Consumers' Internal Motivations for Sustainable Consumption:

An investigation into the effects of consumer image congruence and temporal orientation on the consumption of sustainable goods

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A thesis submitted to the Victoria University of Wellington in fulfilment of the requirements for the degree of Doctor of Philosophy

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#### Abstract

A need for a more environmentally concerned society features prominently in academic discussion, popular media, and popular consciousness. However, individuals continue to consume as they always have, with little predicted immediate change. A wellestablished conversation in the literature highlights the difference between consumer intentions and consumer behaviour with respect to purchasing sustainable goods.

This thesis examines the academic understanding of what internal motivators may factor in an individual's decision to purchase a 'sustainable' good. Image congruence, selfconstrual, temporal orientation, and temporal discounting are examined in the context of purchasing sustainable goods. The conceptual basis for this research takes the perspective that whilst individuals and society may perceive the purchase of sustainable goods and proenvironmental behaviour as a positive behaviour, individuals may choose to postpone this behaviour, or defer to their own self-interest compared to the interests of the society. Furthermore, there is a cost to sustainable consumption, either monetary or in product effectiveness. Thus, consciously, or unconsciously consumers are responding to a product trade-off.

This research contributes to the academy's understanding of how image congruence, self-construal, temporal orientation, and temporal discounting interact with each other and the interaction between these variables and sustainable goods purchases. To the best of the author's knowledge investigating the three theoretical threads in combination, has not before been accomplished. Image congruence and self-construal offer insights into an individual's social value orientation. Temporal orientation and temporal discounting can explain how individuals consider actions in the context of the present and future. The inclusion of temporal orientation examines an individual's view of time and decision-making as a

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consequence of this context. Therefore, image congruence, self-construal, temporal orientation are three powerful internal motivators of behaviour, and their interaction is expected to help explain consumer decision making with respect to the purchase of sustainable goods. Combined, these three factors help to address the consumer trade-off described before. To better understand the nature of sustainable goods purchase intention the effect of age, gender, and parenthood were explored and tested.

This research used a quantitative methodology; a survey distributed to an online survey panel was used to validate and test the conceptual model. The quantitative methodology chosen allows for the collection of a broad range of views from a broad range of participants. Image congruence, self-construal, and temporal orientation were tested using existing scales. Multiple contributions have been made using this approach, including the adaptation of temporal-discounting activity-based scenario to online panel data collection.

An activity to understand how individuals perceive time was designed and an initial test performed. This activity contributes to an understanding of three commonly used term; present, near-future, and far-future. Scale refinement was undertaken to measure the study constructs better using online data collection while temporal discounting was measured using an online activity, rather than an existing scale. A challenge faced was in the construction of an activity, readily understood by survey panel members. Existing scales measuring image congruence, self-construal, and temporal orientation also measured information not necessary to this research and so were further refined. Development of a calculation style question was also tested. This question asked participants to make a choice relative to a baseline choice, for example, 'receive \$0, plus \$30', rather than, 'receive \$30'.

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An understanding of how different age groups and family structures consider the future is offered, as well as how these individuals see themselves in relation to society. This understanding offers insight into the divide between attitude and behaviour.

Image congruence and interdependent self-construal were found to be significant predictors of purchase intention. Differing effects were found in the presented model when participants had high or low interdependent self-construal, high or low independent selfconstrual, high or low income, were younger or older, and whether they were parents. When asked to categorise time, the majority of participants defined the boundary between present, and near future as occurring between 14 and 30 days, and the boundary between near future and far future was considered to occur between six months and twelve months.

## Acknowledgements

They say it takes a village, in the case of this thesis, that was true. The help, guidance, and support I have received on this journey have been humbling, and I am eternally grateful for all those I have met along the way.

To my supervisors Jim and Michelle, this thesis could not have been completed without your generosity and patience. Your words of wisdom and guidance have helped this thesis grow and develop, and you have helped me grow and develop my skills as a researcher and as a teacher.

To my colleagues at the School of Marketing and International Business, your kind words and support have helped keep me in high spirits and kept me pushing through even the most challenging times. I want to thank you all for your open doors, and willingness to talk through problems, ideas, or to offer up a distraction. I also want to say thank you for the opportunity to grow my skills as a tutor and lecturer. For those, I shared an office with, thank you for lively debates, lunches, and suggestions, not only on how to improve my research but on how to keep pushing through the setbacks.

And finally, to my partner Emily, and my family. Thank you for helping me get through the thesis; giving me the love and support needed to make the long nights and weekends worth it. Thank you for continuing to accept "getting there" as an answer to "how's the PhD?".

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# **Chapter 1 – Introduction**

### 1.1 Background

The protection and development of environmental resources and avoiding the depletion of natural resources is of growing importance to consumers, businesses, governments, and society (Olsen et al., 2014). With the increased significance of sustainable products in Western societies (Abeliotis et al., 2010), media reports of environmental issues have reinforced to consumers that consumption of goods has an environmental effect and a global impact (Prothero et al., 2010). The realisation of the detrimental effects of unsustainable consumption has led to growing concerns by consumers and businesses about the impact of their consumption (Costa Pinto et al., 2014). There is a rising number of firms introducing initiatives to decrease their environmental harm, for example, Bank of America reducing paper consumption, recycling paper, and offering employees \$3000 towards the purchase of a hybrid car (Ramirez, 2013). Tesco selling wood and paper products made with wood from certified sources, while Walmart has published an annual report regarding its environmental commitments since 2005 (Lavorata, 2014).

Sustainable goods consumption may be defined as that which optimises the environmental, social, and economic consequences of the acquisition and disposition of goods to meet the needs of current and future generations (Luchs et al., 2011; Phipps et al., 2013). The consumption of sustainable goods is the use of products with lower environmental impacts, including biodegradable, recycled, low energy requirements, or reduced packaging (Costa Pinto et al., 2014; Follows & Jobber, 2000; Gordon et al., 2011; Horne, 2009; Krause, 2009; Muster, 2012; Pedersen, 2000). This research will use the term sustainable goods and sustainable products interchangeably. The extant sustainable research literature consistently reports differences between consumer attitude and purchase behaviour (e.g., Devinney et al., 2010; Prothero et al., 2011). On the one hand, consumers see consuming sustainable goods as a desirable activity (Nielsen, 2011) with 40% of consumers willing to purchase sustainable goods (United Nations Environment Program, 2005). On the other hand, only 4% of consumers follow through with their intention (United Nations Environment Program, 2005). This difference between consumer purchase intention for sustainable goods and actual consumer behaviour is perplexing.

Trade-offs are apparent when purchasing sustainable goods and is illustrated both in the extant literature and practice. Sustainable products may be more expensive, have less functionality, or have limited availability compared to non-sustainable alternatives (Kaufman, 2014; Tanner & Wölfing Kast, 2003). However, consumers are willing to pay a higher price for sustainable products if these products are readily available (Gam et al., 2010; Harris & Freeman, 2008; Thøgersen, 2005). Kaufman (2014) suggests that sustainable alternatives often carry a price premium, as well as a stigma of lower quality, suggesting a trade-off between price and quality, and sustainability; or convenience and sustainability (Tanner & Wölfing Kast, 2003).

Practical examples of the trade-off in sustainable goods are evident in cleaning products and appliance purchases. An example of the trade-off consumers face is evident in laundry detergents purchase decisions. Consumer New Zealand, a consumer advocacy and advisory organisation, found a sustainable brand of laundry detergent to be less effective than a non-sustainable alternative in both top loader and front loader form. In both instances, the sustainable brand of laundry detergent cost \$1.49 more (Consumer, n.d.-b, n.d.-c). Price premiums are also evident in more energy-efficient household appliances. A highly powerefficient dishwasher commanded a price premium of \$570 over a less power efficient

dishwasher (Stock, 2015). Stock (2015) found in a review of dishwashers that the energy savings of a more efficient dishwasher equated to \$30 per year, taking nineteen years to return the price difference. It is worth considering the impact of product reviews as these inform consumer purchasing decisions – further highlighting the perceived trade-off.

An individual's sense of self influences their purchasing decisions. Onkvisit and Shaw (1987) introduced the image congruence hypothesis; that consumers select products according to how they see themselves. Self-concept is an individual's perceptions about their characteristics and abilities, as well as their thoughts and feelings towards themselves and others (Blackwell et al., 2006; Malhotra, 1988; Rogers, 1951). Numerous studies find that consumers purchase according to their self-concept (e.g., Abel et al., 2013; Dolich, 1969; Graeff, 1996; Landon, 1974; Malär et al., 2011). One component of individual self-concept is self-construal, which refers to how individuals view themselves compared to those around them.

The apparent trade-off considered when purchasing sustainable goods may also involve social dilemmas. For example, a trade-off between short-term and long-term consequences, or individual and societal consequences (Joireman, 2005; Joireman & Strathman, 2005; Joireman et al., 2004). Applying a social dilemma perspective involves considering an individual's time preference (temporal discounting), past, present, or future behaviours (temporal orientation), and their social value orientation (self-construal) (Joireman, 2005; Joireman & Strathman, 2005; Joireman et al., 2004). Time preference is often referred to and considered to be the same as temporal discounting the term used within this research. Social value orientation is considered a stable preference towards the pro-self or pro-social behaviours (Utz, 2004). Self-construal may describe pro-self or pro-social behaviours, with suggestions that self-construal is contextual and able to be primed (Liu & Li, 2009; Utz, 2004).

The benefits of environmentally sustainable consumption occur far into the future with unclear benefit to society. Therefore, when choosing to consume sustainable goods, particularly considering the inherent trade-off in such products, consumers are prioritising an unclear future reward. Temporal orientation, the way consumers see the future consequences of their actions, has been used to explore and explain the difference between intention and behaviour (e.g., Eyal et al., 2009; Gupta & Sen, 2013; Liberman & Trope, 1998). Cognitive involvement of temporal orientation focuses on past, present, or future behaviours (Holman & Silver, 1998). This research examines temporal orientation in the context of sustainability to determine the effect that present and future orientations (the dominant Anglo-western orientations) may have on consumer's intentions to purchase sustainable goods.

An individual's temporal orientation is exhibited in behaviour the discounting of future gains relative to the present day. Temporal discounting, a manifestation of an individual's temporal orientation, is the tendency of individuals to prefer a smaller reward today, over a larger reward in the future (Joshi & Fast, 2013). Consumer temporal discounting has applications in areas where decisions carry long term consequences, such as monetary rewards (e.g., Frederick et al., 2002), addiction (e.g., Bickel et al., 1999; Coffey et al., 2003; Madden et al., 1997; Petry, 2001), religion (e.g., Paglieri et al., 2013), alcohol consumption (e.g., Vuchinich & Simpson, 1998) and financial savings (e.g., Ersner-Hershfield et al., 2009; Vuchinich & Simpson, 1998). Temporal discounting is especially useful in understanding issues where there is a future outcome impacted by present actions. The future outcome must be traded-off with the benefits of a present action that may be negative to that future outcome.

