Bar-Anan, Liberman, and Trope (2006), for example, examined the associations between level of construal and psychological distance using the Implicit Association Test (figure 22). In their study authors demonstrated, across four experiments, that participants were faster in associating psychological distance with high-level construal and psychological proximity with low-level construal, suggesting that the association between psychological distance and construal level can be activated automatically without conscious deliberation. Moreover, the study demonstrated similar results across the four dimensions.

Figure 22: Stimuli of All Studies

Experiment	Psychological distance				Construal level			
	Proximal		Distal		Low construal level		High construal level	
	Group	Words	Group	Words	Group	Words	Group	Words
1A	Things that will happen soon	eat, tomorrow, drink, conversation	Things that will happen in a long time	old age, retirement, 2050, PhD	Concrete	2 synonyms for specific: detailed, defined	Abstract	general, 2 synonyms for abstract, universal
1B	Near time	a second, a minute, now, immediately, soon	Distant time	a year, a decade, later, last year, long ago	Examples	hammer, beer, possible, left, Sprite (brand of beverage)	Categories	vegetables, clothes, animals, food, furniture
2A	Things that are located near	hair, shoe, chair, shoe	Things that are located far	airplane, the sun, Canada, North pole	Concrete	2 synonyms for specific: detailed, defined	Abstract	general, 2 synonyms for abstract, universal
2B	Near location	2 synonyms of here, and 2 synonyms of beside	Distant location	2 synonyms of there, far away, far off	Examples	hammer, beer, possible, left, Sprite	Categories	vegetables, clothes, animals, food, furniture
3A	My intimates	friend, parents, brother, siblings	Not my intimates	coworker, strangers, anonymous person	Concrete	2 synonyms for specific: detailed, defined	Abstract	general, 2 synonyms for abstract, universal
3B	Us	me, ourselves, at our place, for us, we	Others	2 synonyms of they, them, for them, at their place	Examples	hammer, beer, possible, left, Sprite	Categories	vegetables, clothes, animals, food, furniture
4A	Real creatures	beagle, dog, dolphin, horse	Imaginary creatures	dragons, troll, zombie, Cyclops	Concrete	2 synonyms for specific: detailed, defined	Abstract	general, 2 synonyms for abstract, universal
4B	Reality	real, actually, realtion, historical, authentic	Fiction	legend, imaginary, illusion, dream, hallucination	Examples	hammer, beer, possible, left, Sprite	Categories	vegetables, clothes, animals, food, furniture

Source: Bar-Anan et al. 2006

The link between distance and construal has been found able to affect perception (visual), categorization, action identification, evaluation, choice, and behaviour. For instance, actions, like objects, may be construed in high-level terms, which link them to a superordinate purpose (why one performs them), or in low-level terms, which link them to subordinate means (how one performs them). Research shows that thinking about an activity in high-level, “why” terms rather than low-level, “how” terms leads people to think of the activity as taking place in more distant points in time (Liberman, Trope,

Macrae, & Sherman 2007; McCrae, Liberman, Trope, & Sherman 2008) and of the actor as more socially distant (Stephan et al. 2010).

Regarding evaluation and choice, Trope and Liberman (2010, p.451) state that “we make choices and set preferences with respect to our construals of objects rather than the objects themselves....We argue that construals depend not only on the actual attributes of the objects but also on the object’s psychological distance”. In this regard, an important aspect is the one concerning central versus peripheral features as well as feasibility versus desirability. According to CLT, central, goal-related features of outcomes constitute a high-level construal of these outcomes, whereas peripheral, goal-irrelevant features of outcomes constitute a low-level construal. Distancing an outcome should, therefore, increase the weight of central features relative to peripheral features (Liberman & Trope 2008). Trope and Liberman (2000) found support for this prediction in studies on evaluations of objects and events containing both a primary and secondary aspect. In one study, for instance, participants imagined buying a radio set either the next day or 1 year later, to listen to morning programs. In one version, participants read that the sound quality of the radio set was good, but that the clock that was incidentally included was relatively useless. In another version, participants read that the sound quality of the radio set was poor, but that the clock aspect was quite useful. As expected, thinking about the radio set in the more distant future increased satisfaction when the sound quality was good and the clock poor, but decreased satisfaction when the sound quality was poor and the clock good, indicating that time delay increased the weight of central features and decreased the weight of peripheral features.

Regarding desirability and feasibility concerns, the former involve the value of the action’s end state (a high-level construal feature), whereas feasibility concerns involve the means used to reach the end state (a low-level construal feature). Therefore, desirability concerns should receive greater weight over feasibility concerns as psychological distance increases (Trope & Liberman 2010). Consistent with this prediction, it was found that as temporal distance from an activity (e.g., attending a guest lecture) increased, the attractiveness of the activity depended more on its desirability (e.g., how interesting the lecture was) and less on its feasibility (e.g., how convenient the timing of the lecture was) (Liberman & Trope 1998). Similar results have been found for

other distance dimensions, including hypotheticality and social distance (e.g., Liviatan et al. 2008; Todorov, Goren & Trope 2007).

### 3.3.2. Types of psychological distance

According to CLT there are four psychological distances, which have been defined as follows (Bar-Anan, Liberman, & Trope 2006):

- Spatial - how distal in space is the target from the perceiver;
- Temporal - how much time (past or future) separates between the perceiver's present time and the target event;
- Social - how distinct is the social target from the perceiver's self (e.g., self vs. others, friend vs. stranger);
- Hypotheticality (probability) - how likely is the target event to happen or how close it is to reality.

The effect of temporal psychological distance on construal level was the first studied (Liberman & Trope 1998). In their seminal work, Liberman and Trope asked participants to think of themselves performing activities either "tomorrow" or "next year". Then, they gave them the Behavioural Identification Form (BIF; Vallacher & Wegner 1989), a measure that assesses the extent to which people prefer to describe actions (e.g., "locking a door") in terms of low-level, specific means (e.g., "putting a key in the lock") or high-level, superordinate goals (e.g., "securing the house"). Participants showed a greater relative preference for the high-level versus low-level descriptions when they imagined performing the activities in the more distant (vs. near) future, consistent with the notion that people construe events more abstractly as temporal distance increases.

Later research extended the theory to spatial distance (Fujita et al. 2006), social distance (Liviatan, Trope & Liberman 2008; Stephan, Liberman & Trope 2010, 2011), and hypotheticality or likelihood (Wakslak et al. 2006). Common manipulations of psychological distance used in empirical research are presented in figure 23 (Soderberg et al. 2014).

Figure 23: Examples of Psychological Distance Manipulations

Distance type	Manipulation
Temporal	<ul style="list-style-type: none"> <li>• Participants imagine their life tomorrow vs. a year from now and write about it for 5 minutes</li> <li>• Participants imagine making a choice tomorrow vs. a month from now</li> <li>• Participants make predictions about events that will occur in the near or distant future</li> </ul>
Spatial	<ul style="list-style-type: none"> <li>• Participants imagine they are going on a trip to a nearby or distant location</li> <li>• Participants are told that the study materials were created at a nearby or distant location</li> <li>• Participants believe they are talking to or making judgments about others who are in a nearby or distant location</li> </ul>
Social	<ul style="list-style-type: none"> <li>• Participants are asked to make a choice for themselves or for another person</li> <li>• Participants make judgments about a similar (same birthday) or dissimilar (different birthday) individual</li> <li>• Participants made judgments about ingroup or outgroup members</li> </ul>
Hypothetical	<ul style="list-style-type: none"> <li>• Participants believe there is a high or low likelihood that they will complete a task later in the study</li> <li>• Participants make judgments about an event that has a high or low probability of occurring</li> </ul>

Source: Soderberg et al. 2014

Regarding spatial distance, Fujita and colleagues (2006) demonstrated that, as well as for temporal and social distance, increasing the reported spatial distance of social events would enhance the activation of high-level construals. In their study, students at NYU’s Washington Square campus watched a video of two students interacting and provided a written description of the activity in the video. In the spatially near condition, participants believed that the individuals in the video were NYU students studying at the Washington Square campus in New York City; in the spatially distant location, participants believed that the individuals in the video were NYU students studying at an NYU study-abroad location in Florence, Italy. Participants’ written descriptions were analysed for abstractness of language, using coding schemes developed for the Linguistic Categorization Model (Semin & Fiedler 1988). Findings showed that participants who believed that the video protagonists were located in a spatially distant location used more abstract language in describing the events than those who believed the video protagonists were located in a spatially near location.

In a similar vein, Wakslak and colleagues reasoned that independent of its spatiotemporal and social distance, an event is removed from one’s direct experience when it could have happened but has not actually happened or when it is possible but not certain (Wakslak, Trope, Liberman & Alony 2006, p.642). An improbable event would thus seem more distant than a probable event, and the lower the probability of the event, the greater its psychological distance. In their study, authors manipulated hypotheticality by leading participants to believe that there was a near certainty (a 95% chance) or a more distant possibility (a 5% chance) that they would be asked to complete the Gestalt Completion Test (GCT; Ekstrom, French, Harman & Dermen 1976) later in the experiment. As expected, participants in the distant (vs. near) condition—who believed they were less

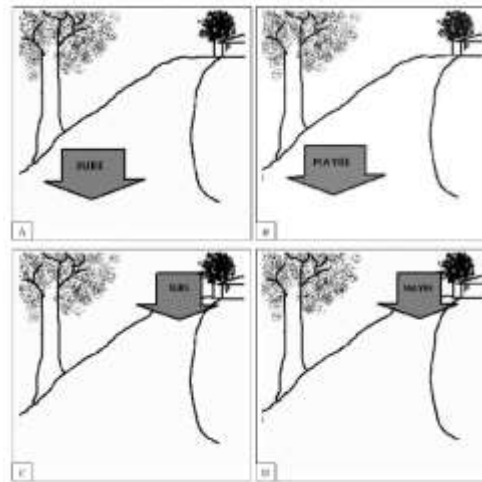


likely to complete the full GCT later on—showed greater abstraction on the practice problems.

To conclude, social distance is based on how familiar or unfamiliar someone is to an individual, how similar or dissimilar they are, and whether they are in or out of an individual's social group. It has been shown that the less similar someone is to oneself, the more socially distant they typically seem and, consequently the behaviour performed by a dissimilar other would be represented at a higher level of construal than behaviour performed by a similar other (Trope, Liberman & Wakslak 2007). In this regard, Liviatan, Trope, and Liberman (2008) examined construal effects related to similarity. Participants read about a target person who had attended either similar or different classes as themselves. They then imagined the student engaging in various activities; for each activity, participants chose between a subordinate action identification (in terms of how) and a superordinate action identification (in terms of why). As would be expected if dissimilar targets' actions are represented in higher level terms than similar targets' actions, participants' preference for superordinate relative to subordinate action identifications was greater for a dissimilar than the similar target.

As a consequence to what shown above, scholars agree in affirming that dimensions of psychological distance (temporal, spatial, social, and hypothetical) have important similarities, and they are interrelated, since they have a common meaning and people access to it automatically (Trope & Liberman 2010). To give an example, we could say that remote locations should bring to mind the distant rather than the near future, other people rather than oneself, and unlikely rather than likely events. This point has been empirically demonstrated in different academic studies (Bar-Anan, Liberman, Trope, & Algom 2007; Stephan, Liberman, & Trope 2010, 2011). Bar-Anan, Liberman, Trope, and Algom (2007) used a picture–word Stroop task (Stroop 1935) to examine the cognitive interrelations among psychological distances. Participants viewed landscape photographs containing an arrow that was pointing to either a proximal or a distal point in the landscape (figure 24).

Figure 24: Example of the four Spatial Location × Word Meaning combinations in Bar-Anan, Liberman, Trope, and Algom (2007)



Source: Trope and Liberman (2010)

Each arrow contained a word denoting either psychological proximity (e.g., “tomorrow,” “we,” “sure”) or psychological distance (e.g., “year,” “others,” “maybe”). Participants’ task was to respond by pressing one of two keys as quickly and as accurately as possible. In one version of the task, they had to indicate whether the arrow pointed to a proximal or distal location. In another version, they had to identify the word printed in the arrow. As expected, participants responded faster to distance-congruent stimuli (spatially distant arrow combined with temporal distance, social distance, or low likelihood; spatially proximal arrow combined with temporal proximity, social proximity, or high likelihood) than to distance-incongruent stimuli.

Another attempt in this regard is the one by Stephan, Liberman, and Trope (2010), who investigated how social distance affects and is affected by spatial distance and temporal distance. In their paper, authors found an effect of spatial and temporal distance from the target of communication on the use of polite language: participants phrased more polite messages when they assumed that the target person was spatially remote or that the target would read the message in the more distant future.

In a similar vein, Williams and Bargh (2008) showed that participants who were primed with spatial distance (relative to proximity) by marking close (vs. distant) points on a Cartesian plan subsequently reported greater social distances between themselves and members of their family and their hometown.

### 3.3.3. Construal Level Theory and Environmentally-Friendly Behaviours

Construal Level Theory, predominantly studied in the psychology field, has also been applied to some extent in the field of marketing. In this regards, research use CLT in order to evaluate consumers' product evaluation (Kim, Park, & Wyer 2009) and new product adoption (Castaño et al. 2008); to study brand extension (Kim & John 2008), brand attachment and brand personality (Malär et al. 2011); to study advertising and marketing appeals (Wright et al. 2012; Martin et al. 2009; Hernandez et al. 2015).

The application of CLT seems to be very salient also in the field of sustainable consumption. Despite to date very few attempts have been made in this regard, and most of them are focused on climate change, or on specific psychological dimensions (e.g., temporal distance), scholars agree in stressing its importance and its usefulness in promoting sustainable behaviours.