Temporal discounting also impacts a consumer's self-concept, with separation of future and present selves said to create reduced concern for their future self (Bartels & Rips, 2010; Ersner-Hershfield et al., 2009; Hershfield, 2011), with this disconnect a possible

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component of the difference between intention-behaviour. Therefore, this research seeks to investigate whether consumer temporal discounting is likely to impact intentions and behaviours towards sustainable consumption. Temporal orientation and temporal discounting both refer to respondent's perceptions of time, with terms such as present, immediate, future, near future, and far future used but not defined (e.g., Eyal et al., 2009; Gupta & Sen, 2013).

Within self-construal literature, two key construals exist, independent and interdependent. Individuals with independent self-construal emphasise the individuality and autonomy of the individual, while individuals with interdependent self-construal view themselves in a broader social context (Markus & Kitayama, 1991). Thus, independent individuals are more likely to act for their benefit, while interdependent individuals act with the interests of the group around them (Downie et al., 2006). In this research, self-construal addresses whether the benefits of sustainable goods consumption fall to the individual or society, and whether self-construal influences purchasing decisions. Self-construal of individuals impacts behaviour (e.g., Kühnen & Oyserman, 2002; Lee et al., 2000). With those having an interdependent self-construal being more inclined to purchase sustainable goods because of their desire to benefit those around them, while independent individuals may choose to purchase sustainable goods if they gain a benefit from doing so.

To better understand the motivators behind consumer consumption of sustainable goods, this research examines critical areas of the research literature, image congruence, selfconstrual, temporal orientation, and temporal discounting. This study develops a conceptual model and takes a positivist approach – using an experiment which investigates the interaction between each component of the model. This research utilised a survey to test the relationships between the antecedents within the model (temporal orientation, and image congruence) and the behaviours (temporal discounting and purchase intention). The survey sought a representative sample of consumers likely to make frequent purchasing decisions. This research defines a representative sample of purchasing consumers as between the ages of 25 and 65, with a range of incomes and an equal gender split desirable. An assortment of parents reflected the different purchasing decisions made for a family.

# 1.2 Research problem, and questions

Damage created by human consumption of goods and services, and the constant need to consume more has become increasingly apparent, with increased awareness of environmental damage (Costa Pinto et al., 2014). This study seeks to contribute to an understanding of how to encourage the consumption of more environmentally friendly goods and services. The purpose of this study is to investigate a set of variables expected to influence consumer decision making around sustainable goods. Purchasing sustainable goods involves the contributions of many facets of the self, with social co-operation and long-term thinking necessary to maximise future environmental outcomes. An individual's image congruence with sustainable goods (purchasing to meet their image), their degree of interdependent or independent self-construal (social co-operation), temporal orientation and temporal discounting (relationship with future outcomes) have been identified as critical internal drivers of sustainable purchasing. To further investigate the effect of these variables on sustainable goods purchase intention the effect of temporal framing (altering how participants view of the future) and respondent demographic will be examined. Furthermore, understanding how participants view different lengths of time will create context for extant literature, and the discussion of the results of this investigation. This research aims to answer the following questions:

- 1. Does image congruence, self-construal, temporal orientation, and temporal discounting impact consumer purchase intention of sustainable goods?
- Does the presence of temporal framing impact consumer purchase intention of sustainable goods?

- 3. What demographic characteristics impact on purchase intention towards sustainable goods?
- 4. Do different consumers see lengths of time differently?

#### **1.3 Research contributions**

This research seeks to contribute to consumer behaviour and sustainability literature, by proposing a novel and comprehensive model of sustainable goods purchase intention. In examining a complex issue requiring social co-operation and future-thinking, this research brings together image congruence, self-construal, temporal orientation, temporal discounting, and temporal framing to understand sustainable goods purchase intention. This research will make theoretical, methodological, and managerial contributions.

This research contributes to consumer behaviour literature, specifically consumer purchasing of sustainable goods. Combining image congruence, self-construal, temporal orientation, temporal discounting, and temporal framing to understand purchase intention creates a novel and essential understanding of the trade-off consumers face when making purchasing decisions. Current understandings of social dilemmas and co-operation highlight the value of temporal orientation and self-construal on problems with a distant and socially oriented benefit such as sustainable consumption. Extant literature discusses the future without a clear understanding of what constitutes present, future, and far future to a consumer and thus, this research seeks to contribute an understanding of these periods. Demographic factors – including age, gender, and parenthood – are tested to understand their relationship with purchase intention.

This research contributes methodologically by designing a sorting exercise to measure how consumers view different lengths of time – essential to understanding consumers' behaviour in the extant literature of temporal orientation and temporal discounting. A temporal discounting activity is also adapted from extant literature and tested in the research panel context, with a representative sample of the New Zealand population. This research also contributes to methodological aspects of, self-construal, temporal orientation, temporal discounting, and temporal framing research by further refining commonly used scales and testing priming techniques and adapting them for use with online surveys and panel data.

Managers will be presented with a range of findings on the effects of purchase intention, self-construal, temporal orientation, temporal discounting, temporal framing, and demographics on purchase intention towards sustainable goods. Demographic understandings are of value to managers as these offer an understanding of how age, gender, parenthood, and income impact on sustainable goods purchase intention. By investigating demographics managers will be able to understand the effectiveness of each construct, and which group it is most effective with.

## 1.4 Overview of chapters

This thesis contains a total of seven chapters. Chapter 1 offers an introduction to the research topic and the research objectives. Following an introduction to the research, Chapter 2 presents a literature review. The objective of this literature review is to provide a broad and deep understanding of the literature surrounding sustainability, image congruence, self-construal, temporal orientation, temporal discounting, and temporal framing. Other literature is covered where necessary to provide more in-depth information and context. Chapter 3 an argument for the proposed conceptual model and details the model to explain and justify its composition. Chapter 4 discusses the methodology used to test the proposed model. Chapter 5 presents the results of the analysis and the statistical findings, which forms the basis of Chapter 6, where the findings are discussed and interpreted. Chapter 7 concludes the thesis with closing remarks and a summary of the contributions and research findings.

#### **Chapter 2 – Literature Review**

## 2.1 Introduction

Chapter 1 introduced the research area and briefly introduced the concepts investigated in this thesis. Chapter 2 introduces the extant literature relevant to the research questions and provides an overview of the current understanding of sustainability, image congruence, self-construal, temporal orientation, temporal discounting, temporal framing, purchase intention, and demographic effects.

Chapter 2 is structured to provide a logical flow to the problem being investigated, that of how to enhance consumer purchase intention towards sustainable goods. Literature around sustainability is introduced to provide context to later discussion, highlight the potential trade-off consumers' may be considering when purchasing sustainable goods, discuss the difference between attitude and behaviour, and provide a definition for sustainable goods. Sustainable goods consumption may be classed as a social dilemma, as such a discussion on social value orientation is followed by a discussion on time preferences. Purchase intention will be discussed as will demographic factors that have been demonstrated to influence sustainable goods purchase intention in extant literature. A table of literature that has been particularly influential in the thinking and conceptualisation of this research is included as Table 2.1.1.

#### Table 2.1.1

Critical	literature	referenced	in th	his stud	h
		•			~

Citation	IC	SC	TO	TD	TF	Dem	Sust
Arnocky, S., Stroink, M., & DeCicco, T. (2007). Self-		Х					Х
construal predicts environmental concern, cooperation,							
and conservation.							
Costa Pinto, D., Nique, W. M., Añaña, E. d. S., & Herter,						х	
M. M. (2011). Green consumer values: how do							
personal values influence environmentally responsible							
water consumption?							

Escalas, J. E., & Bettman, J. R. (2003). You Are What They Eat: The Influence of Reference Groups on Consumers' Connections to Brands.	х					
Eyal, T., Sagristano, M. D., Trope, Y., Liberman, N., & Chaiken, S. (2009). When values matter: Expressing values in behavioral intentions for the near vs. distant future.				х		
Graham, R. J. (1981). The Role of Perception of Time in Consumer Research.			Х			
<ul><li>Griskevicius, V., Tybur, J. M., Sundie, J. M., Cialdini, R.</li><li>B., Miller, G. F., &amp; Kenrick, D. T. (2007). Blatant benevolence and conspicuous consumption: When romantic motives elicit strategic costly signals.</li></ul>		X				
Griskevicius, V., Tybur, J. M., & Van den Bergh, B. (2010). Going green to be seen: Status, reputation, and conspicuous conservation.	Х					Х
Gupta, R., & Sen, S. (2013). The effect of evolving resource synergy beliefs on the intentions–behavior discrepancy in ethical consumption.				X	х	X
Joireman, J., Van Lange, P. A. M., & Van Vugt, M. (2004). Who Cares about the Environmental Impact of Cars?		X	Х			X
Kaufman, N. (2014). Overcoming the barriers to the market performance of green consumer goods.						X
Hardisty, D., J., & Weber, E., U. (2009). Discounting future green: Money versus the environment.				х		X
Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation.		Х				
McCright, A. M. (2010). The effects of gender on climate change knowledge and concern in the American public.						
Oliver, J. D., & Lee, SH. (2010). Hybrid car purchase intentions: a cross-cultural analysis.	х					X
Utz, S. (2004). Self-Construal and Cooperation: Is the Interdependent Self More Cooperative Than the Independent Self?		x				

*Note:* Table shows critical literature used in the conceptualisation and operationalisation of this research. IC – Image Congruence; SC – Self-Construal; TO – Temporal Orientation; TD – Temporal Discounting; TF – Temporal Framing; Dem – Demographics; Sust – Environmental Sustainability.

Chapter 2 further provides a foundation to Chapter 3 – Conceptual Development.

Chapter 3 will conceptualise the identified literature and propose a conceptual model for

testing and discussion.

#### 2.2 Sustainability

Sustainability has been actively researched in many disciplines, marketing (e.g., Banerjee et al., 2003; Kapferer & Michaut-Denizeau, 2014; Kronrod et al., 2012; Menon & Menon, 1997), management (e.g., Belkhir, 2015; Carcano, 2013; Lane, 2014; Shrivastava, 1994, 1995a, 1995b; Wilson, 2013), economics (e.g., Baumgärtner & Quaas, 2010; Common & Perrings, 1992; Daly, 1992; Stern, 1997; van den Bergh, 2010), and psychology (e.g., Cooperrider & Fry, 2012; De Young, 1993, 1996, 2000; Myers, 2003; Pelletier et al., 2008). Kotler and Levy (1969) introduced the idea of societal marketing management, leading to research in societal marketing, social responsibility and marketing, and ecological concerns (e.g., El-Ansary, 1974; Kassarjian, 1971; Kinnear & Taylor, 1973; Kinnear et al., 1974; Kotler & Zaltman, 1971; Lavidge, 1970). Leonidou and Leonidou (2011) found that the marketing and management academy paid little attention to sustainable marketing until an increase in societal and governmental focus on the environment in the 1990s. Kotler (2011), posited that consumers would increasingly purchase from companies that demonstrate care for the environment and workers. This shift in consumer attitudes in favour of companies demonstrating environmental and human care arises from changes to consumer concerns; with consumers questioning the amount of food they eat, the fuel-efficiency of cars, or the necessity of owning a car, how they can save more energy, and how well they sort their waste (Kotler, 2011). However, the low consumption rate of sustainable goods demonstrates a disconnect between consumer concern, and consumer behaviour (United Nations Environment Program, 2005).

# 2.2.1 Sustainable Goods Trade-Off

Although Tanner (2003) found that sustainable products may be more expensive, with reduced availability than less-sustainable alternatives, consumers have shown a willingness to

pay higher prices for sustainable products (Gam et al., 2010; Harris & Freeman, 2008). However, the ready availability of goods may be more important to consumers than price. Thøgersen (2005) found that increasing the availability of sustainable goods may be necessary to increase purchase behaviour. Both public policy and company responses to increased sustainable goods consumption exist, with the latter leveraging the availability of sustainable goods, to increase company attractiveness to consumers (Costa Pinto et al., 2014; Peattie & Charter, 1992). Concern around availability and price as raised by Tanner (2003) and Thøgersen (2005) provides support that consumers face a trade-off when purchasing sustainable goods. The trade-off argument is further supported by Kaufman (2014), who suggests that sustainable goods carry a price premium, as well as the stigma of lower quality. Thus, to consume sustainably, consumers must search harder for products, spend more money, and potentially end up with a less optimal solution to their problem. Therefore, consumers must be willing to bear these costs to contribute to a future outcome with benefits not accruing directly to themselves.

The apparent trade-off is also evident when consumers with an ingrained predisposition concerning the price and quality of sustainable goods (e.g., Kaufman, 2014; Thøgersen, 2005), are exposed to negative reviews or information further reinforcing this trade-off. Thus, furthering the assertion of this research that consumers purchasing sustainable goods are inherently choosing within a trade-off. Product reviews reinforce the trade-off by suggesting that sustainable goods may be more expensive with a future benefit (Stock, 2015). Experiencing a future benefit with a present cost may be off-putting to many consumers, particularly those without a future-focussed temporal orientation. Stock (2015) in a review of dishwashers, demonstrated that the reduction in running costs of a power-efficient dishwasher might take 19 years to return the price premium. Therefore, a consumer unlikely to keep a single dishwasher for 19 years may never see the price premium returned. However,

at a societal level, the cumulative impact of many power-efficient dishwashers is a reduction in total power drain and thus a reduction in overall power generation emissions. Alternatively, Consumer New Zealand found in reviews (n.d.-b, n.d.-c) that an eco-friendly washing liquid was more expensive with lower cleaning performance than a less eco-friendly alternative. An updated version of the same test demonstrated one eco-friendly cleaner with washing performance worse than water (Consumer, n.d.-a; Fyfe, 2019). Again, a similar trade-off is evident; consumers must choose to spend more money and risk potentially dirtier clothes to contribute to cleaner water. Therefore, at an individual level, a cost is evident to contribute to a greater societal outcome.

## 2.2.2 Attitude-Behaviour Difference

While consumption of sustainable products is a desirable activity (Nielsen, 2011), consumer marketing studies highlight a difference between perceived desirability and behaviour in sustainable goods consumption (Devinney et al., 2010; Prothero et al., 2011). Despite 40% of consumers being willing to purchase "green products" only 4% convert this intention to a purchase (Prothero et al., 2011; United Nations Environment Program, 2005). High purchase intention suggests generally positive public sentiment; however, the consumption behaviour of individuals does not match this. Further understanding of the difference between purchase intention and purchase behaviour is required.

There have been attempts within the marketing literature to explore the difference between the perceived desirability of consuming sustainable products and the lack of purchase behaviour by consumers. Literature attempting to explain this difference has identified key areas of research including, values (e.g., Maio & Olson, 1998; Schwartz, 1992; Verplanken & Holland, 2002), and temporal orientation (e.g., Eyal et al., 2009; Gupta & Sen, 2013; Liberman & Trope, 1998). This same difference is evident in the literature on customer loyalty, (e.g., García & Caro, 2009; Gupta & Sen, 2013) and consumer behaviour (e.g., Gupta & Sen, 2013). Gupta and Sen (2013) examine the effect of consumer beliefs about the synergy between a firm's resources dedicated to ethical attributes and functions of a product, and the impact this has on sustainable consumption. Gupta and Sen (2013) propose that consumers will gradually shift their viewpoint from ethical attributes and functionality being mutually exclusive, to one whereby ethical attributes are considered part of product function. Gupta and Sen (2013) suggest that closing the perceived difference between ethical attributes and functional attributes will go some way towards closing the intention-behaviour difference and would likely go some way towards solving the described trade-off. For some consumers, this may also be the case, but no reviewed literature suggests that this attitude is widespread.

One consideration for the intention-behaviour difference is the difference between how consumers feel they should act and how they desire to act. Rogers and Bazerman (2008) discuss the concept of 'should' decisions. 'Should' decisions are defined as those an individual believes they 'should' do, for example 'should' conserve energy, and 'should' donate money. Rogers and Bazerman (2008) identify that consumers when asked about a future decision often give the 'should' answer, for example identifying ethical consumption as something they intend to do, but when action is required, the decision often reverts to a 'want' decision. Bazerman et al. (1998), refer to this as the 'want' self, and the 'should' self, these selves represent a tension between what consumer's desire in the moment, and the future decision they feel they should make. This tension appears to describe the intentionbehaviour difference, especially regarding sustainable purchasing decisions. Rogers and Bazerman (2008) across four experiments find that consumers are more likely to choose a 'should' choice when making that choice for a distant-future self, rather than a near-future self. Van Strien and Koenders (2012) state that the choices in sustainable consumption are

complex, with conflict occurring between an individual's interests and long-term collective goals again suggesting a trade-off evident in consumer decision making.

Further examination on the conflict discussed by Van Strien and Koenders (2012) suggests that social dilemmas may be an appropriate lens through which to view competing goals (Joireman, 2005; Utz, 2004). Social dilemmas examine how individuals their relationship with those around them (Social Value Orientation) and how they view time (Time perspective) and (Joireman, 2005). Self-construal is discussed instead of social value orientation due to the contextual nature of an individual's self-construal rather than the more stable concept of social value orientation (Utz, 2004). Time perspective is often named temporal orientation, and the discussion in this research uses the term temporal orientation. Joireman (2005) highlights that environmental problems are the result of a trade-off between short-term and long-term decision making and individual versus collective benefits.

The assertion that consumers place higher weighting on sustainable purchase decisions when viewed in the distant-future rather than the near-future (Gupta & Sen, 2013) is supported by the way information is processed in a present versus future context (Liberman et al., 2002; Liberman & Trope, 1998; Trope & Liberman, 2003). No literature explicitly provides parameters for the near-future versus-far future; near-future context presents information relating to events in the present time or immediate future. No clear definition exists within the literature for what near-future or far-future may mean to a participant. Thus, while an understanding exists that things happening in the future may adjust the perspective of a participant today, no identified literature suggests if this is six-months, one-year, or three-years into the future. Within the sustainability context, Böhm (2005) identifies consumers as more inclined towards sustainable purchases when they have a future orientation. There is evidence that socioeconomic status has an impact on temporal

orientation, while gender, familial status, stage of life, and other demographic and psychographic indicators are open to further investigation (Graham, 1981).

Gupta and Sen (2013), identify the effect of temporal discounting as a possible component of the difference between intention and behaviour. Temporal discounting is the study of consumer preferences for short-term rewards, over rewards in the far-future (Joshi & Fast, 2013). Vices, with an immediate reward, are preferred in the near future, while virtues, with their delayed rewards, are preferred in the far-future (Read et al., 1999; Wertenbroch, 1998). The time preference of vices and virtues reinforces the tension between the 'want' self, and the 'should' self (Bazerman et al., 1998) with consumers reporting a virtuous decision in surveys and reverting to vices at time of purchase (Rogers & Bazerman, 2008). Rogers and Bazerman (2008) identify consumer's reporting of future behaviour as a reflection of their 'ideal' self. The tensions raised by Rogers and Bazerman (2008) provides further support for the trade-off highlighted by Kaufman (2014). This chapter discusses congruency between the self and actions as image-congruence. Temporal discounting also interacts with the selves where a disconnect between present and future selves leads to increased discounting of a future reward relative to today (Pronin et al., 2008).

Message framing impacts on sustainable product purchase decision-making. Environmental issues generally exist over a long-term timeframe, with little immediate impact felt by consumers. However, long-term environmental gains are the culmination of many small actions. Individual's temporal orientation impacts their perception of these small actions and their importance over the long-term. The temporal framing of messages is influential to individuals, depending on their temporal orientation – with future positive outcomes and immediate negatives persuading individuals with a future temporal orientation (Orbell et al., 2004). Conversely, individuals with a present temporal orientation more persuaded by immediate gains and future negatives (Orbell et al., 2004). Therefore, temporal

framing of messages may make a trade-off bearable to a consumer where a match between the message frame and temporal orientation occurs.

Consumer sense of self also offers insights, with studies finding that consumers prefer stores and products in line with their self-concept (Pervin, 1967; Stern et al., 1977). For those who identify environmental concerns as part of their 'self', this becomes an important consideration. Luchs et al. (2010) suggested that the difference between consumer attitudes towards sustainable consumption and purchase behaviour may arise from an adverse inference about sustainable products. Research finding the presence of a desirable attribute can negatively impact the perception of other attributes (Chernev & Carpenter, 2001) grounds the suggestions of Luchs et al. (2010). Luchs et al. (2010) demonstrated in hand sanitiser where product strength is desirable, that being sustainable (green) led to adverse inferences on the product. The trade-off detailed in Literature Review Section 2.2.1 also suggests that being sustainable may carry negative inferences, for example, more sustainable equals less effective, or more expensive. Therefore, the presence of sustainable product attributes may be perceived by consumers as negatively impacting other attributes (Luchs et al., 2010).

The way consumers perceive themselves concerning those around them has also been demonstrated through costly signalling, whereby sustainable goods are purchased because of their negative attributes, to demonstrate a desirable perception of self. Griskevicius et al. (2010) examined hybrid car purchases to find out why these purchases increased after the removal of tax incentives. The authors found that when status motivations were activated, people were more inclined to choose a hybrid vehicle over a similarly priced luxury vehicle because it signalled a willingness to be pro-social and make sacrifices (less luxurious vehicle for the same price) for the greater good.

#### 2.2.3 Sustainable Goods Definition

This research defines the consumption of sustainable products as that which optimises the environmental, social, and economic consequences of the acquisition, use and disposition of goods, to meet the needs of both current and future generations (Luchs et al., 2011; Phipps et al., 2013). Consumption of sustainable products has been further characterised as the use of products with lower environmental impacts including biodegradable products, recyclable, recycled, or reduced packaging, and low energy usage (Costa Pinto et al., 2014; Follows & Jobber, 2000; Gordon et al., 2011; Horne, 2009; Krause, 2009; Muster, 2012; Pedersen, 2000).