In the research field of climate change, CLT has been applied as a strategy to increase individuals' motivation to respond to it. However, as reported by McDonald and colleagues (2015) in their review "although psychological distance seems to be an important barrier to encouraging action on climate change, relatively little research has examined how people perceive the psychological distance of climate change, and that although the manipulation of some dimensions of the psychological distance of climate change appears to affect concern and action, there are no studies systematically examining the effects of distance across all dimensions" (p.112). Climate change still appears to be treated by many as a distant phenomenon - temporally, socially, and geographically removed from our everyday experience. Researchers have argued that perceiving climate change in this "psychologically distant" has the potential to reduce support for mitigating action and even for adaptive behaviour (Lorenzoni & Pidgeon 2006; Milfont 2010; Newell et al. 2014; Swim et al. 2009; Weber 2010). Therefore, scholars highlight that the proximal consequences of climate change are an important strategy to engage and mobilise publics around this issue. However, empirical studies that have experimentally tested the promising approach have not revealed the expected positive effects on individual support for addressing climate change (e.g., Shwom, Dan, & Dietz 2008; Spence & Pidgeon 2010), revealing unambiguously supportive evidence (Brügger et al. 2016). Indeed, results suggest that approaches aimed at reducing this distance may not be universally beneficial. In this regard, it was found that distance

interacted with other things to determine individual responses, such as values, beliefs and norms as well as fear and scepticism (McDonald et al. 2015).

CLT has also been applied in research aimed at identifying framing effects on consumers' purchase intentions and attitudes towards energy efficient products (i.e., CFL bulbs). In line with what suggested by McDonald et al. (2015) on the relation between psychological distance and other variables, Tangari and colleagues (2012) demonstrated that there is an interaction between the temporal frame of savings and a consumer's temporal orientation, thus there is a stronger effect of the temporal frame on future-oriented compared to present-oriented consumers (Study 1). Therefore, a distant or close temporal framing is moderated by consumers' temporal orientation, defined as a predisposition to focus one's attention on either the present or the future (Tangari et al. 2012, p.199). In a follow-up study, Tangari and colleagues (2015) demonstrated the same relation using a different moderator, such as the propensity to elaborate on potential outcomes (EPO; Nenkov, Inman & Hulland 2008). This construct differs from temporal orientation measures in that it captures whether people deliberate and consider future or potential outcomes, which has considerable implications for self-regulation and how consumers respond to situations involving tradeoffs. Across three experimental studies, authors show that consumers lower in elaboration are more likely to choose an energy efficient product when perceived distance is proximal versus distal, in line with the previous study.

An interesting attempt in shedding light on the application of CLT in sustainable consumption is the one by Schill and Swan (2016). Unlike previous studies mostly based on experiments, authors used a qualitative method by interviewing participants (i.e., households) in order to explore more deeply their thoughts and feelings about sustainability and recycling. More specifically, psychological distance, observed in all its dimensions (temporal, spatial, social, and hypothetical) has been analysed using the Semin and Fiedler's Linguistic Categorization Model (1988), which explains how to categorise an event or an action in terms of abstraction. Results, in line with basic assumptions of CLT, show that those participants who engaged in sustainable and recycling behaviours experienced consistency between mental construal and all dimensions of psychological distance. Moreover, households experienced their recycling and sustainable behaviours as proximal.

Recently, academic research, which combines CLT and pro-environmental behaviours, grounds in the assumption that the “fit” (or lack thereof) between communication frames and individual differences (in terms of goals, attitude bases, processing style and alike) can be an alternative explanation for the success or failure of environmentally products adoptions (Ramirez et al. 2015). In accordance with what previously shown, CLT posits that individuals can construe stimuli in their environments in different ways - in terms of abstract and generalised features (high-level construals) or in terms of concrete and contextualised features (low-level construals). Consequently, in judgment and decision-making settings, individuals favour information, experiences, or events that match their construal level (Nussbaum, Trope, & Liberman 2003; Trope & Liberman 2000).

In this regard, a relevant attempt is the one by White and colleagues (2011). In their study, authors, across three experiments, highlight the conditions under which consumers will be more (or less) likely to report positive intentions toward recycling and actually engage in recycling behaviour. Built on CLT, they show a strong interplay between message framing and the consumer’s construal level mind-set, indicating that a message framed as a negative loss (rather than a positive gain) matched with a more concrete mind-set produces more positive consumer recycling intentions and behaviours (and vice versa). More specifically, recycling increased when the mind-set and the framing were congruent (i.e., abstract/gain; concrete/loss) relative to when they were incongruent. Similar fit effects were observed by Ramirez et al. (2015), who found that consumers react more favourably towards environmentally sustainable products when there is construal-goal fit.

The same logic has been applied in studying sustainable consumption in terms of benefits association. Sustainable consumption can be considered as a social dilemma because it often implies a trade-off between immediate personal benefits and delayed collective benefits (van Dam & Fischer 2015). Prior researchers argue that environmentally friendly consumption is motivated by one of two benefits (Green & Peloza 2014). On the one hand, some researchers contend that green consumption is motivated by benefits to the environment and society. In this regard, Webb, Mohr, and Harris (2008, p.93) posit that “socially responsible consumption is invariably socially oriented other than self-centered”. Prior research finds that when purchasing environmentally friendly products, consumers always focus on the good of the environment instead of individual interest.

They may even give up personal profit if the purchase of green products benefits the society (Griskevicius, Van den Bergh, & Tybur 2010). Further to this point, Peattie and Crane (2005) indicate that green consumption that offers future benefits to the entire generation of consumers is of greater efficiency than green consumption that only provides individual benefits in generating consumers' green purchase intentions. Consequently, these findings suggest that environmentally friendly consumption is more likely to occur when such consumption associates with the benefit of other.

In contrast, other researchers argue that providing the benefit of self is more appropriate for encouraging green consumption behaviours. This body of research holds the notion that most pro-environmental behaviours are based on egoistic consideration (De Groot & Steg 2008; Stern 2000). For instance, Hutton and Markley (1991) demonstrated that financial incentive programmes changed participants' behaviours from using their own cars to taking public transport, which is less harmful to environment than private cars. Holmes, Miller, and Lemer (2002) showed that consumers are more inclined to participate in pro-social actions when a form of benefit to the self follows the request for help. In addition, Peattie (2001) notes that highlighting cost-saving often prompts consumers to behave in consumption that generates environmental or social welfare. Consistent with these findings, Luchs et al. (2010) also find that in the process of green consumption, if consumers' personal profit is damaged, they will generate a sense of resistance toward the product, thus influencing their product choice. Therefore, providing the benefit of self is a strong incentive for green consumption that has little to do with social goodness.

As suggested by van Dam & Fischer (2015), the psychological mechanism behind this social dilemma can be understood in terms of construal level theory (Bar-Anan, Liberman, & Trope, 2006; Liberman, Trope, & Wakslak, 2007). Construal level theory proposes that objects and events are mentally represented at different levels of abstraction, which influences the type of reasoning and choice of action. Thus, high-level construals, like the delayed collective benefits of a sustainable choice, are typically represented in terms of desirability. In contrast, low-level construals are represented in terms of feasibility (Liberman & Förster 2009; Liberman & Trope, 1998). Therefore, CLT implies that the actual meaning of importance depends on the level of construal.

In this regard, Young and colleagues (2015) state that providing benefits to other strongly refers to the welfare of other people rather than individual interests, which may, in turn, increase the psychological distance between consumers and the products (Liberman & Trope 2008). Therefore, consumers may psychologically consider the products as something far away from them that have nothing to do with their own business (Young et al. 2015, p.2665). Comparatively, when the attributes of green products associate with the benefit of self, the main beneficiary becomes the consumers themselves. Under this circumstance, consumers may regard the products as something closely related to them due to the emphasis on consumers' own interest, reducing the psychological distance. Built on this assumption, they demonstrated that a fit between benefit association of green products and type of appeals exist. More specifically, they explore how abstract appeal (i.e., describing the features of green products in a vaguer way) and concrete appeal (i.e., describing the features of green products in a more specific way) can encourage consumers to engage in green consumption behaviour, such as purchasing green products. Across three experiments, authors show that abstract (concrete) appeal is more effective in generating green purchase intentions than concrete (abstract) appeal in situations where the benefit association of green products is other (self).

In a similar way, Goldsmith and colleagues (2016) recently demonstrated that highlighting either self-benefits (i.e., economic benefits) and other benefits (i.e., benefits to the environment) is a matter of fit with the mind-set. Moreover, they suggest that “when individuals form an abstract representation, they will experience greater meta-cognitive difficulty when evaluating a sustainable product that is framed as offering economic (vs. self-transcendent) benefits, due to a lack of fit between the product’s economic benefits and the values-oriented motives for purchase” (p.2). This prediction is supported by research showing that when consumers evaluate products in a more concrete fashion, personal benefits (e.g., quality) are of greater concern than other, more abstract, factors (e.g., the fit between the product and the brand; Meyvis, Goldsmith & Dhar 2012; Fujita et al. 2008, Study 2).

Following this logic, we aim at showing similar results with specific regard to sustainable packaging. As shown at the beginning of this chapter academic research on packaging materials is still scarce. Moreover, common models applied to pro-environmental or sustainable behaviours may be reinforced using new theories such as Construal Level

Theory. According to this, we aim at contributing with new insights to the academic research on sustainable consumption. In particular, the purpose of this thesis is to show if the fit between the level of construal and benefits associations can be proved with regard to sustainable packaging choice. Therefore, we hypothesises that:

H2: When individuals form an abstract representation, highlighting other-benefits (i.e., environmental benefits) may make a sustainable packaging more appealing, because that framing fits with abstract, higher-order values associated with helping the environment.

H2a: Consumers' intentions are more positive when an abstract mind-set and other benefits are combined, rather than a concrete mind-set and other-benefits.

H2b: Consumers' willingness to pay more is more positive when an abstract mind-set and other benefits are combined, rather than a concrete mind-set and other-benefits.

H3: When individuals form a concrete representation, highlighting self-benefits (i.e., healthy and economic benefits) may make a sustainable packaging more appealing, because the framing is congruent with a desire to satisfy more immediate concrete needs.

H3a: Consumers' intentions are more positive when a concrete mind-set and self-benefits are combined, rather than an abstract mind-set and self-benefits.

H3b: Consumers' willingness to pay more is more positive when a concrete mind-set and self-benefits are combined, rather than an abstract mind-set and self-benefits.



## 4. Methodology

### 4.1. Aim, Design, Methodology, and Data Collection of Study 1

The purpose of Study 1 is to understand more about self-reported (i.e. explicit) and automatic (i.e. implicit) evaluations that may encourage/inhibit consumer's adoption of food packaging, which uses ecologically friendly material (i.e. compostable or biodegradable packaging). In doing so, an Implicit Association Test (IAT) has been conducted.

Among the different methodologies used to assess implicit attitudes, the most reliable method remains the Implicit Association Test (IAT, Greenwald et al. 1998; Perugini 2005). It has been shown that IAT obtains good internal consistency values (usually  $\alpha = .80$ ) and reasonable test-retest values (usually  $r = .60$ ) (Perugini 2005). The IAT has also shown the greatest evidence of construct and predictive validity (Greenwald & Nosek 2001). These facts, in addition to the flexibility of the IAT in assessing a broad variety of socially significant topics, have made this test the most widely used method to measure implicit attitudes.

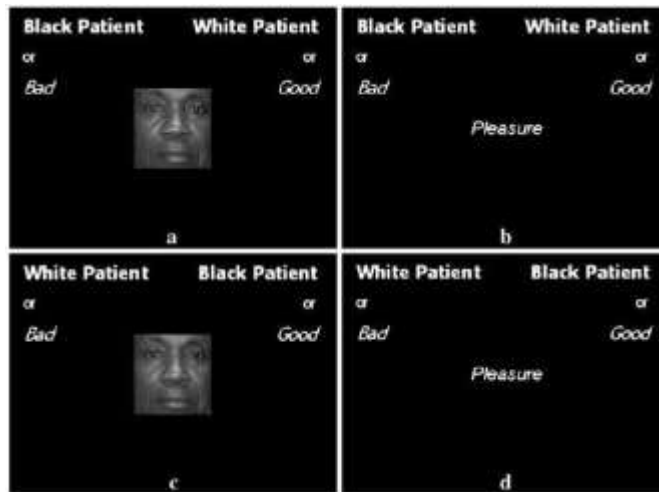
The IAT is a relative measure, assessing the difference between the attitude towards a concept A and the attitude towards a concept B. IAT indirectly measures the strength of automatic associations between two target concepts (e.g. Diet Coke versus Regular Coke) and a bipolar attribute concept (e.g. bad versus good) (Ackerman & Palmer 2014). The rationale behind it is that the more closely associated the target concept and the attribute concept are, the easier it is to respond to them as a single unit. Shorter response latencies are expected to emerge when strongly associated concept pairings are elicited and share a common response key as compared to when they do not (Dimofte 2010).

More specifically, the IAT is a computerised task that provides an indirect measure of the strength of automatic associations (Greenwald et al. 2003). This measure is obtained from the response time (in milliseconds) required by participants to associate a target concept and an attribute dimension via a series of double-categorisation tasks. The faster the response time (the lower the response latency), the stronger the automatic association between the target concept and the attribute dimension. As described by Nosek and colleagues (2005) a typical IAT includes a total of five blocks. Two of the five blocks contribute the critical trials (blocks 3 and 5) for the calculation of the so-called IAT score;

the other three blocks include practice trials for the two critical blocks (figure 25). In particular:

- Step 1: *Learning the concept dimension*. First, respondents sort items from two different concepts into their superordinate categories (e.g., face images for the races Black and White). Categorizations are made using two keys on a computer keyboard that are mapped to the superordinate categories (e.g., the “E” key for “Black,” the “I” key for “White”) and stimulus items appear sequentially in the middle of the computer screen.
- Step 2: *Learning the attribute dimension*. Respondents perform the same task with the same two keys but now sort items representing two poles of an attribute dimension (e.g., terrible, nasty for “Bad” and wonderful, beautiful for “Good”).
- Step 3: *Concept-attribute pairing*. In the third stage, these two sorting tasks are combined such that, on alternating trials, respondents are identifying a face as White or Black and then a word as Good or Bad. In this case, one key (“E”) is the correct response for two categories (Black and Bad) and the other key (“I”) is the correct response for the other two categories (White and Good). Respondents first perform a block of 20 trials with these sorting rules (often referred to as the “practice” block). After a brief pause, they repeat it for a second block of 40 trials (often referred to as the “critical” block).
- Step 4: *Learning to switch the spatial location of the concepts*. In the fourth stage of the task, only stimulus items for the target concepts (White and Black) are sorted for 20 trials, but this time the key assignment is reversed. In the present example, Black items would now require an “I” key response and White items would require an “E” key response.
- Step 5: *Concept-attribute pairing*. In the fifth stage of the task, respondents sort items from both the attribute and target concept categories again, except that the response key assignments now require Black and Good items to be categorized with one key, and White and Bad items to be categorized with the other key, the opposite association from the earlier block (block 3). Respondents sort stimulus items with this response assignment for 20 trials and then again for 40 more trials.