#### 2.3 Consumer Purchase Dilemma

Section 2.2.1 discusses a trade-off in the purchase of sustainable goods; that is that a consumer must make a choice in the present, for a socially beneficial, yet distant outcome. This represents a dilemma in consumer purchasing; purchase an environmentally unfriendly product now and maximise personal outcomes, but potentially lead to long-term environmental damage. Alternatively purchase an environmentally friendly product now with lessened personal outcomes, but potentially contribute to positive environmental outcomes.

For the consumer facing this dilemma there are likely several factors being processed, the type of product being purchased and if it aligns to their image, the social benefit of their action against their personal benefit, and the distant and uncertain nature of the outcome.

# 2.3.1 Social Dilemmas – Social Value Orientation

Individuals are driven by their self-image (image construal) and how they see themselves in relation to those around them (self-construal). These innate aspects of the self impact consumption intentions and consumption decisions. Individuals seek to consume in a manner consistent with their self-image, impacting the products consumed and the stores frequented (e.g., Blackwell et al., 2006; Hosany & Martin, 2012; Sirgy et al., 2000). Using a social dilemma lens, self-construal is seen as an influential factor in co-operation on social problems (Utz, 2004). Being more oriented towards others (interdependent self-construal) is associated with increased co-operation, while being oriented towards the self (independent self-construal) is associated with increased competition for resources and maximisation of individual outcomes (Utz, 2004).

#### 2.3.1.1 Self-concept

An individual's idea of themselves influences their behaviour and consumption decisions – this sense of self is their self-concept. The idea of self-concept originated in the 1950s (Rogers, 1951) and gained momentum in marketing literature through the 1960s (e.g., Birdwell, 1968; Grubb & Grathwohl, 1967; Grubb & Hupp, 1968; Hamm & Cundiff, 1969). Research into self-concept has continued to grow (e.g., Abel et al., 2013; Blackwell et al., 2006; Graeff, 1996; Grubb & Stern, 1971; Malär et al., 2011; Malhotra, 1988; Onkvisit & Shaw, 1987; Rosenberg, 1979; Sirgy, 1982).

Extant literature defines self-concept as an individual's thoughts feelings and perceptions of their abilities, their view of their limitations, appearance, characteristics, and personality (Graeff, 1996; Malhotra, 1988) and their impression of the type of person they are (Blackwell et al., 2006). Furthermore, self-concept continually evolves throughout a participant's lifetime, in response to stimuli around them (Onkvisit & Shaw, 1987). However, self-concept is notably stable enough to be measured – particularly in the short timeframe of a purchase (Onkvisit & Shaw, 1987).

Initially proposed as a single-dimensional concept, further work suggested a multidimensional concept. With Markus and Nurius (1986, p. 954) proposing multiple selfconcepts or possible selves manifesting in different forms and representing "specific,
individually significant hopes, fears, and fantasies". Markus and Nurius (1986, p. 954) give an example; "I am now a psychologist, but I could be a restaurant owner, a marathon runner, a journalist, or the parent of a handicapped child". Furthermore, these possible selves are not only individualised and personalised but often the direct result of previous social comparisons (Markus & Nurius, 1986). Thus possible selves have the potential to reveal the constructive nature of the self, while still reflecting its socially determined character (Elder, 1980; Markus & Nurius, 1986; Meyer, 1985; Stryker, 1984). Other aspects of the self-concept literature have discussed the possibility of the self as a multidimensional concept (Hughes, 1976; Malhotra, 1988; Onkvisit & Shaw, 1987; Sirgy, 1982). Recent literature recognises selfconcept as multi-dimensional, (e.g., Abel et al., 2013; Hosany & Martin, 2012; Sirgy, 1982; Todd, 2001) with five notable dimensions. Real-self (objective self), the way a person actually is (Onkvisit & Shaw, 1987); self-image (actual self), how one perceives the self (Onkvisit & Shaw, 1987; Sirgy, 1982); ideal-self, how one desires to become (Onkvisit & Shaw, 1987; Sirgy, 1982); social-self, the person one believes others perceive (Onkvisit & Shaw, 1987; Sirgy, 1982); and the ideal social-self, the person one desires others to perceive (Sirgy, 1982).

The distinction of these selves and the feelings of individuals suggest that there may be an impact on consumption based on self-concept. Each of these selves grows through an active learning process by the individual, changing with time and personal experiences (Onkvisit & Shaw, 1987). Richter (2014) found the flexibility of the self-concept to adapt to outside influences reinforces the continual learning process in the formation of self-concept (Onkvisit & Shaw, 1987). Information may influence an individual's self-concept, leading to a constant evolution of self-concept. Onkvisit and Shaw (1987) suggest that self-concept may also have an impact on the behaviour of individuals. Self-concept has become an important

area of research forming the basis for image congruence and the impact of image congruence on purchasing.

## 2.3.1.2 Image congruence with the self

Image congruence is the degree to which individuals purchase goods based on their sense of self (e.g., Grubb & Grathwohl, 1967; Onkvisit & Shaw, 1987). Literature examining self-image congruence finds that consumer evaluations of products are a positive function of the degree of congruence between their self-image and the image of the product (Britt, 1966; Graeff, 1996). Self-image congruence describes the same concept as the image congruence hypothesis, but at times predates the works of Onkvisit and Shaw (1987) (e.g., Britt, 1966; Grubb & Grathwohl, 1967; Grubb & Hupp, 1968; Grubb & Stern, 1971; Stern et al., 1977). Several terms describe self-image congruence: self-congruence, self-congruity, and image congruence (Hosany & Martin, 2012). With the term image congruence used throughout this research for consistency.

Image congruence positively influences purchase behaviour; however, the mechanism through which this operates is still under debate. Contradicting Dolich (1969), Landon (1974) proposed that some consumers would match the image of a product with their ideal selfimage, while others would match with real self-image. Landon (1974) found that for nine of twelve products sampled self-image had a higher correlation with purchase intention than ideal self-image for males. For females, self-image only influenced purchase intention in two of seven products, ideal self-image influenced three of seven, and the remaining two showed no substantial distinction (Landon, 1974). The findings of Landon (1974) suggest that different genders perceive the self differently and use behaviour to communicate different aspects of the self. Malar et al. (2011) reported that congruence with self-image generates higher levels of brand attachment than congruence to ideal self-image; this partially supports the findings of Landon (1974). Abel et al. (2013) similarly found that health club patronage was more positively correlated to self-image than ideal self-image, despite the hypothesis that the conspicuous nature of health club patronage would lead to higher correlation with ideal self-image. The findings of Abel et al. (2013) do not support Graeff's (1996) suggestion that conspicuous goods (those with a public consumption) are influenced more by ideal selfimage than self-image. When thinking about the public consumption of goods, it may be possible to extrapolate this to include public shopping goods (goods purchased or consumed in public areas).

An understanding of image congruence has been used to examine problems in multiple areas, including tourism (e.g., Hosany & Martin, 2012), retail stores (e.g., Stern et al., 1977) and consumer products such as cars, beer, magazines, and cigarettes (e.g., Birdwell, 1968; Dolich, 1969; Grubb & Stern, 1971; Sirgy, 1985). Findings in the literature support congruence between consumer's self-concept as influential to actions and behaviours, not just product purchases. Consumers show preference for products and stores whose users are congruent with their self-image (e.g., Blackwell et al., 2006; Hosany & Martin, 2012; Pervin, 1967; Sirgy et al., 2000; Stern et al., 1977). Ibrahim & Najjar (2008) stated, "Customers feel uncomfortable if they visit a store which does not reflect their perceptions of themselves". Blackwell (2006) and Sirgy (2000) both suggest that other customers influence individual perceptions of a store. Shoppers also hold a stereotyped image of different stores; a shops perception may be catering to the wealthy, while another may be seen as catering to the working-class (Martineau, 1958; Onkvisit & Shaw, 1987). When congruity between cruise ship participants' self-image and their perceived images of other tourists was high, participants rated their experiences higher (Hosany & Martin, 2012). Therefore, the type of person that frequents a store or engages in a behaviour forms part of the assessment of that store or behaviour (e.g., Blackwell et al., 2006; Hosany & Martin, 2012; Sirgy et al., 2000).

Thus, consumers may be more or less likely to engage with a store or behaviour if their self is not congruent with the image of other patrons. So, for those consumers to whom wealth is a component of their self-image, the image of a store catering to the working-class would negatively impact their desire to shop there.

Oliver and Lee (2010) found a positive relationship when examining the effect of image congruence on willingness to purchase sustainable products. In an examination of hybrid car purchases, Oliver and Lee (2010) further found that consumer self-image has a more substantial influence on a car purchasing decision than the seeking out of green information. It is worth noting that Oliver and Lee (2010) found that consumers did not believe personal actions could have a meaningful impact on reducing emissions. However, feelings of self-efficacy had a lesser impact on behavioural intentions than did social motivations. Despite the view that individual actions make little impact, consumers purchasing sustainable goods suggests strong internal motivation to act congruently with selfimage. This internal motivation may also be related to status motivations, where consumers wish to act sustainably to signal their pro-social status by being pro-environmental (Griskevicius et al., 2007; Griskevicius et al., 2010), thus purchasing in line with their perceived self. The difference in purchase intentions was also shown to vary based on cultural context, in an individualistic (United States of America) context image-congruence had a more positive association with purchase intention than social value did. This finding was reversed in a collectivist (Korea) context (Oliver & Lee, 2010). Suggesting that the findings of Griskevicius et al. (2007; 2010), studying an American sample, may not replicate in a more collectivist culture where actions and behaviours considered pro-social may relate less to self-image, and more to social norms and pressures.

Graeff (1996), compared public (Chevrolet Camaro and Reebok) and Private (Budweiser and Reader's Digest) brands, finding individuals who monitor their behaviours

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and actions to present the 'right' person in the 'right situation, are influenced more influenced by ideal self-image than actual self-image in the consumption of public goods. Abel et al. (2013) found that health club patronage, a somewhat public behaviour, has a higher correlation with actual self-image than ideal-self-image. However, given the effect that image congruence with other patrons of a business has on store assessment (e.g., Blackwell et al., 2006; Hosany & Martin, 2012; Sirgy et al., 2000), the findings of Abel et al. (2013) may suggest that image congruence with other patrons, with public consumption, may be more influential than when a product is publicly purchased for private consumption.

## 2.3.1.3 Measurement of Image Congruence

Image congruence is often measured with a six-item scale adapted from Escalas and Bettman (2003), and Escalas (2005). Six items were introduced by Escalas and Bettman (2003) to measure image congruence with a brand Escalas and Bettman (2005) introduced a seventh item, not used in this research. In both studies Escalas and Bettman (2003, 2005) reported strong alphas of 0.96. Later research has also applied this scale, (Rindfleisch et al., 2009; White & Dahl, 2007). With Rindfleisch et al., (2009) reporting good model fit in a CFA.

### 2.3.1.4 Self-construal

Self-construal is the extent to which an individual sees themselves as either separate to others (independent) or connected to others (interdependent) (Markus & Kitayama, 1991). Markus and Kitayama (1991), set out to determine differences in the sense of self between American and Japanese cultures and how their cultural background influences these senses of self. Markus and Kitayama (1991) found that people are predominantly either; independent (e.g., separate to others) or interdependent (e.g., connected to others). Those with an independent self-construal place a greater focus on their unique attributes, while interdependent individuals define themselves mainly based on their relationships (Markus & Kitayama, 1991). A third self-construal, the meta-personal self-construal has also been suggested; whereby individuals perceive themselves as deeply interconnected with all forms of life such as plants and animals (Arnocky et al., 2007). Self-construal impacts environmental concerns (e.g., Arnocky et al., 2007; Singelis, 1994) and has a role in explaining problem solving co-operation in social dilemmas such as sustainable consumption (Utz, 2004).

Self-construal research often examines a Western versus Eastern context. Markus and Kitayama (1991), found that Western cultures are predominantly independent view the self as separate from the social context and emphasise the individuality and autonomy of the individual. Individuals with independent self-construal emphasise being unique and expressing the self, realising internal attributes, promoting individual goals, and being direct in communication (Arnocky et al., 2007). Furthermore, when thinking about themselves, those with an independent self-construal refer to their abilities, attributes, characteristics, or ambitions (Singelis, 1994).

Markus and Kitayama (1991) found in contrast to Western cultures, individuals in Eastern cultures are predominantly interdependent and define their sense of self mainly on relationships with a strong emphasis on harmony with others. Individuals with interdependent self-construal feel that their self and others are interconnected; these same individuals present a flexible self, emphasising, status, roles, and relationships (Singelis, 1994).

Individuals with the third self-construal, metapersonal, see themselves as deeply interconnected with all life, differing from interdependent self-construal which concerns interconnectedness with other humans (Arnocky et al., 2007). Despite the associations of metapersonal self-construal with religious or cultural belief systems such as Buddhism,

individuals may have a metapersonal self-construal without belonging to a religious group (Arnocky et al., 2007). Reinforcing the association, a comparison between a Buddhist sample and a Christian sample demonstrated higher rates of metapersonal self-construal within the Buddhist sample (Arnocky et al., 2007).

Studies have linked self-construal to a broad range of effects including, cognition, emotion, motivation, behaviour, impulsivity, and environmental concerns (e.g., Arnocky et al., 2007; Kühnen & Oyserman, 2002; Lee et al., 2000). Within the study of motivation, interdependent self-construal reduces the likelihood of achieving personal goals, with the focus on fulfilling the goals of other members of the group the individual identifies with (Kühnen & Oyserman, 2002). The focus on the fulfilment of the group's goals may lead to individuals pursuing goals not matching their values and often distracts from the pursuit of their own goals (Kühnen & Oyserman, 2002). Ybarra and Tramifow (1998) found that individuals with interdependent self-construal are more likely to engage in behaviour matching the social norms of the group to which they identify.

Conversely, individuals with an independent self-construal are more likely to engage in behaviours in line with their attitudes and emotions (Markus & Kitayama, 1991; Ybarra & Trafimow, 1998). Therefore, it may come as little surprise that literature finds that individuals with interdependent self-construal are more likely to engage in cooperative and altruistic behaviour (Holland et al., 2004; van Baaren et al., 2004).

In the context risk preferences towards investments and the possible effects of priming individuals with independent or interdependent self-construal, individuals with an interdependent self-construal prefer products guaranteeing safety and security (Hamilton & Biehal, 2005). Using four colour ads with text either reinforcing an individual self-view, or an interdependent self-view, Hamilton and Biehal (2005) had some success in priming individuals towards a self-view focussing on themselves, or others. However, the four-colour ad approach did not successfully prime self-construal (Hamilton & Biehal, 2005). Hamilton and Biehal (2005) had more success manipulating self-construal using an activity with a potential financial reward benefitting themselves (independent) or others (interdependent). Hamilton and Biehal (2005) found that interdependent individuals strive for safety and security by choosing products that either minimise losses or maintain the status quo with independent individuals preferring products leading to the personal enhancement and were willing to make riskier choices. Hamilton and Biehal's (2005) findings echo those of Higgins (1997) who identified that independent individuals were more inclined to maximise gains. Zhang and Mittal (2007) offer further support for interdependent individuals being conservative when considering product attributes and seeking to minimise deficiencies in those products. Thus, by seeking to minimise deficiencies in product choice, interdependent individuals appear more likely to consider the long-term deficiencies as well as short-term deficiencies. Safety and security are characteristics sought by interdependent individuals (Zhang & Mittal, 2007), and has been identified as a factor in purchase intention towards sustainable goods (Joshi & Rahman, 2015).

Contrast this with individuals with independent self-construal who are more concerned about selecting the best alternative, even if it means not being able to give up the worst alternative. That is, those with more independent self-construal are concerned about missing out on maximising an opportunity, even if it means a cost may be involved. Thus, independent individuals may be less concerned about the long-term implications of their purchases (Zhang & Mittal, 2007). Independent individuals are less likely to co-operate in a social dilemma situation (Utz, 2004); with interdependent individuals more likely to cooperate (Utz, 2004). In the context of a social dilemma, self-construal can be primed, suggesting a degree of context-sensitivity (Utz, 2004). Higgins (1997) offers some

explanation of this phenomena, individuals with an interdependent self-construal focus on preventing a loss, driven by the expectations of those around them. Independent individuals are less concerned with the expectations of those around them and thus, more focussed on their enjoyment. While this research does not focus on social dilemmas, literature from this area adds to the understanding of environmental issues. A positive environmental outcome is unlikely to be immediate and very likely to benefit society. Therefore, environmental issues can be considered a social dilemma due to the future temporal horizon and societal rewards (Utz, 2004).

In a study of whether individual differences and self-construal can predict differences in environmental concern and pro-environmental behaviour Arnocky et al., (2007) found that self-construal was directly related to environmental concern and pro-environmental behaviour. The commonly utilised Singelis (1994) scale measured self-construal. Arnocky et al., (2007) found that independent self-construal predicted egoistic environmental concerns (effect of environmental destruction on the individual). Interdependent self-construal did not predict egoistic; biospheric (focus on the inherent value of the environment, believes humans are a part of nature, and all species have a right to exist); or altruistic (focus on benefits to humans) environmental concerns. Metapersonal self-construal predicted biospheric environmental concerns. Therefore, to show signs of egoistic environmental concern, another factor may be increasing the perceived importance of the environment. Metapersonal individuals should have biospheric concerns about the environment due to their belief that all living things are interconnected. However, contradicting one possible interpretation of interdependent self-construal, interpersonal self-construal did not predict altruistic environmental concerns — interdependent self-construal may only predict in-group cooperation (Arnocky et al., 2007). Therefore, interdependent self-construal may lead to individuals acting in line with a narrow group, rather than society. Thus, these findings

suggest that internal motivations, other than self-construal, contribute to consumer's attitudes towards sustainable consumption and that more understanding is required to understand behavioural intentions better. Findings examining co-operation within social dilemmas support increased co-operation from interdependent individuals (Utz, 2004) whether this cooperation was to enhance a sense of self (egoistic) or to support those around them (altruistic) — unlike the findings of Arnocky (2007). The future temporal horizon involved in social dilemmas may increase the difficulty of understanding these through a purely egoistic or altruism-based lens, however.

#### 2.3.1.5 Measurement of Self-Construal

Three key scales measure self-construal, the Leung and Kim (1997) scale from an unpublished manuscript, the Gudykunst et al., (1996) scale, and the Singelis (1994) scale. There is a degree of commonality between these scales with items commonly overlapping between two or even three of the scales (Levine, Bresnahan, Park, Lapinski, Wittenbaum, et al., 2003). Due to the popularity and the continued development of the Singelis (1994) scale, this scale will be the focus of discussion. The Singelis (1994) scale was the first developed, with items from this scale informing development of the latter two scales.

Singelis (1994) developed a scale of 24-items to measure independent and interdependent self-construal, with a further six items added enhancing the measurement of self-construal, three items for interdependent self-construal and three for independent selfconstrual (Singelis et al., 1999). There has been debate surrounding the validity of selfconstrual scales (D'Amico & Scrima, 2016; Hardin et al., 2004; Kam et al., 2012; Kim & Narayan S., 2003; Levine, Bresnahan, Park, Lapinski, Tai Sik, et al., 2003; Levine, Bresnahan, Park, Lapinski, Wittenbaum, et al., 2003). CFAs performed on the self-construal model have reported poor model fit (D'Amico & Scrima, 2016; Hardin et al., 2016; Hardin et al., 2004; Kam et al., 2012). While criticism exists of Cronbach's Alpha as a major signal of reliability in selfconstrual research (Levine, Bresnahan, Park, Lapinski, Wittenbaum, et al., 2003).

Attempts to refine the 30-item scale to a 10-item scale have seen success in improving model fit and overall reliability of the self-construal construct (D'Amico & Scrima, 2016). D'Amico and Scrima (2016) see further advantages in the 10-item scale as it allows faster completion by the participant while still capturing similar information. The 10-item scale was developed from an Italian translated version of the 30-item scale (D'Amico & Scrima, 2016) with validation on an English language version of the 10-item scale not yet undertaken.

### 2.3.2 Social Dilemmas – Time Preference

Part of the product benefit of sustainable goods is future environmental benefits. However, these future benefits are uncertain and rely on high levels of social co-operation to manifest. Within dilemma literature time preference (an individual's temporal orientation) is highlighted as leading to increased co-operation (Joireman, 2005) and thus increased likelihood of consuming sustainable goods. Future environmental outcomes also carry high levels of uncertainty, with an action today maybe (but not definitely) impacting the future outcome. High levels of future uncertainty have been investigated for their potential to lead to high levels of discounting of the future outcome (Baron & Leshner, 2000; Kahneman & Tversky, 1979), thus reducing the likelihood of present action to make the future gain appear.

## 2.3.2.1 Temporal Orientation

Temporal orientation refers to the extent to which people consider the outcomes of their behaviour, and how these potential future outcomes influence their behaviours (Holman & Silver, 1998; Kees et al., 2010). Temporal orientation focuses on three temporal perspectives, past, present, and future orientation; however, these perspectives form a continuum as opposed to discrete categories (de Volder, 1979). Past orientation is a feeling of being unable to let go of the experience and letting this experience guide attitudes and behaviours (Holman & Silver, 1998). Individuals with a present orientation think little of the future and base their attitudes and behaviours around what is essential now (Graham, 1981). Individuals with a future orientation think a lot of the future and base their attitudes and behaviours on maximising future rewards (Loda, 2013).