Figure 25: Example of Implicit Association Test



The IAT effect is calculated using latency data from Steps 3 and 5. In the above example, sorting the stimulus items faster when Black and Bad (and White and Good) share a response key than the reverse pairings indicates a stronger association strength between Black and Bad (and White and Good) compared to the reverse mapping, or an automatic preference for White relative to Black. As shown in the figure, for each block the category labels appear on the top left and right of the computer screen to remind participants of the response key mapping rules. When stimulus items are incorrectly categorised, an error indication appears (often a red “X” immediately below the stimulus item) and the subject is obliged to fix the error by hitting the correct response key before continuing to the next trial (Greenwald et al. 1998). To conclude, for what concerns the analysis of IAT, the algorithm recommended by Greenwald and colleagues (2003), called D score, can be obtained following these computations:

- eliminate trials with latencies greater than 10,000 milliseconds;
- eliminate subjects for whom more than 10% of trials have latencies less than 300 milliseconds;
- compute one standard deviation for all trials in Blocks 3 and another standard deviation for all trials in Blocks 5
- compute means for trials in each of the two blocks (Blocks 3 and 5);
- divide each means score by its associated standard deviation;
- D score = the equal-weight average the two resulting ratios.

Regarding the design of Study 1, a within-subject approach has been adopted in order to decipher whether implicit attitudes towards compostable packaging differed between two different food categories (healthy vs. unhealthy food). In particular, participants were asked to take part in a categorisation task which measured their reaction speed (implicit measure of attitudes), as well as to complete a questionnaire on environmental attitudes and sustainable consumption behaviour (explicit measure of attitudes), and to make an actual choice task.

Eighty-eight participants from the University of Cardiff took part in the study, and they received £5 Amazon Voucher in return.

Regarding the procedure, before starting participants were asked to choose a cake in one of two packaging – traditional plastic packaging or compostable cardboard packaging. The choice was recorded and considered as a measure of the actual choice task. No time limit was imposed. Then, participants were asked to read an introductory paragraph, and they were randomly assigned to conditions.

In the first part, participants completed an IAT test using Direct RT software (Jarvis 2014), which measured their reaction speed (implicit measure of attitudes). In the second part, they completed a questionnaire on environmental attitudes and sustainable consumption behaviour (explicit measure of attitudes).

For what concerns the categorization task, we followed the procedure of a typical IAT as shown before. Thus, the initial discrimination task involved distinguishing images representing two target categories. Category one was compostable packaging, such as soluble starch based packaging, recyclable cardboard or organic plant-based material, while category two was traditional packaging. The second discrimination task involved distinguishing contrasted attribute categories, "bad" and "good" in our study. The third discrimination task was a combined task during which subjects categorised a series of items drawn from the two target categories and the two attribute categories. The final two discrimination tasks reversed the appropriate response for the target categories. Therefore, the fifth discrimination task, called "the reversed combined task", has been directly compared to the initial combined task (table 3).

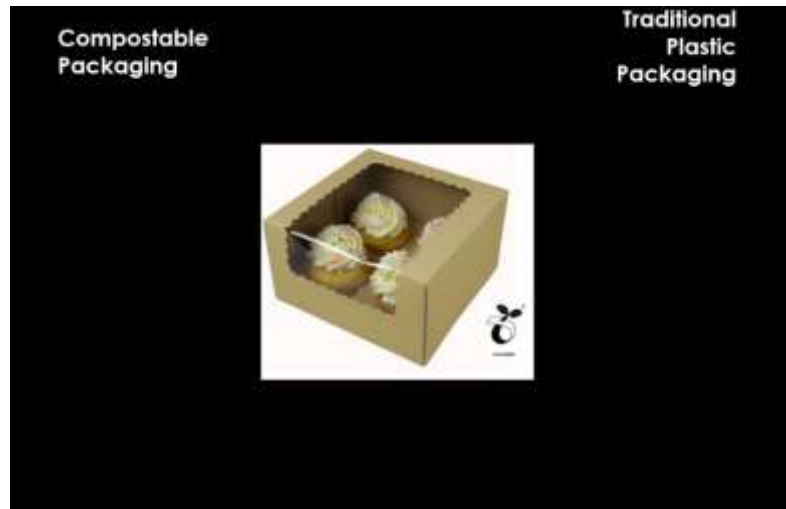
Table 3: IAT Study

Block	Number of trials	Function	Items Assigned to Left-Key Response (E)	Items Assigned to Right-Key Response (I)
1	20	Practice	Compostable packaging images	Traditional plastic packaging images
2	20	Practice	Good words	Bad words
3	40	Critical test block	"Compostable packaging" images + "Good" words	"Traditional plastic packaging" images + "Bad" words
4	20	Practice	Bad words	Good words
5	40	Critical test block (reversed)	"Compostable packaging" images + "Bad" words	"Traditional plastic packaging" images + "Good" words

To perform these categorization tasks, participants must press as quickly as possible a button to the left of the computer keyboard (key E) for stimuli corresponding to a concept of the first and a button to the right of the computer keyboard (key I) for stimuli corresponding to the concept of the other category.

As shown in figure 26, the initial discrimination task involved distinguishing images representing two target categories - compostable food packaging and traditional plastic food packaging. Respondents were asked to categorise as quickly and as accurately as possible when a picture was presented in the centre of the screen. They then had to respond by hitting either key E or key I, these keys corresponding to the category labels at the top of the screen. Key E always corresponded to the ‘compostable packaging’ and key I always corresponded to ‘traditional plastic packaging’.

Figure 26: Block 1 (practice): Compostable Packaging vs Traditional Plastic Packaging



In the second stage, respondents were asked to complete the same task, however, this time involved distinguishing contrasted attribute categories, "bad" and "good" (key E corresponded to 'good' words, i.e. pleasant, wonderful, superb, joyful, lovely, beautiful and excellent; whilst key I corresponded to 'negative' words, i.e. unpleasant, tragic, nasty, terrible, awful, horrible, awful) (figure 27).

Figure 27: Block 2 (practice): Contrasted attribute categories (bad vs good)



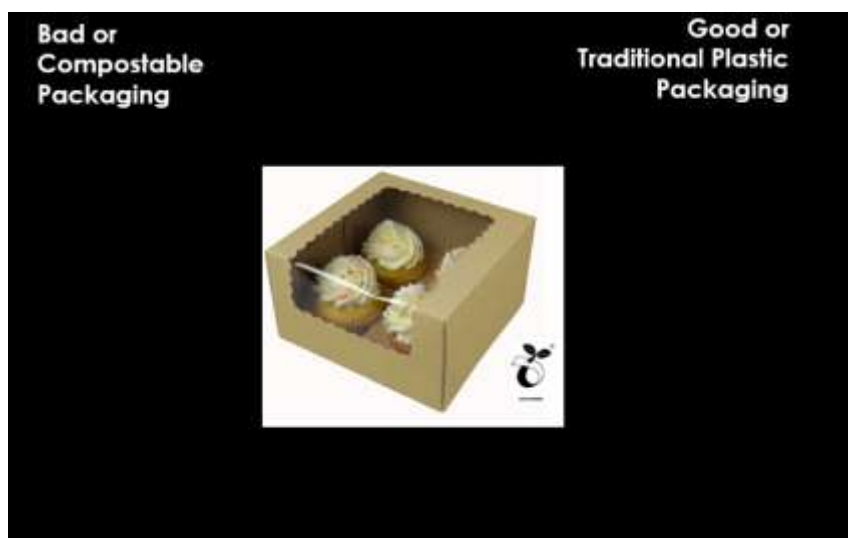
In the third stage, the category labels from the previous two stages were combined. This meant that key E now corresponded to words/pictures of food in compostable packaging and good words. Similarly key I corresponded to words/pictures of food in traditional packaging / and bad words (figure 28).

Figure 28: Block 3 (critical test block): "Compostable packaging" images + "Good" words



The fourth stage repeated the previous 2<sup>nd</sup> stage. However, the category labels were changed and now appeared on opposite sides (key E corresponded to 'bad' words and key I corresponded to 'good' words). In stage 5, as with the previous stage, the category labels were combined. Key E corresponded to words/pictures of compostable packaging and bad words. Similarly key I corresponded to words/pictures of traditional plastic packaging and good words. Therefore, the fifth discrimination task, called "the reversed combined task", can be directly compared to the initial combined task (figure 29).

Figure 29: Block 5 (critical test block reversed): "Compostable packaging" images + "Bad" words



If the respondent completes the task more quickly when "compostable packaging" and "good" share the same keyboard key than when "traditional plastic packaging" and "good" share the same keyboard key, this reflects a difference between the implicit attitudes with respect to the compostable packaging and the traditional plastic packaging. To reduce order effects, the explicit/implicit task order, as well as the order of the 3<sup>rd</sup> and 5<sup>th</sup> discrimination task, was randomly assigned to participants. Moreover, the stimuli used to illustrate the categories "good" and "bad" are those validated in previous studies using IAT and available on the website "Project Implicit". Thus, "good" is illustrated by the words: Marvellous; Superb; Pleasure; Beautiful; Joyful; Glorious; Lovely; Wonderful. "Bad" is illustrated by the words: Tragic; Horrible; Agony; Painful; Terrible; Awful; Humiliate; Nasty.

In the second part, they completed a questionnaire on environmental attitudes and sustainable consumption behaviour (explicit measure of attitudes). Explicit measures were based on previously validated scales and they evaluated common variables used in theoretical models on pro-environmental behaviours.

Explicit attitudes towards compostable packaging were measured using a six-item semantic differential scale adapted from Perugini (2005). Each 7-point item consisted of polar-opposite adjective pairs, i.e. bad-good, harmful-harmless, unpleasant-pleasant, boring-exciting, unhealthy-healthy, unsociable-sociable. Social norm was measured with three items taken also from Carrus et al. 2008 (e.g. "Most people who are important to me would want me to purchase food products in compostable packaging when grocery shopping"). Pro-environmental self-identity was measured with three items (adapted from van der Werff, Steg & Keizer 2013) (e.g. "I think of myself as an environmentally-friendly consumer"). In addition, we also measured behaviour with regards to packaging, e.g. extent to which they bought products with less packaging. Behavioural intention was assessed with three items (e.g., "I will increase my purchase of food products using ecologically responsible packaging in the next three months") adapted from Ackermann and Palmer (2014). Additional demographic information was collected at the end (e.g., age, gender, nationality and alike).



## 4.2. Aim, Design, Methodology, and Data Collection of Studies 2 and 3

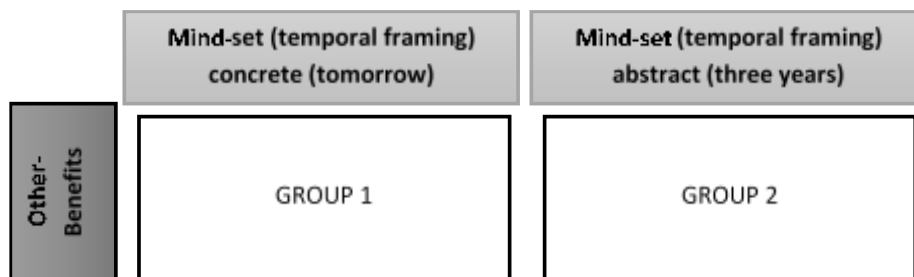
The aim of Studies 2 and 3 is to explore how psychological distance affects behavioural intentions toward sustainable packaging, and further if this effect is linked by the presence of benefits associations (self-other), and thus to highlight the conditions under which consumers will be more (or less) likely to report positive intentions toward compostable packaging.

In doing so, two two-groups experimental designs have been conducted. The goal of the experimental research is to investigate the possible cause-and-effect relationship by manipulating one independent variable to influence the other variable(s) in the experimental group, and by controlling the other relevant variables, and measuring the effects of the manipulation by some statistical means. By manipulating the independent variable, the researcher can see if the treatment makes a difference on the subjects. If the average scores of two groups prove to be significantly different, and if there are not any explanations for this difference, then it can be concluded that the effect of the treatment caused this difference.

### 4.2.1. Study 2

Study 2 tests, through a between-subject design, for the predicted fit between mental representation (abstract vs. concrete) and the type of benefit that is highlighted (other-benefit in this study) on evaluating a sustainable product (i.e., compostable packaging). As supposed in H2 we aim at identifying an effect in the condition where abstract mind-set and other benefits are combined rather than concrete mind-set and other benefits. A convenience sample of 54 participants was recruited, and they were randomly assigned to one of two conditions (figure 30).

*Figure 30: Design of study 2*



Mental representation has been manipulated using a well-established time perspective task in which participants either were asked to write about their life “one year from tomorrow” (abstract representation) or their life “tomorrow” (concrete representation) (Förster, Friedman & Liberman 2004). Specifically for this study, the distant future condition (abstract mind-set) has been changed using three years from tomorrow instead of one year. A manipulation check for temporal distance has been developed. Manipulation checks establish that the treatment has had an effect on the theoretically relevant causal construct. In other words, manipulation checks are a way of ensuring that an experiment actually has been conducted (i.e., that the IV has been effectively manipulated).

Regarding the procedure, a questionnaire-based study has been used and it has been translated both in Italian and English. After participants have been randomly assigned to the concrete or the abstract mind-set condition, they were presented with a fictional advertisement for an eco-friendly (compostable) packaging, where other-benefits (environmental benefits) were highlighted (figure 31). A rating check of appeal types, based on Green and Pelozo (2014) and on White and Pelozo (2009), was tested. Participants were then asked to complete a questionnaire about their intention and attitudes towards eco-friendly packaging.