Discussion of the attitudes and behaviours impacted by temporal orientation, also referred to as 'Time Orientation', or 'Time Perspective' (e.g., Ayoun & Moreo, 2009; Barndt & Johnson, 1955; Davids & Parenti, 1958; Ellis et al., 1955; Lewin, 1997) are found throughout the literature (e.g., Brock & Del Giudice, 1963; Kees et al., 2010; Lamm et al., 1976; Landau, 1976; Nurmi, 1987, 1991; Orbell et al., 2004). Temporal orientation has been applied to a variety of contexts, including; child psychology (e.g., Nurmi, 1991), healthcare (e.g., Chandran & Menon, 2004; Orbell et al., 2004), finances (e.g., Joireman et al., 2005), management (e.g., Das, 1987, 1991; Souder & Bromiley, 2012), sustainability issues (e.g., Böhm & Pfister, 2005; Pahl et al., 2014), and more recently marketing (e.g., Kees et al., 2010; Tangari et al., 2010).

Consumers may view time differently depending on their cultural or societal heritage. Graham (1981) identified three models of time, the linear-separable model, the circulartraditional model, and the procedural-traditional model. Evidence of these three models of time exists across societies, with linear-separable being the critical model for Anglo countries. The linear-separable model of time views time as linear, containing past, present, and future with people holding this view perceiving time as a road or ribbon (Graham, 1981). This model portrays time passed that is not contributing to the present state as waste and irrecoverable, while time spent well today will better position the individual for the future (Graham, 1981). This model also views time as discretely dividable, with individuals preferring to do only one thing in each of these discrete slices. Graham (1981) does not provide an example of this model of time. However, one can envisage a New York businessperson; scheduling meetings throughout the day, with one at 10, 11, and 1:30. With each of these meetings, there is an expectation partners are on time, and to fill their allotted time slot, leaving no room to go over time and ensuring the completion of work as quickly and efficiently as possible. The linear-separable model of time leads to comparison with other discrete items such as money; therefore, leading to the notion that time equals money (Graham, 1981). Graham (1981) further states that viewing time as a road leads to future orientation, with activities seen as a means to an end. The majority of extant temporal orientation studies focus on Anglo studies (e.g., Böhm & Pfister, 2005; Kees et al., 2010; Orbell & Kyriakaki, 2008; Orbell et al., 2004; Pahl et al., 2014; Tangari et al., 2010), suggesting that current understanding of temporal orientation is most applicable in Anglo contexts.

The circular-traditional model of time views time as a circular system, with events repeated in a cycle (Graham, 1981). Originating in hunting, gathering, and agricultural societies, time is regulated by natural cycles of the sun, seasons, and moon. People who adhere to this model of time expect a future that is exactly like the past; this future holds no particular promise and is to be neither celebrated nor feared. Thus, individuals living within societies exhibiting this model of time have a mainly present orientation (Graham, 1981). Saunders (1954) gives the example of a Spanish speaking person, where priority dictates the order of work. If it is possible to delay work, then it will be, if work is essential, then it will be prioritised. A further example highlights the lack of segmentation of time apparent with this predominantly present orientation. A Latino businessperson may have fifteen people in their office at one time; acts of business that may have taken only a quarter of an hour, therefore, stretches to many hours (Hall, 1973).

Graham (1981) finds that socio-economic status can impact orientation, with the circular-traditional model often associated with low socio-economic or low education individuals (Graham, 1981). People holding a circular-traditional model of time may feel an inability to impact their future. Temporal orientation is apparent in the difference between the shopping habits of those with a present and future orientation. Present orientated consumers may purchase high-quality food using food stamps in the supermarket while those with a future orientation can afford significantly less as their money is invested in a house, with the hope of future rewards (Graham, 1981). The difference in shopping suggests a similar effect with other temporally focussed purchases.

The procedural-traditional model of time views activities as procedure-driven rather than time-driven. In this model, the amount of time spent on an activity is irrelevant (Graham, 1981), and it is vital to do something the right way, rather than in a certain length of time. Cultures with little written history, where culture is communicated by ritual most commonly adhere to the procedural-traditional model of time. American Indian societies are the most widely studied with this orientation (Graham, 1981).

The discussion of literature in this research will focus on the linear-separable model of time as this is the predominant concept in Anglo societies, with European and American cultures generally having a focus on present and future orientations (Loda, 2013). Anglo temporal orientation is mainly linear, with a present to future focus, forming a clear continuum on which consumers fall. Past orientation is more prevalent in cultures with cyclical patterns (e.g., following moon cycles or seasons) and does not widely manifest itself in American consumers, so is thus less likely an Anglo phenomenon (Gonzalez & Zimbardo, 1985). Social status can also impact temporal orientation with low-income children more likely to be present-oriented, while those in the middle class are often more future-oriented (Davids & Parenti, 1958). Furthermore, a person is more likely to be future-oriented if they feel a highly valued goal is attainable while feeling that the goal is out of reach is likely to result in a present orientation (Davids & Parenti, 1958). Thus, challenges and issues reaching into the future may be approached in a more present-focussed fashion; presenting a challenge to those trying to alter behaviour with a far-future outcome. The literature further suggests that setting goals into the future may enhance an individual's future perspective (de Volder & Lens, 1982; Simons et al., 2004).

The attainability of a goal presents a dilemma to those who are pursuing a collective goal requiring the participation of other individuals, akin to a social dilemma (e.g., Utz, 2004). The participation and attitudes of others may have a meaningful impact on the perception of their ability to attain the goal, and thus impact their temporal orientation. Humans have evolved mainly in an environment of scarcity where immediate satisfaction of needs was the primary concern; this has led to the prioritisation of short-term rewards (Pahl et al., 2014). Therefore, when a goal requires societal participation, individual preferences for short-term rewards may act against the interests of this goal. However, interdependent selfconstrual impacts on co-operation when faced with a temporally future outcome (Joireman, 2005) suggesting that the nature of temporal orientation is complex and influenced by other factors around it. The trade-off inherent in sustainable goods combined with the uncertain long-term outcome inherent in environmental discussions may lead to the situation raised by Davids (1958) where uncertain goal attainability leads to a present temporal orientation.

Multiple sources influence an individual's temporal orientation. Individual cultural (Graham, 1981), and socio-economic (Graham, 1981; Loda, 2013) factors have been discussed. The orientation of parents has also been suggested by Webley and Nyhus (2006) to influence the temporal orientation of children. A study of financial savings behaviours in children found that the future orientation of a father was a predictor of a child's temporal orientation at a 90% significance level with the future orientation of a mother was found to be

significant at a 99% level (Webley & Nyhus, 2006). The findings of Webley and Nyhus (2006) highlight a parental influence that transcends cultural (Graham, 1981) and socioeconomic (Graham, 1981; Loda, 2013) factors. Therefore, it appears that temporal orientation is to an extent a learned behaviour or pattern of behaviours.

It is clear, that while this literature is well developed, research gaps exist around the effects of temporal orientation on purchase intention towards sustainable goods. While the impact of temporal orientation within the sustainability literature has been discussed (e.g., Böhm & Pfister, 2005; Strathman et al., 1994), there is room for further examination of this relationship. Temporal orientation has also been shown as a factor when understanding co-operation in social dilemmas (Joireman, 2005) — suggesting that the application of temporal orientation to issues around long-term socially-oriented behaviours contributes to a further understanding of social dilemmas. The reviewed literature also has little mention of temporal discounting, which is the quantifiable function by which future rewards are discounted relative to their value today.

Furthermore, there is a lack of clear definition of the terms present, near-future, and far future. These terms are commonly referenced and discussed herein; however, no clear definition is apparent concerning these. Thus, any reference to present, near-future, and far future is somewhat ambiguous and challenging to quantify. The definition of these terms dramatically impacts the interpretation of the literature for example if far future were to mean one year rather than ten years. This ambiguity is impactful in contexts with horizons of decades or even centuries like environmental studies.

#### 2.3.2.2 Measurement of Temporal Orientation

Individual temporal orientation can be measured on a continuum, from past to future, with individuals in Anglo societies, primarily falling between present and future (Loda,

2013). This continuum is measured using the consideration of future consequences (CFC) scale; this scale is considered a reliable measure of "the extent to which individuals consider the potential future outcomes of their current behaviours and the extent to which they are influenced by these potential outcomes" (Strathman et al., 1994, p. 743). Individuals with low CFC are present-oriented, while high CFC individuals are future-oriented (Kees et al., 2010). Kees et al. (2010) introduced the CFC scale into the marketing and advertising literature, looking at message strategies to combat obesity. Kees et al. (2010) found that individual differences in CFC can influence consumer's attitudes, this finding is consistent with studies in psychology (e.g., Dorr et al., 1999; Orbell et al., 2004; Strathman et al., 1994). To measure the effect of CFC, Kees et al. (2010), applied the 12-point CFC scale (Strathman et al., 1994), as part of a between-subjects experiment to a convenience sample of college students. Kees (2010) found that the effectiveness of framing techniques may depend on the temporal orientation of the individual. The correlation between demographic variables (e.g., education) and temporal orientation is useful when designing public service advertising (Kees et al., 2010).

The CFC scale has also had a broad application outside of marketing. High-CFC individuals have been reported (when compared to low CFC individuals) as having greater self-control and conscientiousness (Strathman et al., 1994), lower aggression (Joireman et al., 2003), less impulsive purchasing habits (Joireman et al., 2003; Verplanken & Herabadi, 2001), more frequent exercise habits (Ouellette et al., 2005), and reduced participation in risky sexual practices (Dorr et al., 1999). A high-CFC may induce sustainable behaviour (Böhm & Pfister, 2005), supporting findings by Strathman et al. (1994), finding that high CFC individuals had a less favourable opinion of offshore oil drilling than those with a low CFC. Strathman et al. (1994) put forth a 12-item scale named the consideration of future

consequences scale, encompassing items designed to measure future orientation and immediate orientation.

Literature discussing the CFC scale has also found support creating two sub-scales (Joireman et al., 2008; Joireman et al., 2012). The CFC immediate scale and the CFC future scale. Joireman et al.'s (2008) discussion of two sub-scales resulted in the addition of two items to the 12-item CFC scale (Joireman et al., 2012). The addition of two items added to the CFC scale brought the total to fourteen; the additional items increased the strength of the future orientation sub-scale (Joireman et al., 2012).