*Figure 31: Stimulus Other-Benefits*



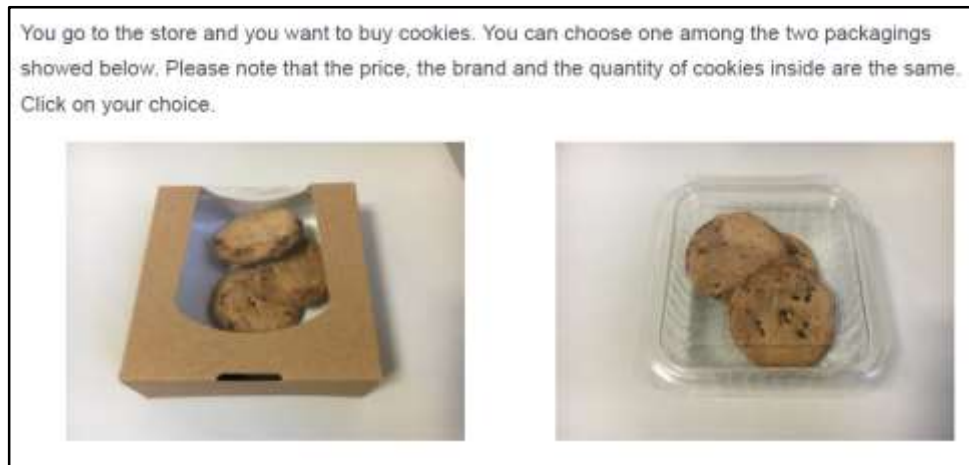
**A greener packaging!  
A cleaner planet!**

- Compostable packaging puts little harm to the environment since it is **100% biodegradable**.
- Every year **waste generation can be cut by up to 50%**.
- It is made from **forest cardboard** and **organic plant-based materials**, differently to traditional packaging, that is made from non-sustainable fossil oils and finite resources.
- **15 million tonnes** of plastic packaging waste generated in the last year, of which nearly 50% of it is **still landfilled**, with terrible consequences for the environment.
- Choosing compostable packaging, **CO<sub>2</sub> emissions, air pollution and energy resources** can be **reduced**.

**Buying it the champion is the environment!**

After presenting this stimulus, participants were asked to choose biscuits contained in two different packaging (compostable or plastic packaging) (figure 32).

Figure 32: Packaging choice



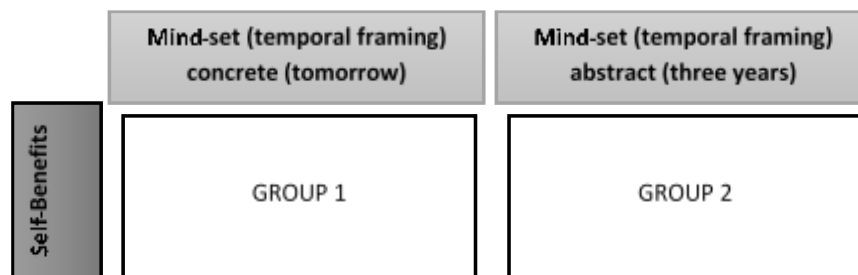
Explicit measures were based on previously validated scales and they evaluated common variables used in theoretical models on pro-environmental behaviours. Explicit attitudes towards compostable packaging were measured using a six-item semantic differential scale adapted from Perugini (2005). Each 7-point item consisted of polar-opposite adjective pairs, i.e. bad-good, harmful-harmless, unpleasant-pleasant, boring-exciting, unhealthy-healthy, unsociable-sociable. Two different scales have been used to assess environmental concern. Three items (e.g. “I consider myself to be well informed about environmental problems”) were adapted from Van Birgelen et al. (2009). Environmental concern scale developed by Snelgar (2006) has also been adopted since it is based on the value-belief-norm model, thus capturing egoistic, altruistic and biospheric values. Social norm was measured with three items taken from Carrus et al. 2008 (e.g. “Most people who are important to me would want me to purchase food products in compostable packaging when grocery shopping”). Two items from Bamberg et al. 2007 were adapted to assess personal norms toward compostable packaging (e.g. “Because of my own values/principles I feel an obligation to use compostable packaging instead of the plastic one”). Pro-environmental self-identity was measured with three items (adapted from van der Werff, Steg, & Keizer 2013) (e.g. “I think of myself as an environmentally-friendly consumer”). Past and present pro-environmental behaviour was assessed by asking participants to reflect on their behaviour during the past year and to rate on a Likert scale the extent to which they, for example, bought organic food whenever possible, and bought environmentally-friendly products (adapted from Kilbourne & Pickett, 2008). In

addition, we also measured behaviour with regard to packaging, e.g. extent to which they bought products with less packaging. Three items from van Birgelen, Semeijn and Keicher (2009) were used to measure perceived behavioural control (e.g. My food packaging choices have a direct impact on the environment). Behavioural intention was assessed with six items (e.g., “I will increase my purchase of food products using ecologically responsible packaging in the next three months”) adapted from Ackermann and Palmer (2014) and Bamberg et al. (2007). Willingness to pay more for sustainable packaging has also been assessed using one item. Additional demographic information was collected at end (e.g., age, gender, nationality and alike).

#### 4.2.1. Study 3

Study 3 tests, through a between-subject design, for the predicted fit between mental representation (abstract vs. concrete) and the type of benefit that is highlighted (self-benefit in this study) on evaluating a sustainable product (i.e., compostable packaging). As supposed in H3 we aim at identifying an effect in the condition where concrete mind-set and self-benefits are combined rather than abstract mind-set and self-benefits. A convenience sample of 54 participants was recruited, and they were randomly assigned to one of two conditions (figure 33).

*Figure 33: Design of study 3*



Mental representation has been manipulated using a well-established task in which participants either were asked to write about their life “one year from tomorrow” (abstract representation) or their life “tomorrow” (concrete representation) (Förster, Friedman, & Liberman 2004). Again, distant temporal condition has been changed from the original version using three years instead of one year. A manipulation check for temporal distance has been developed.

Regarding the procedure, a questionnaire-based study has been used, and it has been translated both in Italian and English. After participants had been randomly assigned to the concrete or the abstract mind-set condition, they were presented with a fictional advertisement for an eco-friendly (compostable) packaging, where self-benefits (healthy and economics benefits) were highlighted (figure 34). A rating check of appeal types, based on Green and Pelozo (2014) and on White and Pelozo (2009), was tested. Participants were then asked to complete a questionnaire about their intention and attitudes towards eco-friendly packaging.

Figure 34: Stimulus Self-Benefits



**A greener packaging!  
A safer choice for you!**

- Compostable packaging **benefits your health**, since the **materials used are natural-based**.
- It releases around **90% less of toxin and heavy metals** in your body and food if compared to traditional plastic packaging.
- **Food** inside remains **safe** and all its properties (**minerals, vitamins, proteins and alike**) are **preserved at 100%**.
- It is **lightweight** and **robust**, thus you can bring it with you at work.
- You can easily **dispose** it at home in just **few weeks** and use it to fertilize your garden or plants, **reducing waste generation and saving money**.

**Buying it the champion is your well-being!**

After presenting this stimulus, participants were asked to choose biscuits contained in two different packaging (compostable or plastic packaging) (figure 35).

Figure 35: Packaging choice

You go to the store and you want to buy cookies. You can choose one among the two packagings showed below. Please note that the price, the brand and the quantity of cookies inside are the same. Click on your choice.



Explicit measures were based on previously validated scales, and they evaluated common variables used in theoretical models on pro-environmental behaviours. Explicit attitudes towards compostable packaging were measured using a six-item semantic differential scale adapted from Perugini (2005). Each 7-point item consisted of polar-opposite adjective pairs, i.e. bad-good, harmful-harmless, unpleasant-pleasant, boring-exciting, unhealthy-healthy, unsociable-sociable. Two different scales have been used to assess environmental concern. Three items (e.g. “I consider myself to be well informed about environmental problems”) were adapted from Van Birgelen et al. (2009). Environmental concern scale developed by Snelgar (2006) has also been adopted since it is based on the value-belief-norm model, thus capturing egoistic, altruistic and biospheric values. Social norm was measured with three items taken from Carrus et al. 2008 (e.g. “Most people who are important to me would want me to purchase food products in compostable packaging when grocery shopping”). Two items from Bamberg et al. 2007 were adapted to assess personal norms toward compostable packaging (e.g. “Because of my own values/principles I feel an obligation to use compostable packaging instead of the plastic one”). Pro-environmental self-identity was measured with three items (adapted from van der Werff, Steg, & Keizer 2013) (e.g. “I think of myself as an environmentally-friendly consumer”). Past and present pro-environmental behaviour was assessed by asking participants to reflect on their behaviour during the past year and to rate on a Likert scale the extent to which they, for example, bought organic food whenever possible, and bought environmentally-friendly products (adapted from Kilbourne & Pickett, 2008). In addition, we also measured behaviour with regards to packaging, e.g. extent to which they bought products with less packaging. Three items from van Birgelen, Semeijn and Keicher (2009) were used to measure perceived behavioural control (e.g. My food packaging choices have a direct impact on the environment). Perceived behavioural control was assessed with three items. Behavioural intention was assessed with six items (e.g., “I will increase my purchase of food products using ecologically responsible packaging in the next three months”) adapted from Ackermann and Palmer (2014) and Bamberg et al. (2007). One single item has been used to assess consumers’ willingness to pay more for sustainable packaging. Additional demographic information was collected at the end (e.g., age, gender, nationality and alike).

## 5. Results and discussion

### 5.1 Study 1

#### Sample

Eighty-eight participants from the University of Cardiff were recruited for study 1. Fifty-nine female (67%) took part in this study, and nearly 90% were under 24 years old. The sample predominantly consisted of university students (92%), who have been staying in the UK for more than five years (94%). Data are shown in tables 4, 5, 6 and 7.

*Table 4: Gender*

		<b>Gender</b>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	29	33,0	33,0	33,0
	Female	59	67,0	67,0	100,0
	Total	88	100,0	100,0	

*Table 5: Age*

		<b>Age</b>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-21	66	75,0	75,0	75,0
	22-24	13	14,8	14,8	89,8
	25-34	6	6,8	6,8	96,6
	35-44	3	3,4	3,4	100,0
	Total	88	100,0	100,0	

*Table 6: Occupation*

		<b>Main occupation</b>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Full-time student	81	92,0	92,0	92,0
	Full-time employment (incl. self-employment)	7	8,0	8,0	100,0
	Total	88	100,0	100,0	

Table 7: Living time in the UK

		How long have you lived in the UK?			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 6 months	1	1,1	1,1	1,1
	Between 6 months to 1 year	2	2,3	2,3	3,4
	Between 1 to 3 years	2	2,3	2,3	5,7
	More than 5 years	83	94,3	94,3	100,0
	Total	88	100,0	100,0	

### Descriptive statistics

In order to assess the level of internal consistency of the scales used to measure the constructs in our study, several reliability analyses were performed. The Cronbach's alpha reliability scores are presented in table 8. As shown, all reliability scores well exceed the threshold value of 0.70 as proposed by Nunnally and Bernstein (1994), providing sufficient evidence for the reliability of the scales used. Constructs correlations are shown in table 9.

Table 8: Descriptive Statistics and reliability coefficients for explicit measures

	ITEMS	MEAN	SD	$\alpha$
Explicit Attitude compostable	6	6.01	.95	0.76
Explicit Attitude plastic	6	2.85	1.1	0.76
Social Norms	3	4.24	1.5	0.91
Environmental Self-Identity	3	4.95	1.23	0.90
Behavioural Intention	2	4.8	1.10	0.74

Table 9: Construct correlations

	EAC	EAP	SN	PESI	BI
Explicit attitudes compostable (EAC)	1				
Explicit attitudes plastic (EAP)	-,283**	1			
Social Norms (SN)	,222*	-,167	1		
Pro-environmental Social Identity (PESI)	,173	-,243*	,282**	1	
Behavioural Intention (BI)	-,008	-,069	,362**	,377**	1

\* $p < .01$ . \*\* $p < .005$ . All two-tailed.



## Results and Discussion of Study 1

Regarding the hypotheses of Study 1, we supposed that:

H1a: We predicted that implicit and explicit attitudes toward compostable packaging are higher positive than implicit and explicit attitudes toward plastic packaging.

H1b: We predict that correlations between implicit and explicit attitude towards compostable packaging differ in the two food categories (healthy vs unhealthy). More specifically, we predict no correlation between implicit and explicit attitude towards compostable packaging in the case of unhealthy food and a significant correlation between implicit and explicit attitude towards compostable packaging in the case of healthy food.

H1c: We hypothesized that gender differences would emerge when considering implicit and explicit attitudes toward compostable and plastic packaging in the two food categories (healthy vs unhealthy). More specifically, we predicted that women would show higher positive implicit attitude than male in the case of healthy food.

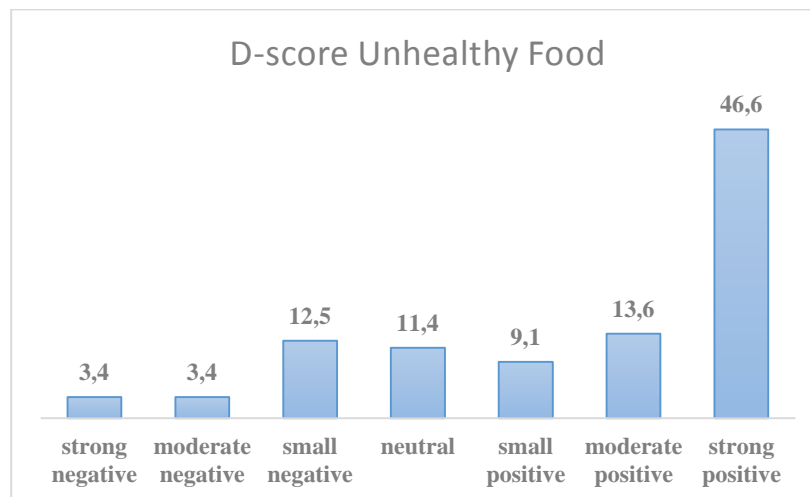
In order to test the abovementioned hypotheses an IAT D-score has been calculated. As shown in the methodology section, the IAT D-Score is the critical measure, which calculates the difference in latencies during the critical trials and is thus a relative measure of the difference between the implicit attitudes towards two different packaging categories (“compostable” versus “traditional plastic packaging”). Prior to computing this score, any response time greater than 10,000 ms has been deleted, in addition to removing cases where more than 10% of the scores are less than 300ms. An IAT D-score is quite similar to Cohen’s (1977) *d* measure of effect-size (Greenwald et al., 2003). Therefore, an implicit preference is said to be strong, medium or slight if the IAT D-score meets the conventional criteria for small (below 0.20), medium (between 0.20 and 0.50) and large (above 0.80) effect sizes of Cohen’s (1977). D scores between -0.2 and +0.2 are considered neutral, indicating no preference for either compostable or plastic packaging.

Since the aim of this study was to decipher whether implicit attitudes towards compostable packaging differed between two different food categories (healthy vs. unhealthy food), two IAT D-scores have been calculated. Both IAT D-scores indicate a medium-high preference for compostable packaging:  $M_{\text{unhealthy}}=.80$ ,  $SD=1.01$ ,

$M_{\text{healthy}}=.60$ ,  $SD=1.13$ . These value were both significantly different from zero: for the unhealthy food category  $t(87)=6.80$ ,  $p<.000$ , while for healthy food  $t(87)=4.86$ ,  $p<.000$ . Thus, it means that the IAT test measured a difference in valence between the critical blocks. Concerning explicit attitudes, participants show a strong positive explicit attitude toward compostable packaging ( $M_{\text{eac}}=6$ ,  $SD=.94$ ) and an overall negative explicit attitude toward plastic packaging ( $M_{\text{eap}}=2.84$ ,  $SD=1.1$ ). These value were both significantly different from zero: for the explicit attitude toward compostable packaging  $t(87)=59.5$ ,  $p<.000$ , while for plastic packaging  $t(87)=24.2$ ,  $p<.000$ . We can conclude that participants showed an explicit preference for compostable packaging in contrast to plastic packaging ( $M_{\text{rel}}=3.16$ ,  $SD=1.64$ )<sup>1</sup>.

More specifically, for what concerns unhealthy food, results demonstrated that 46,6% of respondents showed a strong and 13,6% a medium implicit bias to compostable packaging. An additional 9,1% showed a small whilst 11,4% showed a neutral implicit bias. However, nearly 20% showed a preference for unhealthy food in traditional plastic packaging (figure 36).

Figure 36: Implicit attitudes toward compostable packaging (unhealthy food)

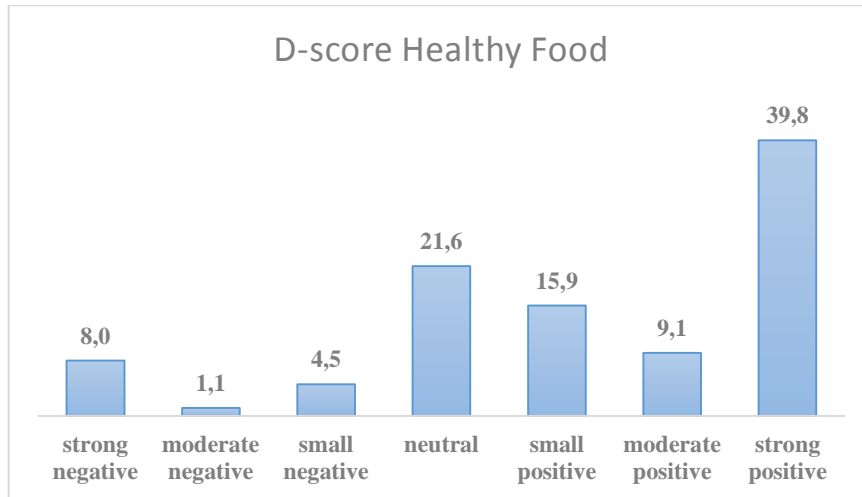


Regarding the healthy food category, slightly different results can be observed. Nearly 40% of respondents showed a strong and 9% a moderate implicit bias to compostable packaging. An additional 15,9% showed a small whilst 21,6% showed a neutral implicit

<sup>1</sup> $M_{\text{rel}}$  is the relative measure of explicit attitude, that is the mean difference between explicit attitude toward compostable packaging and explicit attitude toward plastic packaging.

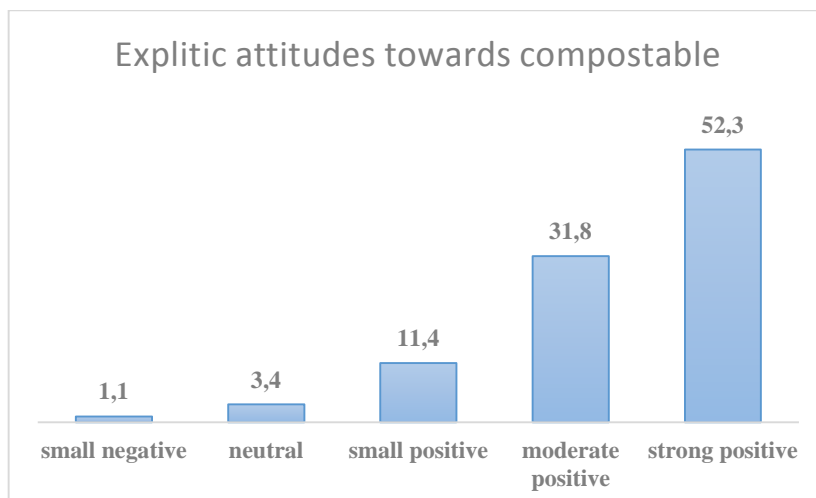
bias. However, nearly 14% showed a preference for healthy food in traditional plastic packaging (figure 37).

Figure 37: Implicit attitudes toward compostable packaging (healthy food)



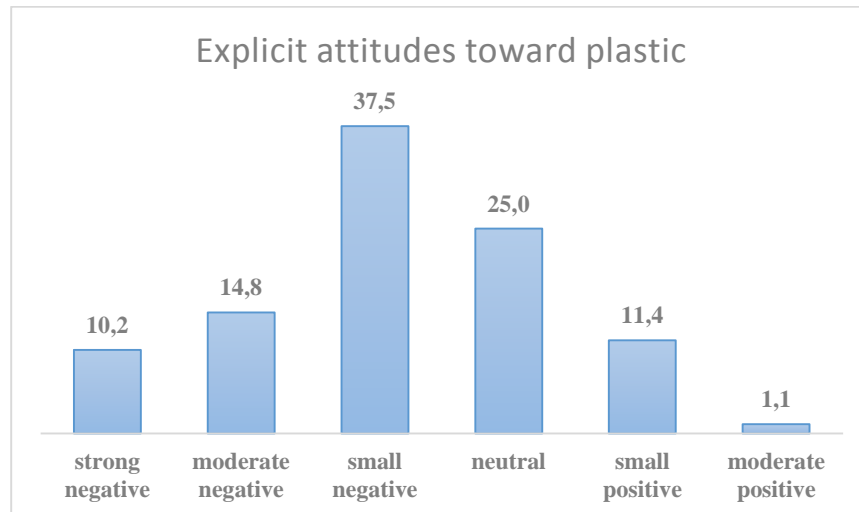
Analysing explicit attitudes toward compostable packaging, it emerges that respondents have generally positive attitudes toward it (figure 38). More specifically, nearly 53% showed a strong positive attitude, while nearly 32% a moderate positive attitude. Interestingly, no one of the respondents showed a strong and a moderate negative attitude toward compostable packaging and a very few percentage (less than 2%) reported having small negative attitudes (figure 38).

Figure 38: Explicit attitudes toward compostable packaging



For what concerns explicit attitudes toward plastic packaging, it emerges that respondents have generally negative attitudes toward it (figure 39). More specifically, nearly 11% showed a strong negative attitude, while nearly 15% a moderate negative attitude. 37,5% of respondents had a small negative attitude. Interestingly, no one of the respondents showed a strong positive attitude toward plastic packaging.

*Figure 39: Explicit attitudes toward plastic packaging*



In accordance with these findings, we can state that Hypothesis 1a is supported. More specifically, results are consistent with the prediction that implicit and explicit attitudes toward compostable packaging are higher positive than implicit and explicit attitudes toward plastic packaging. As shown, participants demonstrated medium-high preferences at the implicit level, in case of both healthy and unhealthy food category, and high positive attitudes at the explicit level toward compostable packaging.

Regarding Hypothesis 1b, we predict that correlations between implicit and explicit attitude towards compostable packaging are different in the two food categories (healthy vs unhealthy). More specifically, a non-correlation between implicit and explicit attitude towards compostable packaging can be observed in the case of unhealthy food, while a significant correlation between implicit and explicit attitude towards compostable packaging can be found in the case of healthy food. In order to test this hypothesis we conducted a Pearson correlation analysis between the two D-score and the relative measure of explicit attitude, that is the difference between explicit attitudes for compostable and plastic packaging.

Results confirm Hypothesis 1b. The correlation between the implicit and explicit measures was positive and significant for the multi-item measure of attitude based on Perugini (2005),  $r=.221$  ( $p<.05$ ), in the case of healthy food category. These results are particularly interesting, since no dissociation between the two measures (implicit and explicit) occurs. According to the academic literature (Greenwald et al., 2009), a high relationship between implicit and explicit measures suggests that automatically activated evaluation of the attitude object and its verbal evaluation support one another, confirming the predictive power of the explicit measure. Thus, in the case of healthy food, participants reported their true feelings about compostable packaging and they did not need to modify them because of social desirability.

In contrast, for what concerns unhealthy food, the correlation between the implicit and explicit measures was negative and not significant for the multi-item measure of attitude based on Perugini (2005),  $r=-.12$  ( $p>.05$ ). A non-significant correlation between the two measures of attitudes suggests that explicit measures might be consciously modified as a result to report true feelings, reflecting possible social desirability bias. Thus, the findings confirm that individuals' automatically activated evaluations towards sustainable packaging are not the same as those measured by self-report. A weak relationship indicates a potential internal psychological conflict, which in turn has a negative impact on the predictive power of the explicit measure (Greenwald & Nosek, 2009; Greenwald et al., 2009; Hofmann et al., 2005; Nosek, 2005; Nosek et al., 2007). These findings seem to be in line with the classic dual-process of attitudes, for which the correlation between an explicit and an implicit measure should be lower when people have the motivation and the cognitive capacity to control the influence of automatically activated cognitions (e.g., Strack & Deutsch 2004; Wilson et al. 2000). In addition, it has been demonstrated that self-reports on relatively mundane topics such as consumer attitudes correlate higher with the IAT measure than self-reports in socially sensitive domains such as prejudice, self-esteem, and sustainable behaviour (Hofmann et al. 2005). Dissociation between implicit and explicit measures of attitude can be observed when the social object under investigation is of a sensitive nature as respondents may not report their true attitude. In such conditions, implicit and explicit measures of attitude may not share the same valence (Akerman & Palmer 2014).

Regarding hypothesis 1c, results show that a gender difference emerges when considering implicit and explicit attitudes toward compostable and plastic packaging in the two food categories (healthy vs unhealthy). In particular, H1c is supported since for healthy food female tend to have more positive implicit attitudes than male:  $t(43,5)=-2.1$ ,  $p<.05$ . Conversely, the results showed no significant difference between males and females and their implicit attitudes for the unhealthy food category  $t(86)=.69$ ,  $p>.05$ . The same for explicit attitudes toward compostable or plastic packaging, where no significant difference between male and female can be observed. More specifically, for explicit attitudes towards compostable packaging, results are  $M_{\text{male}}=6.05$ ,  $SD=.88$ ,  $M_{\text{female}}=5.99$ ,  $SD=.98$ ,  $t(61,1)=.30$ ,  $p>.05$ , while for explicit attitudes towards plastic packaging, results are  $M_{\text{male}}=2.76$ ,  $SD=1.07$ ,  $M_{\text{female}}=2.89$ ,  $SD=1.12$ ,  $t(58,3)=-.52$ ,  $p>.05$ .

## 5.2. Study 2

### Sample

Fifty-four participants were recruited for study 2. Thirty-eight female (70.4%) took part in this study and age range was from 22 to 65, with a  $M_{age}=34.7$ . The sample predominantly consisted of university students and workers (74.1%), while regarding nationality all participants were Italian. Data regarding gender, nationality and occupation are shown in tables 10, 11 and 12.

*Table 10: Gender*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	16	29,6	29,6	29,6
	Female	38	70,4	70,4	100,0
	Total	54	100,0	100,0	

*Table 11: Occupation*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Full-time student	10	18,5	18,5	18,5
	Studente part-time	1	1,9	1,9	100,0
	Full-time employment	30	55,6	55,6	74,1
	Part-time employment	2	3,7	3,7	77,8
	Retired	2	3,7	3,7	81,5
	Other	9	16,7	16,7	98,1
	Total	54	100,0	100,0	

*Table 12: Nationality*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Italiana	54	100,0	100,0	100,0

### Manipulation checks

As reported in the methodology section, participants were randomly assigned either to an abstract mind-set (distant temporal condition – 3 years) and to a concrete mind-set (close temporal condition – tomorrow). An independent T-test has been conducted in order to reveal if the manipulation was perceived as intended (table 13). Two items were used to assess the degree to which participants rated the task as referred to their present or their future life. Participants in the concrete condition (tomorrow) expressed significantly greater degree in stating that the task was focused on their present life than those in the

abstract condition (three years):  $M_{concrete}=5.33$ ,  $M_{abstract}=3.07$ ,  $t(52)= 4.464$ ,  $p<0.001$ . Conversely, participants in the abstract condition expressed significantly greater degree in stating that the task was focused on their future life than those in the concrete condition:  $M_{abstract}=6.19$ ,  $M_{concrete}=3.81$ ,  $t(52)= -4.994$ ,  $p<0.001$ .