#### 2.3.2.3 Time Preference – Temporal Discounting

Temporal discounting is the tendency of individuals to prefer a smaller reward today, rather than a larger reward in the future (Joshi & Fast, 2013). Temporal discounting is socalled because the value of future rewards is discounted relative to today's rewards. The more distant the reward, the steeper the discount typically applied (Ainslie & Haslam, 1992; Frederick et al., 2002; Green et al., 1994; Schelling, 1984; Thaler, 1981). This research applies the commonly used definition that temporal discount is the mechanism by which a smaller reward is preferred today, compared to a larger reward in the future (Joshi & Fast, 2013). There is a large and diverse body of literature surrounding Temporal Discounting, which is unsurprising given the consequences for long-term decision-making. It has broad applications in fields such as monetary rewards (e.g., Frederick et al., 2002), addiction (Bickel et al., 1999; Coffey et al., 2003; Madden et al., 1997; Petry, 2001), religion (Paglieri et al., 2013), alcohol consumption (Vuchinich & Simpson, 1998) and financial savings (Ersner-Hershfield et al., 2009; Vuchinich & Simpson, 1998). Temporal discounting is also known in the literature as time preference (e.g., Chapman, 2005; Chapman & Coups, 1999; Fuchs, 1982; Gafni & Torrance, 1984; Joireman & Strathman, 2005; Li & Löfgren, 2000; Maital & Maital, 1978; Robb et al., 2008; Zhang & Rashad, 2008). This discounting effect arises due to a feeling of disconnect between the present self and the future self (Bartels & Rips, 2010; Ersner-Hershfield et al., 2009; Hershfield, 2011).

The discount rates of consumers are domain specific. Studies of nicotine and narcotics addicts reveal addicts have steeper discount rates for their favoured addictions than for money (Bickel et al., 1999; Coffey et al., 2003; Madden et al., 1997; Petry, 2001). In each of these studies, the substance was equal to, or of similar value to, the monetary reward, suggesting the temporal discounting process applies when comparing a valuable item to a monetary reward. These studies reveal both domain effects and group effects. Discount rates in the substance domain differ from the monetary and group effects; substance users have higher discount rates than non-substance users (Tsukayama & Duckworth, 2010).

There have been attempts to explain the phenomenon of temporal discounting. Explorations include uncertainty about the future (Baron & Leshner, 2000; Kahneman & Tversky, 1979), disconnect between present and future selves (Pronin et al., 2008; Pronin & Ross, 2006) and the way in which future rewards are abstract and decontextualised (Trope & Liberman, 2003; Wakslak et al., 2006). Uncertainty about the future highlights that many things can happen between now and the future, and individuals prefer certainty (Kahneman & Tversky, 1979). Therefore, selecting a reward now rather than delaying it creates increased certainty and may act as a coping mechanism to allay uncertainty (Baron & Leshner, 2000). There is further evidence that people may make more rational decisions for future events with a degree of certainty, rather than hypothetical events (Peters & Büchel, 2010). Therefore, potential measurement issues may exist in studies as well as difficulty in using temporal discounting occurs when individuals do not fully consider the future opportunity cost of a decision (Read et al., 2016). However, fully explaining the future opportunity cost to individuals may help

add weight to future choices (Read et al., 2016), although this may remain offset by future uncertainty. This is particularly of note in the environmental context, where future outcomes are abstract and highly dependent on a myriad of factors. Thus, environmental outcomes are likely to suffer from this discounting effect.

An understanding of how individuals perceive the present and future is a necessary consideration for how they perceive themselves within that time. Studies of temporal discounting suggest that a disconnect between present and future selves may lead to heavier discounting of future gains (Bartels & Rips, 2010; Ersner-Hershfield et al., 2009; Hershfield, 2011). Literature examining image-congruence also suggests that a disconnect between selves impacts behaviour (Onkvisit & Shaw, 1987). Therefore, the disconnect between present and future self occurs as people view their future selves as they would another person rather than as a future version of themselves over which they maintain control (Pronin et al., 2008). Thus decisions made by people often occur as if they were making them for a third party rather than themselves (Pronin et al., 2008). Bartels and Rips (2010) suggest that the more people feel connected to their future selves, the less they discount future gains. This connection to a future-self creates a preference for rewards benefitting the future self. Conversely, consumers with a lesser connection to future-self prefer to reward the present self (Bartels & Rips, 2010).

Not only are events in the future uncertain and disconnected from the present self, but these events may be abstract and without context (Wakslak et al., 2006). Trope and Liberman (2003), suggest that when an event is not experienced, it is psychologically distant and involves broad and abstract cognitive representations. Uncertainty and abstraction are complementary ideas that may offer a substantial explanation of temporal discounting. An immediate reward is viewed as concrete, certain, and experienced; while future rewards are abstract and uncertain (Kim et al., 2013). Therefore, consumers discounting future rewards

are acting to maximise certainty, creating an unfair comparison in the mind of the individual. Context is also a factor in the level of temporal discount applied, with Böhm (2005) suggesting the effect of temporal discounting differs between areas such as finance and environmental risks. Peters (2010) highlights the difficulty for consumers to correctly evaluate and consider hypothetical events, something that in most contexts, the future remains.

## 2.3.2.4 Measuring Temporal Discounting

Researchers have used choice models and modelled temporal discounting using mathematical formulae and measurement in attempts to understand temporal discounting better. Multiple approaches to measuring temporal discounting exist (Basile & Toplak, 2015; Green et al., 2007; Hardisty et al., 2013; Hurst et al., 2011; Rachlin et al., 1991). Commonly temporal discounting is measured using a series of choices; where a participant must choose between a decision today, and a decision in the future (Hardisty et al., 2013). Participants may see these choices as a pair of cards presented by an examiner in a lab (e.g., Rachlin et al., 1991), or a pair of choices on a screen (e.g., Basile & Toplak, 2015; Hardisty et al., 2013). Alternatively, participants may see a list of multiple paired choices, (e.g., Hardisty et al., 2013). With a single pair of choices shown at a time, studies have trialled using each choice made to inform the next pair of choices shown to elicit an indifference point in less time (e.g., Hardisty et al., 2013).

Hardisty (2013) compared three methods commonly used within the temporal discounting literature and determined that showing single pairs of choices and varying the order and magnitude of the choices offered was more predictive of real-world behaviour and outcomes. However, matching multiple pairs minimised experimental demand effects and led to a good model fit remaining a practical choice for research (Hardisty et al., 2013). Temporal

discounting rates may be partly constructed based on the methodology used to measure them (Hardisty et al., 2013). Despite the potential construction effect on the score, this would be consistent across participants. Therefore, while a single irrefutable score may be unattainable, a consistent and comparable value, correlated with real life behaviours is valuable for measuring the temporal discounting construct.

Temporal discounting is frequently expressed as a function where *V* is the subjective value of the reward (indifference point) of a reward of *A* (baseline value), *D* is the time delay until the reward is received, and *k* is the rate of discounting (Green et al., 2007; Mazur, 1987); V = A/(1+kD). One challenge in interpreting temporal discounting data, also mirrored in the discussion on temporal orientation is the lack of clear definition around the frequently used terms: present, near-future, and far-future.

To measure an individuals' temporal discount rate, it is necessary to determine how they value a present choice and a future choice and to identify an indifference point between them. The indifference point is the point where a participant sees two values as being approximately equal; similarly, the point where a participant would find it hard to choose between them. The indifference point is the average of the future value selected, and the last future value not selected (Hardisty et al., 2013). An example taken from Hardisty's (2013) study is a participant choosing to take \$250 today, and \$270 in the future. The indifference point is the average of the \$270 selected, and the future \$250 reward not selected; thus, the indifference value would be \$260.

## 2.3.2.5 Time Preference – Temporal Framing

Temporal framing is a form of message framing that highlights consequences in the context of the time, either short-term (present-oriented), or long-term (future-oriented) (Nan et al., 2014). Temporal framing has been examined in many contexts, willingness to

volunteer (Lindenmeier, 2008), environmental protective behaviours (Loroz, 2007), and health-related behaviours (Block & Punam Anand, 1995), including quitting smoking (Arthur & Quester, 2004), drug use (Newcomb et al., 2000) and social marketing in the context of smoking (Peracchio & Luna, 1998), with results varying by age and gender (Smith & Stutts, 2003, 2006). The broad application of temporal framing suggests the use of temporal framing in the marketing literature, with recent literature examining social marketing campaigns (Thaler & Helmig, 2013).

Orbell (2004) found that positive outcomes lasting into the future with negative outcomes portrayed as immediate heavily persuaded participants with a high consideration of future consequences (CFC). Contrasting this, low CFC participants were more persuaded by immediate positive outcomes with negatives in the far future. This understanding further supports later temporal orientation literature (Kees et al., 2010). Orbell (2008) concludes her study with the suggestion that future research should look towards the effects of CFC and temporal framing on goal achievement. This suggestion looks to further contribute to wellestablished concepts within the temporal orientation literature that suggest perceptions of goal attainment can have different effects on high and low CFC individuals (Davids & Parenti, 1958). Temporal framing may also offer insight into a process that leads to consumers forming an intention to purchase or converting their intention to purchase into purchase behaviour.

## 2.4 Purchase Intention

Purchase intention is the desire of an individual to purchase a product, based on their evaluation of the product (Grewal et al., 1998; Kang et al., 2013; Neumann et al., 2020; Wu & Chen, 2014). Intention to purchase goods is positively associated with the perceived value of the product (Grewal et al., 1998), with consumer's being more likely to repurchase goods

they have experienced high satisfaction with (Mittal & Kamakura, 2001). Morwitz and Schmittlein (1992) demonstrated that purchase intention is a predictor of purchase behaviour. Purchase intention best predicted the behaviour of individuals with demographic or product use profiles best matching the goods purchased (Morwitz & Schmittlein, 1992).

Purchase intention towards green goods is impacted not only by attitudes but by external contexts (Joshi & Rahman, 2015). The difficulty of completing the behaviour influences the conversion of purchase intention into purchase behaviour (Kang et al., 2013). Social pressure from reference groups and congruence with lifestyle and self-image also influence the conversion of a purchase intention to a purchase behaviour (Kang et al., 2013).

#### 2.4.1.1 Measurement of Purchase Intention

Behavioural intention has been broadly studied and is a well-established concept within marketing, with several scales available to choose from. A popular scale, adaptable to purchase intention, with conceptual similarity to many other scales is Algesheimer et al.'s, (2005) brand loyalty intention scale. Algesheimer et al., (2005) validated a three-item brand loyalty intention scale, to determine the extent to which participants with a brand relationship would patronise a brand in the future. Two critical components of the Algesheimer et al., (2005) study make it suitable for measuring purchase intention; the first was a focus on the brand relationship, the second is brand identification. Kang et al. (2013) also propose a three-item purchase intention scale, with very similar wording to the Algesheimer et al., (2005) scale.

#### 2.5 Demographic and Control Factors

Extant literature examining sustainable consumption has identified several key demographic factors as influential; age (Ekholm & Olofsson, 2017; Lazo et al., 2000; Sundblad et al., 2007) education (Ekholm & Olofsson, 2017; McCright, 2010; Sundblad et al., 2007), gender (Arnocky et al., 2014; Ekholm & Olofsson, 2017; Luchs et al., 2011; McCright, 2010; Sundblad et al., 2007), religion (Ekholm & Olofsson, 2017; McCright, 2010), parenthood (Ekholm & Olofsson, 2017; Sundblad et al., 2007; Thomas et al., 2018)and place of residence (Sundblad et al., 2007). Gender, age, and parenthood are particularly influential factors (Ekholm & Olofsson, 2017; Sundblad et al., 2007). However, notably, demographic effects may also be acting as a proxy for another mechanism, and so the effects found may be a combination of other variables.