*Table 13: Group statistic and Independent Sample Test*

Q2 - Task	N	Mean	Std. Deviation	Std. Error
Q3_1 - The task completed focused on thinking about my present life	concrete	5,33	1,861	,358
	abstract	3,07	1,859	,358
Q3_2 - The task completed focused on thinking about my distant future life	concrete	3,81	2,185	,420
	abstract	6,19	1,145	,220

		Leven's Test for		t- test for Equality of Means						
		F	Sign.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval for Mean	
									Lower	Upper
Q3_1 - The task completed focused on thinking about my present life	Equal variances assumed	,181	,672	4,464	52	,000	2,259	,506	1,244	3,275
	Equal variances not assumed			4,464	52,000	,000	2,259	,506	1,244	3,275
Q3_2 - The task completed focused on thinking about my distant future life	Equal variances assumed	18,527	,000	-4,994	52	,000	-2,370	,475	-3,323	-1,418
	Equal variances not assumed			-4,994	39,279	,000	-2,370	,475	-3,330	-1,411

### Descriptive statistics

In order to assess the level of internal consistency of the scales used to measure the constructs in our study, several reliability analyses were performed. The Cronbach's alpha reliability scores are presented in table 14. As can be seen, all reliability scores well exceed the threshold value of 0.70 as proposed by Nunnally and Bernstein (1994), providing sufficient evidence for the reliability of the scales used. In particular, for Environmental Concern scale, based on van Birgelen et al. (2009), one item has been deleted in order to improve its Cronbach's alpha ( $\alpha$ ). Same procedure has been followed for Past Behaviour scale (based on Kilbourne & Pickett 2008); Perceived Behavioural Control (based on van Birgelen et al. 2009); and Behavioural Intention (based on Bamberg et al. 2007).



*Table 14: Descriptive Statistics and reliability coefficients for explicit measures*

	<b>ITEMS</b>	<b>MEAN</b>	<b>SD</b>	<b><math>\alpha</math></b>
Explicit Attitude compostable	6	6.25	0.87	0.85
Explicit Attitude plastic	6	3.23	1.5	0.91
Environmental Concern	2	4.89	1.31	0.77
Social Norms	3	3.9	1.6	0.89
Personal Norms	2	5.5	1.43	0.92
Environmental Self-Identity	3	4.64	1.25	0.9
Past Behaviour	7	4.93	1.07	0.83
Perceived Behavioural Control	2	5.28	1.5	0.9
Behavioural Intention	2	4.85	1.5	0.9
Environmental Concern Egoistic	5	5.39	0.95	0.77
Environmental Concern Altruistic	4	6.35	0.83	0.78
Environmental Concern Biospheric	6	5.82	1.2	0.94

Correlations between the respective constructs are presented in table15.

Table 15: Construct Correlations

	EAC	ECP	EC	SN	PN	ESI	PB	PBC	WTP	EC_EGO	EC_ALTR	EC_BIO	BI
Explicit attitude compostable (EAC)	1												
Explicit attitude plastic (ECP)	-,122	1											
Environmental Concern (EC)	,193	-,266	1										
Social Norms (SN)	,248	-,337*	,088	1									
Personal Norms (PN)	,382**	-,453**	,386**	,360**	1								
Environmental Self-Identity (ESI)	,172	-,337*	,550**	,282*	,545**	1							
Past Behaviour (PB)	,359**	-,377**	,376**	,277*	,591**	,689**	1						
Perceived Behaviour Control (PBC)	,399**	-,313*	,368**	,272*	,468**	,543**	,501**	1					
Willingness to pay more (WTP)	,219	-,446**	,324*	,243	,497**	,539**	,611**	,513**	1				
Egoistic Environmental Concern (EC_EGO)	,055	-,176	,056	,260	,189	-,022	,214	,051	,203	1			
Altruistic Environmental Concern (EC_ALTR)	,414**	-,301*	,145	,335*	,438**	,262	,488**	,322*	,384**	,396**	1		
Biospheric Environmental Concern (EC_BIO)	,411**	-,125	,102	,095	,315*	,161	,393**	,176	,353**	,216	,613**	1	
Behavioural Intention (BI)	,468**	-,432**	,382**	,491**	,670**	,686**	,638**	,611**	,643**	,114	,485**	,261	1

\*p<.01. \*\*p<.005. All two-tailed.

## Results and Discussion of Study 2

Regarding the main hypotheses of study 2, we supposed that:

H2: When individuals form an abstract representation, highlighting other-benefits (i.e., environmental benefits) may make a sustainable packaging more appealing, because that framing fits with abstract, higher-order values associated with helping the environment.

H2a: Consumers' intentions are more positive when an abstract mind-set and other benefits are combined, rather than a concrete mind-set and other-benefits.

H2b: Consumers' willingness to pay more is more positive when an abstract mind-set and other benefits are combined, rather than a concrete mind-set and other-benefits.

In order to test these hypotheses a one-way ANOVA analysis has been conducted. In particular, we show results concerning our two dependent variables, such as behavioural intention and willingness to pay more.

Regarding the first DV (behavioural intention), as shown in table 16, results confirm that there was a statistically significant difference between abstract or concrete mental representation and behavioural intentions,  $F(1,52)=6.99$ ,  $p < .05$ . Among those who formed an abstract representation, highlighting other benefits significantly increased behavioural intentions ( $M=5.35$ ,  $SD=1.33$ ) as compared to those who formed a concrete representation ( $M = 3.44$ ,  $SD=1.83$ ).

*Table 16: Descriptives and ANOVA*

Behavioural Intention									
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	
					Lower Bound	Upper Bound			
abstract	27	5,35	1,329	,256	4,83	5,88	3	7	
concrete	27	4,35	1,447	,278	3,78	4,92	2	7	
Total	54	4,85	1,465	,199	4,45	5,25	2	7	

### ANOVA

Behavioural Intention

	Sum of squared	df	Mean Square	F	Sig.
Between Groups	13,500	1	13,500	6,998	,011
Within Groups	100,315	52	1,929		
Total	113,815	53			

For what concerns the second DV we investigated (Willingness to pay more), results show that there was a statistically significant difference between abstract or concrete mental representation and willingness to pay,  $F(1,52) = 6.78$ ,  $p < .05$ . Participants who formed an abstract representation combined with an environmental appeal were significantly willing to pay more for a compostable packaging ( $M=4.67$ ,  $SD=1.86$ ) than those who formed a concrete mental representation combined with an environmental appeal ( $M=3.33$ ,  $SD=1.9$ ) (table17).

*Table 17: Descriptives and ANOVA*

Willingness to pay more

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
abstract	27	4,67	1,861	,358	3,93	5,40	1	7
concrete	27	3,33	1,901	,366	2,58	4,09	1	7
Total	54	4,00	1,981	,270	3,46	4,54	1	7

### ANOVA

Willingness to pay more

	Sum of squared	df	Mean Square	F	Sig.
Between Groups	24,000	1	24,000	6,783	,012
Within Groups	184,000	52	3,538		
Total	208,000	53			

In accordance with these findings, we can state that Hypothesis 2a and 2b are supported. More specifically, results of study 2 are consistent with the prediction that a fit between mental construal and the type of highlighted benefit are important determinants in intentions toward compostable packaging.

Participants in an abstract mind-set showed greater behavioural intentions and willingness to pay more for a sustainable packaging, as compared to those in a concrete

mind-set, when the environmental benefits were highlighted, confirming the fit. Therefore, our hypothesis is in line with recent research, demonstrating that when the dependent behaviour is pro-environmental, there may be important moderating conditions for the effects of mental construal. Moreover, the current findings confirm recent research that shows a fit between consumers' mental construal (abstract vs. concrete) and the benefits associated with sustainable products (other-benefits) (Young et al. 2015; Goldsmith et al. 2016).

### 5.3. Study 3

#### Sample

Fifty-four participants were recruited for study 3. Forty-one female (75.9%) took part in this study and age range was from 23 to 66, with a  $M_{age}=31$ . The sample predominantly consisted of workers (59.3%), while regarding nationality all participants were Italian. Data regarding gender, nationality and occupation are shown in tables 18, 19 and 20.

*Table 18: Gender*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	41	75,9	75,9	75,9
	Female	13	24,1	24,1	100,0
	Total	54	100,0	100,0	

*Table 19: Occupation*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Full-time student	5	9,3	9,3	100,0
	Full-time employment	32	59,3	59,3	85,2
	Part-time employment	3	5,6	5,6	90,7
	Housemaker	1	1,9	1,9	25,9
	Other	13	24,1	24,1	24,1
	Total	54	100,0	100,0	

*Table 20: Nationality*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Italiana	54	100,0	100,0	100,0

#### Manipulation checks

As reported in the methodology section, participants were randomly assigned either to an abstract mind-set (distant temporal condition – 3 years) and to a concrete mind-set (close temporal condition – tomorrow). An independent T-test has been conducted in order to reveal if the manipulation was perceived as intended (table 21). Two items were used to assess the degree to which participants rated the task as referred to their present or their future life. Participants in the concrete condition (tomorrow) expressed significantly greater degree in stating that the task was focused on their present life than those in the

abstract condition (three years):  $M_{concrete}=5.07$ ,  $M_{abstract}=3.74$ ,  $t(48,40)= 2.626$ ,  $p<0.05$ . Conversely, participants in the abstract condition expressed significantly greater degree in stating that the task was focused on their future life than those in the concrete condition:  $M_{abstract}=6.19$ ,  $M_{concrete}=3.63$ ,  $t(52)= -5.976$ ,  $p<0.001$ .

Table 21: Group statistic and Independent Sample Test

Groups Statistics					
Q2 - Task		N	Mean	Std. Deviation	Std. Error
Q3_1 - The task completed focused on thinking about my present life	concrete	27	5,07	1,591	,306
	abstract	27	3,74	2,105	,405
Q3_2 - The task completed focused on thinking about my distant future life	concrete	27	3,63	1,884	,363
	abstract	27	6,19	1,178	,227

Independent Sample Test									
	Leven's Test for Equality of Variances		t- test for Equality of Means						
	F	Sign.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval for Mean	
								Lower	Upper
Q3_1 - The task completed focused on thinking about my present life	2,838	,098	2,626	52	,011	1,333	,508	,314	2,352
			2,626	48,405	,012	1,333	,508	,313	2,354
Q3_2 - The task completed focused on thinking about my distant future life	10,648	,002	-5,976	52	,000	-2,556	,428	-3,414	-1,697
			-5,976	43,631	,000	-2,556	,428	-3,418	-1,694

### Descriptive statistics

In order to assess the level of internal consistency of the scales used to measure the constructs in our study, several reliability analyses were performed. The Cronbach's alpha reliability scores are presented in 22. All reliability scores well exceed the threshold value of 0.70 as proposed by Nunnally and Bernstein (1994), providing sufficient evidence for reliability of the scales used. In particular, for Environmental Concern scale, based on van Birgelen et al. (2009), one item has been deleted in order to improve its Cronbach's alpha ( $\alpha$ ). Same procedure has been followed for Past Behaviour scale (based on Kilbourne & Pickett 2008); Perceived Behavioural Control (based on van Birgelen et al. 2009); and Behavioural Intention (based on Bamberg et al. 2007). Constructs correlation are shown in table 23.

*Table 22: Descriptive Statistics and reliability coefficients for explicit measures*

	<b>ITEMS</b>	<b>MEAN</b>	<b>SD</b>	<b><math>\alpha</math></b>
Explicit Attitude compostable	6	5.63	1.66	0.94
Explicit Attitude plastic	6	3.3	1.38	0.92
Environmental Concern	2	4.91	1.45	0.92
Social Norms	3	3.09	1.36	0.83
Personal Norms	2	5.25	1.83	0.98
Environmental Self-Identity	3	4.38	1.46	0.92
Past Behaviour	7	4.55	1.28	0.9
Perceived Behaviour Control	2	5.17	1.63	0.95
Behavioural Intention	2	4.67	1.66	0.84
Environmental Concern Egoistic	5	5.11	1.33	0.88
Environmental Concern Altruistic	4	5.87	1.38	0.92
Environmental Concern Biospheric	6	5.39	1.39	0.96



Table 23: Construct Correlations

	EAC	ECP	EC	SN	PN	ESI	PB	PBC	WTP	EC_EGO	EC_ALTR	EC_BIO	BI
Explicit attitude compostable (EAC)	1												
Explicit attitude plastic (ECP)	-,092	1											
Environmental Concern (EC)	,130	-,286*	1										
Social Norms (SN)	,100	-,125	,111	1									
Personal Norms (PN)	,082	-,431**	,495**	,434**	1								
Environmental Self-Identity (ESI)	,216	-,414**	,666**	,282*	,711**	1							
Past Behaviour (PB)	,177	-,499**	,514**	,174	,679**	,743**	1						
Perceived Behaviour Control (PBC)	,345*	-,372**	,450**	,304*	,681**	,641**	,512**	1					
Willingness to pay more (WTP)	,146	-,422**	,400**	,126	,407**	,543**	,515**	,490**	1				
Egoistic Environmental Concern (EC_EGO)	,204	-,277*	,123	,160	,285*	,284*	,253	,217	-,031	1			
Altruistic Environmental Concern (EC_ALTR)	,207	-,429**	,312*	,275*	,484**	,493**	,534**	,376**	,107	,591**	1		
Biospheric Environmental Concern (EC_BIO)	,151	-,401**	,530**	,161	,609**	,654**	,597**	,597**	,343*	,332*	,552**	1	
Behavioural Intention (BI)	,346*	-,353**	,535**	,239	,507**	,689**	,652**	,614**	,589**	,239	,423**	,548**	1

\*p<.01. \*\*p<.005. All two-tailed.

### Results and Discussion of Study 3

Regarding the main hypotheses of study 3, we supposed that:

H3: When individuals form a concrete representation, highlighting self-benefits (i.e., healthy and economic benefits) may make a sustainable packaging more appealing, because the framing is congruent with a desire to satisfy more immediate concrete needs.

H3a: Consumers' intentions are more positive when a concrete mind-set and self-benefits are combined, rather than an abstract mind-set and self-benefits.

H3b: Consumers' willingness to pay more is more positive when a concrete mind-set and self-benefits are combined, rather than an abstract mind-set and self-benefits.

In order to test the hypotheses a one-way ANOVA analysis has been conducted. In particular, we show results concerning our two dependent variables, such as behavioural intention and willingness to pay more.

Regarding the first DV (behavioural intention), as shown in table 24 results do not confirm a statistically significant difference between abstract or concrete mental representation and behavioural intentions,  $F(1,52) = .106$ ,  $p > .05$ . Among participants who formed a concrete representation, highlighting self-benefits did not have an effects on behavioural intentions ( $M=4.59$ ,  $SD=1.54$ ) as compared to those who formed an abstract representation ( $M =4.74$ ,  $SD=1.79$ ).

Table 24: Descriptives and ANOVA

Behavioural Intention								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
abstract	27	4,74	1,789	,344	4,03	5,45	1	7
concrete	27	4,59	1,544	,297	3,98	5,20	2	7
Total	54	4,67	1,657	,225	4,21	5,12	1	7

#### ANOVA

Behavioural Intention					
	Sum of squared	df	Mean Square	F	Sig.
Between Groups	,296	1	,296	,106	,746
Within Groups	145,204	52	2,792		
Total	145,500	53			

Same results for the second DV (Willingness to pay more). As shown in table 25, there was not a statistically significant difference between abstract or concrete mental representation and willingness to pay,  $F(1,52) = .991$ ,  $p > .05$ . More specifically, participants who formed a concrete representation combined with a self-benefit appeal were less willing to pay more for a compostable packaging ( $M=3.74$ ,  $SD=1.89$ ) than those who formed an abstract mental representation ( $M=4.26$ ,  $SD=1.93$ ).

*Table 25: Descriptives and ANOVA*

Willingness to pay more

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
abstract	27	4,26	1,933	,372	3,49	5,02	1	7
concrete	27	3,74	1,893	,364	2,99	4,49	1	7
Total	54	4,00	1,913	,260	3,48	4,52	1	7

#### ANOVA

Willingness to pay more

	Sum of squared	df	Mean Square	F	Sig.
Between Groups	3,630	1	3,630	,991	,324
Within Groups	190,370	52	3,661		
Total	194,000	53			

In accordance with these findings, we can conclude that Hypotheses 3a and 3b are not supported. More specifically, results of study 3 did not show the predicted fit between mental construal and the type of benefit highlighted (self-benefits in this case), since a not significant difference in behavioural intentions and willingness to pay more, between the two groups, has been revealed. Even if the manipulation of our independent variable worked, no effect has been found in the DVs explored.

One possible explanation for these results can lie in the stimulus used for highlighting self-benefits. As reported in the methodological section, participants were asked to rate the appeal type (self-benefits in this case), using a scale based on Green and Peloza (2014) and on White and Peloza (2009). Indeed, looking at the data, participants seem not to perceive the appeal used as able to stress personal benefits ( $M_{\text{self-benefits}}=3.7$ ,  $SD=1.16$ ), showing a slightly neutral rate. Conversely, they seem having perceived it as an environmental appeal.

However, our results seem to be in line with previous research that combines CLT and self-benefits. For instance, Young et al. (2015) reported in one of their studies that consumers did not differ in their purchase intentions for either the abstract appeal or the concrete appeal when the attributes of green products were associated with the benefit of self. In the same vein, Goldsmith et al. (2016, p.5) state that “although we observed that highlighting an economic benefit significantly decreased evaluation difficulty among participants who formed a concrete representation, the implications for purchase interest were mixed”.

## 6. Conclusions and future research

Encouraging sustainable consumer behaviour, such as adoption of eco-friendly packaging, is a growing topic of interest in marketing literature (e.g., Karmarkar & Bollinger 2015; Rokka & Uusitalo 2008) and has been identified as one of the more pressing research topics (Mick 2006).

In addition, consumers are increasingly demanding more environmentally friendly packaging in terms of reduced packaging, or packaging which can be recycled or reused (Magnier & Schoormans 2015) and research into consumer attitudes on new packaging indicate that consumers now expect all packages to be environmentally friendly (Olsen, Slotegraaf & Chandukala 2014). However, extant literature on this topic remains scarce.

Scholars agree that for encouraging consumers to behave in a more sustainable way a deeper understanding of the relationship between attitude and behaviour is needed. Indeed, despite consumers claim to be concerned about the environment, they actually fail in implementing coherent behaviours, implying a discrepancy between their expressed intentions and actions.

Despite several studies have investigated this issue, there is still room for more research. As stated by Kollmuss and Agyeman (2002), answering the question “*Why do people act environmentally and what are the barriers to pro-environmental behaviour?*” might be very challenging.

Based on this premise, this thesis attempts to fill this gap by investigating the role played by implicit attitudes and mental construal level on consumers’ evaluation of sustainable packaging.

## 6.1 Summary of findings

Across three experimental studies, this thesis contributes to marketing research on sustainable consumption by expanding the application of implicit attitudes and Construal Level Theory (CLT) into a new domain, such as consumers' evaluation of environmentally friendly packaging.

The purpose of Study 1 is to examine self-reported (i.e. explicit) and automatic (i.e. implicit) evaluations that may encourage or inhibit consumer's adoption of eco-friendly food packaging. In particular, H1a aims at showing that explicit and implicit attitudes towards compostable packaging are generally positive and are not dependent on the food category (healthy vs unhealthy). Results are consistent with this prediction, indicating that participants show medium-high preferences at the implicit level and high positive attitudes at the explicit level toward compostable packaging, supporting the first hypothesis. In addition, a significant gender difference has been found, supporting H1c for which female show higher positive implicit attitudes than male toward compostable packaging in the case of healthy food. To conclude, a different correlation between implicit and explicit attitude toward compostable packaging has been identified in the two food categories (healthy vs unhealthy), confirming H1b. The correlation between the implicit and explicit measures was positive and significant in the case of healthy food category, which means that no dissociation between the two measures (implicit and explicit) occurs. According to the academic literature (Greenwald et al., 2009), a high relationship between implicit and explicit measures suggests that automatically activated evaluation of the attitude object and its verbal evaluation support one another, confirming the predictive power of the explicit measure. Thus, in the case of healthy food, participants reported their true feelings about compostable packaging and they did not need to modify them because of social desirability. In contrast, for what concerns unhealthy food, the correlation between the implicit and explicit measures was negative and not significant, suggesting that explicit measures might be consciously modified as a result to report true feelings, reflecting possible social desirability bias. Thus, the findings confirm that individuals' automatically activated evaluations towards sustainable packaging are not the same as those measured by self-report. A weak relationship indicates a potential internal psychological conflict, which in turn has a negative impact on the predictive power of the explicit measure (Greenwald & Nosek, 2009; Greenwald

et al., 2009; Hofmann et al., 2005; Nosek, 2005; Nosek et al., 2007). These findings seem to be in line with the assumption that dissociation between implicit and explicit measures of attitude can be observed when the social object under investigation is of a sensitive nature as respondents may not report their true attitude. In such conditions, implicit and explicit measures of attitude may not share the same valence (Akerman & Palmer 2014).

Studies 2 and 3 investigate the role of consumers' construal level mind-set in evaluating a sustainable product and its relationship with a message framed in terms of self versus others' benefits. Supported by recent research, the main hypotheses posit that consumers' behavioural intentions and willingness to pay are more positive when both an abstract mind-set and other benefits, and a concrete mind-set and self-benefits are combined (H2a, H2b, H3a, H3b).

Study 2 provide empirical evidence on the former hypotheses (H2a and H2b) and confirms the fit between mind-set and benefit associations. It thus shows that participants in an abstract mind-set report greater behavioural intentions and willingness to pay more for a sustainable packaging, as compared to those in a concrete mind-set, when the environmental benefits are considered.

In line with previous studies (e.g. Goldsmith, Newman & Dhar 2016), study 2 confirms that a message framed as environmental matched with a more abstract mind-set produces more positive intentions toward a sustainable packaging. Thus, results demonstrate that consumers who perceived greater psychological distance place higher importance on the other-benefits appeal (environmental appeal).

On the contrary, Study 3 does not support the predicted fit between mental construal and the type of benefit highlighted (self-benefits in this case), since a non-significant difference in behavioural intentions and willingness to pay more between the two groups has emerged (H3a and H3b). Therefore, the analysis does not provide evidence on a similar fit when individuals form a concrete mind-set and self-benefits are highlighted, allowing to suppose that, in such a case, making salient the personal benefit (lower-order goals) does not change the perception that the green products help the environment.

Table 26 summarises the findings of the three studies.

Table 26: Summary of the findings (study1, 2 and 3)

Hypothesis	Findings
H1a: We predicted that implicit and explicit attitudes toward compostable packaging are higher positive than implicit and explicit attitudes toward plastic packaging.	<b>Supported</b> Both IAT D-scores indicate a medium-high preference for compostable packaging across the two food categories (healthy vs unhealthy) ( $M_{unhealthy}=.80$ , $SD=1.01$ , $M_{healthy}=.60$ , $SD=1.13$ ). Participants also showed an explicit preference for compostable packaging in contrast to plastic packaging ( $M_{rel}=3.16$ , $SD=1.64$ ).
H1b: We predict that correlations between implicit and explicit attitude towards compostable packaging differ in the two food categories (healthy vs unhealthy). More specifically, we predict no correlation between implicit and explicit attitude towards compostable packaging in the case of unhealthy food and a significant correlation between implicit and explicit attitude towards compostable packaging in the case of healthy food.	<b>Supported</b> The correlation between the implicit and explicit measures was positive and significant for the multi-item measure of attitude based on Perugini (2005), $r=.221$ ( $p<.05$ ), in the case of healthy food category. For what concerns unhealthy food, the correlation between the implicit and explicit measures was negative and not significant for the multi-item measure of attitude based on Perugini (2005), $r=-.12$ ( $p>.05$ ).
H1c: We hypothesized that gender differences would emerge when considering implicit and explicit attitudes toward compostable and plastic packaging in the two food categories (healthy vs unhealthy). More specifically, we predicted that women would show higher positive implicit attitude than male in the case of healthy food.	<b>Supported</b> Results show that a gender difference emerges. In particular, for healthy food female tend to have more positive implicit attitudes than male: $t(43,5)=-2.1$ , $p<.05$ .
H2a: Consumers' intentions are more positive when an abstract mind-set and other benefits are combined, rather than a concrete mind-set and other-benefits.	<b>Supported</b> Results confirm that there was a statistically significant difference between abstract or concrete mental representation and behavioural intentions, $F(1,52)=6.99$ , $p<.05$ . Among those who formed an abstract representation, highlighting other benefits significantly increased behavioural intentions ( $M=5.35$ , $SD=1.33$ ) as compared to those who formed a concrete representation ( $M=3.44$ , $SD=1.83$ ).
H2b: Consumers' willingness to pay more is more positive when an abstract mind-set and other benefits are combined, rather than a concrete mind-set and other-benefits.	<b>Supported</b> Results show that there was a statistically significant difference between abstract or concrete mental representation and willingness to pay, $F(1,52) = 6.78$ , $p<.05$ . Participants who formed an abstract representation combined with an environmental appeal were significantly willing to pay more for a compostable packaging ( $M=4.67$ , $SD=1.86$ ) than those who formed a concrete mental representation combined with an environmental appeal ( $M=3.33$ , $SD=1.9$ ).
H3a: Consumers' intentions are more positive when a concrete mind-set and self-benefits are combined, rather than an abstract mind-set and self-benefits.	<b>Not supported</b> Results do not confirm a statistically significant difference between abstract or concrete mental representation and behavioural intentions, $F(1,52) = .106$ , $p>.05$ . Among participants who formed a concrete representation, highlighting self-benefits did not have an effects on behavioural intentions ( $M=4.59$ , $SD=1.54$ ) as compared to those who formed an abstract representation ( $M=4.74$ , $SD=1.79$ ).
H3b: Consumers' willingness to pay more is more positive when a concrete mind-set and self-benefits are combined, rather than an abstract mind-set and self-benefits.	<b>Not supported</b> There was not a statistically significant difference between abstract or concrete mental representation and willingness to pay, $F(1,52) = .991$ , $p>.05$ . More specifically, participants who formed a concrete representation combined with a self-benefit appeal were less willing to pay more for a compostable packaging ( $M=3.74$ , $SD=1.89$ ) than those who formed an abstract mental representation ( $M=4.26$ , $SD=1.93$ ).



## 6.2 Theoretical and practical implications

The thesis provides theoretical and practical implications to extant literature on pro-environmental behaviours. Empirical results reveal new insights to the comprehension of the attitude-behaviour gap, by demonstrating the role of unconscious evaluations and the role of mind-set as determinant to encourage sustainable behaviour.

In particular, Study 1 makes a theoretical contribution by examining whether IAT has the potential to better explain pro-environmental behaviour or its rejection. As stated in the previous section (§2.2.1.), scholars agree that a possible cause to the discrepancies between environmental attitude and consequent behaviours deals with the measurement of these constructs (Mainieri et al. 1997). Inaccuracies may stem from a variety of sources. Some evidence suggests that individuals tend to over-report their pro-environmental behaviour (Barr 2007; Fuj et al. 1985; Warriner et al. 1984), and social desirability bias has been considered to be a cause for this over-reporting and thus an important limitation of self-report measures of pro-environmental behaviour (Randall & Fernandes 1991; Carrigan & Attalla 2001; Auger & Devinney 2007). Following this, it has been suggested that attitudes often exist outside of conscious awareness and control (Greenwald & Banaji 1995), and they are able to shape people's automatic reactions to attitude objects and their interactions with them. Accordingly, social psychologists started to develop implicit measures in order to understand the correlation between the two as well as the predictive validity of implicit attitude in explaining the explicit one.

Moreover, the thesis enriches the body of literature on sustainable packaging, by exploring consumers' evaluation of it. Since very limited attempts have been made in this regard (Beattie & Sale 2011; Koenig Lewis & Palmer 2015), the thesis adds to extant research by investigating the congruence between implicit and explicit attitudes toward ecologically friendly packaging and by shedding light on the unconscious reasons that may encourage or inhibit consumers' adoption of it. In addition, Study 1 methodologically contributes to extant marketing literature, by answering the call for more research using implicit measures in marketing field (Dimofte 2010). Very few studies in the domain of marketing have measured implicit attitudes using the IAT technique, confirming that the use of implicit measures in marketing and advertising research is still in its infancy (Nevid 2010).

A further theoretical implication lies in extending the knowledge surrounding CLT and in contributing to the hope of Trope, Liberman, and Wakslak (2007) in making CLT an “unified theoretical framework that will allow us to parsimoniously understand a range of seemingly unrelated psychological phenomena” (p. 94). The application of CLT seems to be very salient in the field of sustainable consumption and growing research starts applying this theoretical framework for exploring pro-environmental behaviours (White et al. 2011; Tangari et al. 2015, Yang et al. 2015).

In particular, some scholars have interestingly investigated the existence of a fit in communication framings between CLT and benefits associations and how this can be an alternative explanation to the success or failure of sustainable products. This is consistent with the idea that sustainable consumption can be considered as a social dilemma, since it often implies a trade-off between immediate personal benefits and delayed collective benefits (van Dam & Fischer 2015). Previous research has demonstrated that consumers’ mind-sets (abstract vs. concrete) can systematically influence the importance of product benefits. Consumers in a concrete mind-set have been shown to prefer products offering more tangible, personal benefits (Goldsmith & Dhar 2008); whereas consumers in an abstract mind-set prefer products whose benefits meet higher order goals (Fishbach & Dhar 2005). However, empirical research concerning which type of marketing appeals (self-benefit or other-benefit) would be better able to encouraging green consumption behaviours is inconclusive (Green & Peloza 2014).

Building on this, the thesis offers a deeper understanding of how a specific match in message framing and construal level provides the identified benefits. Findings of Study 2 and 3 highlight the conditions under which consumers will be more (or less) likely to report positive intentions toward compostable packaging. Furthermore, this work demonstrates that the congruence (vs. incongruence) between individuals’ mental representation and the benefits is determinant in evaluating a green product, such a sustainable packaging.

Previous research on pro-social behaviour has shown that a higher psychological distance increases the relationship between values and behaviours (Agerstrom & Bjorklund 2009; Rogers & Bazerman 2008; Giacomantonio et al. 2010; Kivetz and Tyler 2007; Trope and Liberman 2003), which means that an abstract mind-set leads individuals to focus on

primary rather than on secondary features of the object, and thereby facilitates higher-level goals.

In line with this, the thesis confirms that a message framed as environmental matched with a more abstract mind-set produces more positive consumer intentions toward a sustainable packaging. Thus, results demonstrate that consumers who perceived greater psychological distance place higher importance on the other-benefits appeal (environmental appeal), thus showing more favourable behavioural intentions and willingness to pay than those who perceive a close temporal distance.

However, the analysis does not provide evidence on a similar fit when individuals form a concrete mind-set and self-benefits are highlighted, allowing to suppose that, in such a case, making salient the personal benefit (lower-order goals) does not change the perception that the green products help the environment. These results seem to be in line with previous research that combines CLT and self-benefits. For instance, Young et al. (2015) reported in one of their studies that consumers did not differ in their purchase intentions for either the abstract appeal or the concrete appeal when the attributes of green products were associated with the benefit of self. In the same vein, Goldsmith et al. (2016, p.5) state that “although we observed that highlighting an economic benefit significantly decreased evaluation difficulty among participants who formed a concrete representation, the implications for purchase interest were mixed”.

The thesis also provides practical implications. First, findings suggest several courses of action for market researchers. It has been shown that IAT could represent a useful measurement tool to integrate in the process of evaluating attitudes towards sustainable behaviours. Quantitative questionnaire-based methods may allow respondents to modify or falsify their self-reported answer, in order to elicit desired social impressions. Thus, with the use of this method, participants are less able to misreport their implicit attitudes, allowing researchers to identify those who are experiencing some internal psychological conflict towards this behaviour. The joint use of a measure of implicit and of explicit attitude may help to uncover unconscious barriers to change.

Second, studies highlight the importance of advertisement appeal in green purchase intention for current businesses. In this sense, marketers and managers should be aware that consumers are more concerned about other-benefits than self-benefits for green

products. However, firms offering green products should also consider the mind-set of the consumer when determining their product messaging. For instance, in their advertisements marketers should highlight the role of green products in protecting the environment, when consumers are considering purchases for more distant future use, since their mind-set is likely to be more abstract (Trope & Liberman 2003). Moreover, companies should evaluate their media placement strategies carefully in order to increase the ad exposure to more “high-concern” consumers. These consumers tend to be more responsive to the advertised environmental issues, so that the framing strategies can be more effective. For instance, companies can work with media planning agencies to identify the key environmental issues in the markets as well as the communication channels to reach them effectively.

### 6.3 Limitations and future research

The current thesis has limitations that may trigger future research.

First, Study 1 does not present a deeper analysis regarding possible discrepancies between explicit and implicit attitudes. In addition, the study does not present implications of these two different types of attitude for actual behavioural choice (or behavioural intention) as well as it does not assess possible antecedents or moderators.

According to this, further research can be implemented in order to display possible attitudinal dissociation with respect to compostable packaging. Moreover, antecedents and moderators which might explain differences between implicit and explicit attitude measures, such as social influence and other psychological influences of sustainable consumption behaviour, can be assessed, thus adding to theoretical knowledge through increased understanding of sustainable consumption behaviour. Lastly, a regression model, in order to investigate if and how explicit and implicit attitude measures predict behaviours, can be conducted.

As for Studies 2 and 3, a main limitation lies in the fact that an external validity of the results cannot be assessed. Therefore, future research could replicate the findings in other domains. Also, in order to advance sustainable consumption research, it could be useful to apply this type of study to other psychological distances, whether the environmental

outcome is occurring in a local or distant place, or affecting people like or unlike the respondents in the study.

In addition, as reported in the results section, Study 3 does not support the supposed hypotheses. A possible reason behind these non-significant results can be due to the way of framing self-benefit claims in the experiment. Grounding on the literature on green advertising, self-benefit appeals are widely used highlighting their perceived cost-saving or their financial and economic attributes. Differently, in Study 3 we added healthy benefits that consumers could perceive as important for the self. Actually, the choice of highlighting healthy benefits was also due to the particular good we aimed at investigating, such as the packaging. Despite a wide body of literature suggests that personal-health concerns may drive consumers' attitudes toward green products, this is particularly true for those such as organic food or local food (Kareklas et al. 2014), while extant literature on packaging still lacks evidence in this regard. In line with this, future research may wish to examine different combinations (healthy and cost-saving) of self-benefit framing, to see if individuals difference in the weighted importance assigned.

To conclude, another path for future research is to apply a factorial design experiment, 2 (self-other benefits) x 2 (abstract-concrete mind-set), in order to observe main effects as well as interaction effects of the IVs on consumers' behavioural intentions.

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## Appendix

## Introduction

Thanks for participating to this academic research. The information you give in this study is for research purposes only and will be kept strictly confidential. Results will be used for academic purposes only and be reported in aggregated form.

## Manipulation abstract mind-set

Before starting we would like to ask you to complete this task.

Take about 5 minutes to think about this.

Write about your life three years from tomorrow giving some details e.g., where do you imagine yourself or what kind of activities you expect to do.

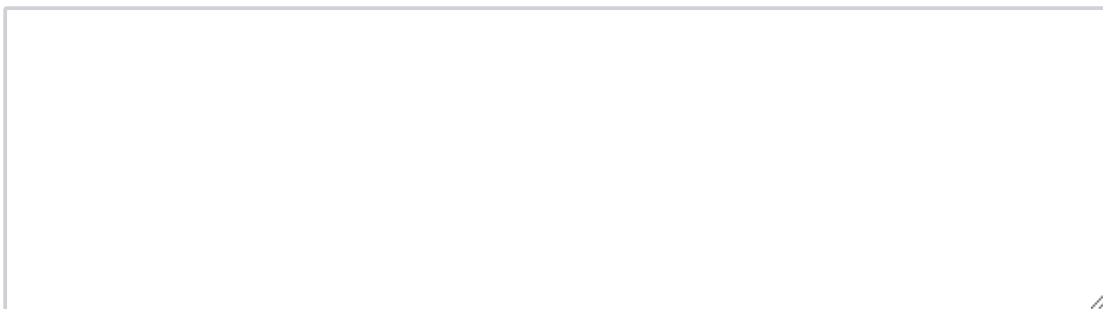


## Manipulation concrete mind-set

Before starting we would like to ask you to complete this task.

Take about 5 minutes to think about this.

Write about your life tomorrow giving some details (e.g., where do you see yourself or what kind of activities you do).



## Manipulation check

Please indicate your agreement with the following statements

	Strongly disagree	2	3	4	5	6	Strongly agree
The task completed focused on thinking about my present life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The task completed focused on thinking about my distant future life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Scenario

We will present you with a scenario which a consumer might face in everyday life. Please evaluate the scenario carefully and then answer the questions that follow. There are not right or wrong answers: we are only interested in your opinions. Thank you for your participation.

## Manipulation other benefits

Please imagine that you are at the store and you are shopping for packaged food. You see that the store has introduced a new line of packaged food in eco-friendly packaging. Read the following description carefully.

### A greener packaging! A cleaner planet!



- Compostable packaging puts little harm to the environment since it is **100% biodegradable**.
- Every year **waste generation can be cut by up to 50%**.
- It is made from **forest cardboard** and **organic plant-based materials**, differently to traditional packaging, that is made from non-sustainable fossil oils and finite resources.
- **15 million tonnes** of plastic packaging waste generated in the last year, of which nearly 50% of it is **still landfilled**, with terrible consequences for the environment.
- Choosing compostable packaging, **CO<sub>2</sub> emissions, air pollution and energy resources** can be **reduced**.

**Buying it the champion is the environment!**

## Manipulation Self benefits

Please imagine that you are at the store and you are shopping for packaged food. You see that the store has introduced a new line of packaged food in eco-friendly packaging. Read the following description carefully.

## A greener packaging! A safer choice for you!



- Compostable packaging **benefits your health**, since the **materials** used are **natural-based**.
- It releases around **90% less of toxin and heavy metals** in your body and food if compared to traditional plastic packaging.
- **Food** inside remains **safe** and all its properties (**minerals, vitamins, proteins** and alike) are **preserved at 100%**.
- It is **lightweight** and **robust**, thus you can bring it with you at work.
- You can easily **dispose** it at home in just **few weeks** and use it to fertilize your garden or plants, **reducing waste generation** and **saving money**.

### Buying it the champion is your well-being!

#### Manipulation check 2

Please indicate your opinion on the following statements

	Not at all	2	3	4	5	6	Very much
To what degree is this an environmental appeal (i.e., focused on helping environment)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To what degree is this appeal associated with looking out for the interests of environment?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To what degree is this an egoistic appeal (i.e., focused on helping oneself)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To what degree is this appeal associated with looking out for one's own interests?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### Choice

You go to the store and you want to buy cookies. You can choose one among the two packagings showed below. Please note that the price, the brand and the quantity of cookies inside are the same. Click on your choice.



### Rating and Attitude

How **environmentally responsible (i.e., sustainable)** do you rate the following food package?

	Very unsustainable	2	3	4	5	6	Very sustainable
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

For me, buying food products in **compostable packaging (e.g., sustainable and eco-friendly)** is:

Unhealthy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Healthy
Bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Good
Unpleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Pleasant
Harmful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Harmless
Unsatisfying	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Satisfying
Risky	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Safe

For me, buying food products in **traditional plastic packaging** is:

Unsatisfying	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Satisfying
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Harmful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Harmless
Risky	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Safe
Unpleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Pleasant
Unhealthy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Healthy
Bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Good

**Environmental concern-social norms- personal norms- Self Identity-past behaviour**

Please indicate your agreement with the following statements

	Strongly disagree	2	3	4	5	6	Strongly agree
I am concerned about the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am aware of current environmental problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider myself to be well informed about environmental problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

People around the world are generally concerned about environmental problems because of the consequences that result from harming nature. However, people differ in the consequences that concern them the most.

Please rate the following items from 1 (not important) to 7 (supreme importance) in response to the question: I am concerned about environmental problems because of the consequences for \_\_\_\_.

	Not important	2	3	4	5	6	Supreme importance
trees	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
marine life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
animals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
plants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
my health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
whales	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
birds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
my future	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
my prosperity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
future generations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
my lifestyle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
children	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not important	2	3	4	5	6	Supreme importance
humanity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
people in the community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate your agreement with the following statements

	Strongly disagree	2	3	4	5	6	Strongly agree
People whose opinions I value would prefer that I purchase food products in compostable packaging.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most people who are important to me would want me to purchase food products in compostable packaging when grocery shopping.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most people important to me think I should purchase food products in compostable packaging.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate your agreement with the following statements

	Strongly disagree	2	3	4	5	6	Strongly agree
Because of my own values/principles I feel an obligation to use compostable packaging instead of the plastic one	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regardless of what other people do, because of my own values/principles I feel an obligation to use compostable packaging instead of the plastic one	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate your agreement with the following statements

	Strongly disagree	2	3	4	5	6	Strongly agree
Acting in an environmentally friendly way is an important part of who I am	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am the type of person who acts in an environmental friendly way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think of myself as an environmentally-friendly consumer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Reflecting on your behaviour during the past year, how true are the following?

Please indicate how frequently you are doing the following

	Never	2	3	4	5	6	Very often	N (Not applicable/don't know)
I reduce household waste whenever possible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I buy products in environmentally-friendly packaging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I buy products with environmentally responsible packaging, such as cardboard or glass instead of plastic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I buy products with less packaging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use products made from recycled material whenever possible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I buy organic food whenever possible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I buy environmentally friendly products whenever possible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I compost my kitchen waste	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate your agreement with the following statements

	Strongly disagree	2	3	4	5	6	Strongly agree
My food packaging choices have a direct impact on the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I buy food products with compostable/ environmentally responsible packaging, I feel that I have done something positive for the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that my packaging choices for the food that I buy have a direct influence on the environment as a whole	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Behavioral Intention

Please express your opinion on the following statements

	Very unlikely	2	3	4	5	6	Very likely
My intention to use compostable packaging instead of the traditional one in the next few weeks is:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Very unlikely	2	3	4	5	6	Very likely
I prefer to increase my purchase of food products using compostable packaging in the next three months rather than to make no changes to my food purchasing habits in the next three months	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the next weeks I will use compostable packaging instead of traditional plastic packaging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will make no changes to my food purchasing habits in the next three months	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will increase my purchase of food products using compostable packaging in the next three months	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I intend to use compostable packaging instead of traditional one in the next few weeks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am willing to pay a higher price for eco-packaging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Demographics

Age

Are you...?

Male

Female

Are you?

British

EU citizen

Overseas citizen

Are you

Full-time student

Part-time student

Full-time employed

Part-time employed

Home-maker

Retired

Other

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