## 2.5.1 Age

Age has a demonstrated impact on green attitudes (Costa Pinto et al., 2011; Ekholm & Olofsson, 2017; McCright, 2010; McCright et al., 2013; Sundblad et al., 2007). Disagreement occurs over the direction of the impact with Costa Pinto (2011) highlighting lower environmental awareness and more wasteful behaviours in a younger age group. Conversely McCright, (2010) highlights increased knowledge of climate change amongst younger individuals. The disagreement suggests that age may be reflective of other factors. Thus, while literature cites age as impactful on sustainable behaviours, the actual mechanism may relate to other factors such as education (e.g., Costa Pinto et al., 2011; McCright, 2010) , political affiliation (e.g., McCright et al., 2013; Milfont, Harré, et al., 2012), parenthood (Ekholm & Olofsson, 2017; Milfont, Wilson, et al., 2012; Sundblad et al., 2007; Thomas et al., 2018) or other lifestyle factors commonly occurring in different life stages.

#### 2.5.2 Gender

Gender influences sustainable consumption (e.g., Arnocky et al., 2014; Blocker & Eckberg, 1997; Costa Pinto et al., 2014; Luchs et al., 2011; McCright, 2010; Yates et al., 2015). With evolving attitudes between 1994 and 2010, males and females reported increases in environmentally responsible behaviours (Yates et al., 2015). Yates et al., (2015) found

support for females performing more private, environmentally responsible behaviours than males. However, an analysis performed on 2010 data found that males were more likely to perform public environmentally responsible behaviours than females, an effect not present in 1994 data (Yates et al., 2015). The result from Yates et al., (2015) suggests an evolving relationship between both genders and sustainable consumption, particularly the way males view environmental action.

The discussion in extant literature observes gender in a binary fashion, with participants either male or female (e.g., Arnocky et al., 2014; Blocker & Eckberg, 1997; Luchs et al., 2011; McCright, 2010; Yates et al., 2015). However, gender is a more nuanced construct and one where a lack of nuance is detrimental to an understanding of complex problems in the social sciences (e.g., Bittner & Goodyear-Grant, 2017; Silva, 2005; Westbrook & Saperstein, 2015). As such, the understanding of attitudes and behaviours of 'male' or 'female' participants may instead reflect ingrained 'masculine' and 'feminine' traits (McCright, 2010).

Lending support to the idea of a more nuanced view of gender constructs in environmental research, Smith (2001) found gender was less associated with environmental attitudes than feminism was. It is worth noting that due to potential shifts in societal norms between the 2001 and 2015, Yates et al., (2015) finding of evolving male attitudes to the environment is likely to outweigh Smith (2001). Furthermore, (Brough et al., 2016) suggest that males are less inclined to engage in pro-environmental behaviours as such behaviours are too feminine (Brough et al., 2016). However, assuming males would not be interested in engaging in 'feminine' behaviour paints all males with a broad brush, further supporting potential value in a more nuanced understanding beyond binary gender. Costa Pinto et al. (2014) demonstrated that female respondents were more likely to report sustainable consumption practices than males. However, social identity salience somewhat equalised the effect between gender; meaning that when social identity was salient male respondents reported similar levels of sustainable behaviour (Costa Pinto et al., 2014). Thus, male respondents increased their level of sustainable behaviour in response to social comparison and recognition mechanisms (Costa Pinto et al., 2014), suggesting a socialisation element to gender effects in sustainable behaviour research.

Despite suggestions that gender should be more nuanced in social science research, sustainability literature limits gender to male and female. Thus, measurement of findings around gender in sustainability research should be read with an understanding that this lack of nuance may be a limitation (Hughes et al., 2016; Westbrook & Saperstein, 2015). Criticism of research treating gender as a binary construct highlight that such research adopts and reinforces a cisnormative worldview (Westbrook & Saperstein, 2015). A cisnormative worldview is that which expects all individuals to be cissexual; that is, those that are born male will remain male, and those born female will remain female (Bauer et al., 2009). Bittner and Goodyear-Grant (2017) suggests that current measurement is crude and excludes nuance and that even in situations where gender identity matches biological sex, differences exist in attitudes not matched with a binary measurement.

Gender findings in the literature may also be the result of a second effect– a household shopper influences the nature of goods purchased (Yim et al., 2014). Within New Zealand share of time spent household shopping is typically biased towards females, with males spending on average fewer minutes daily on household shopping activities (Statista Research Department, 2016). The trend of females spending more time, on household shopping exists across OECD countries, China, and South Africa (Statista Research Department, 2016). Shopping is also seen as a traditionally female role (Roy Dholakia, 1999), again with data reported in a binary fashion. Although more recent literature suggests

a shift in behaviour towards shared responsibility within the household, females remain more likely to report being the primary household shopper (Flagg et al., 2014).

With prior studies treating gender as a binary construct, there is a scarcity of nonbinary data available. The lack of available data for comparison limits the ability of researchers not directly examining gender, to move the conversation on gender nuance forward meaningfully. The last fully available New Zealand Census (Statistics New Zealand, 2013b) collects gender as a binary option creating limited points of comparison within a New Zealand context.

#### 2.5.3 Parenthood

Parenthood is a demographic factor impacting on pro-environmental behaviours (e.g., Costa Pinto et al., 2011; McCright, 2010), with parents having a vested interest in positive environmental outcomes for their children. Two mechanisms make parents a valuable group within environmental research; the first, vested interest in their child's future; the second, the habit discontinuity created by children.

Concerns about adverse future environmental outcomes for their children positively impacts on the environmental attitudes of parents (Thomas et al., 2018). Several names exist for future-focussed concern by parents: The Parenthood Status Hypothesis (e.g., Blocker & Eckberg, 1997), the Parental Roles Hypothesis (e.g., Davidson & Freudenburg, 1996), and the Legacy Hypothesis (e.g., Thomas et al., 2018). Hypotheses relating to parenthood put forth the assumption that mothers will take a nurturing role focussing on the long-term health and safety of the family and thus, environmental outcomes (Thomas et al., 2018). Conversely, the father will take on a provider role, and become more focussed on material well-being and thus less concerned with environmental outcomes (Thomas et al., 2018). Support for the parental effect on environmental attitudes is mixed. With suggestions made that factors other

than a desire to be sustainable are driving a female parent's move towards environmentally friendly products, e.g., reduced chemical exposure for their child (Schäfer et al., 2012). The second key mechanism leading to an interest in parents and sustainable consumption is the habit discontinuity and subsequent opportunity to form new habits occurring at the time of childbirth (e.g., Schäfer et al., 2012; Thomas et al., 2018; Verplanken & Roy, 2016). Debate exists regarding the effect that significant lifestyle disruptions have on environmental behaviour (Schäfer et al., 2012).

## 2.6 Chapter summary

A review of extant literature highlights a disparity between people's attitudes towards sustainable goods, and their behaviours. Environmental concerns are increasing, and awareness around the adverse effects of consumption is increasing (Prothero et al., 2011), with consumers increasingly identifying sustainability as a desirable action (Olsen et al., 2014). However, few consumers behave in a manner they would describe as sustainable (United Nations Environment Program, 2005). The difference between this positive attitude and the behaviour of sustainable consumption has not gone unnoticed with wide-ranging attempts to explore it (e.g., Böhm & Pfister, 2005; Gupta & Sen, 2013; Pervin, 1967; Stern et al., 1977). What is clear from the extant sustainability literature is that positive environmental outcomes require a long-term focus, with a societal-level shift of attitudes and behaviours. This represents a social dilemma, where an optimal outcome requires co-operation over a long period of time. If consumers do not co-operate then an adverse environmental outcome becomes more likely similarly, without a long-term outlook positive behaviour will not continue long enough to create a positive outcome. The fact the outcome is not known and is dependent on the interaction of many other factors leaves consumers working towards an abstract and uncertain future. Therefore, this study examined literature relating to image

congruence, self-construal, and temporal orientation, temporal discounting, and temporal framing.

Consumers behave in a manner congruent with their own self-concept positively influencing purchase intention (e.g., Grubb & Grathwohl, 1967; Hosany & Martin, 2012; Onkvisit & Shaw, 1987). An individual's self-concept develops through a continual learning process (Onkvisit & Shaw, 1987) evolving with new information and taking on individual meaning in differing contexts. However, what is not clear in the broader extant literature is the effect of image congruence in a dilemma situation whereby consumer's need to cooperate in the long-term.

Self-construal: an individual's orientation towards themselves or others enhances influences purchase intention (e.g., Higgins, 1997; Markus & Kitayama, 1991). Individuals with an independent self-construal prioritise their self-interest, while interdependent individuals prioritise the interests of their group (Markus & Kitayama, 1991). Those with an interdependent self-construal also seek safe and secure outcomes from their purchasing (Higgins, 1997). As such, interdependent individuals should seek out goods that have positive outcomes for the groups they are a part of, and that has the least downsides for others (Higgins, 1997). Interdependence also results in increased co-operation with others in response to social dilemmas (Utz, 2004). Independent self-construal leads to individuals seeking to maximise their own outcomes for purchasing (Markus & Kitayama, 1991) prioritising their benefit regardless of impacts on others. Sustainable goods present a trade-off to purchasers where their consumption benefits society but incurs a personal cost (Kaufman, 2014; Tanner & Wölfing Kast, 2003). However, the literature on co-operation and selfconstrual does not clearly place individual self-construal in the context of long-term outcomes.

Temporal orientation describes the extent to which individuals consider the future consequences of their actions, and the extent to which this impacts their present behaviour (e.g., Kees et al., 2010). The distant nature of environmental problems requires an understanding of how individuals consider time and the consequences of today's actions, far into the future. With consumers inclined to discount future rewards, present-oriented consumers prefer a small reward today over a larger reward in the future (Joshi & Fast, 2013). Consumers are also more inclined to discount hypothetical future events rather than certain ones (Peters & Büchel, 2010); therefore, environmental issues may be heavily discounted due to the abstract and uncertain nature of environmental outcomes. Extant temporal orientation literature is missing a strong bridge between temporal orientation and self-construal in the context of social dilemmas.

Temporal discounting is the degree to which a future event is discounted relative to a present value (Joshi & Fast, 2013). Individuals with a high temporal discount rate are more likely to see a future reward or loss, as equal to the present value and thus choose to prioritise the present value (Joshi & Fast, 2013). Conversely, those with a low temporal discount rate see a higher value in the future event and thus are more likely to delay their gratification (Joshi & Fast, 2013). Hardisty (2013) found that discount rates differ between gains and losses. With environmental outcomes being distant and abstract consumers are more likely to discount the value of the outcome relative to the present day. A large part of the uncertainty of future outcomes is a result of the need for society to both co-operate, but also maintain co-operation over a long-term and with a long-term outcome. Extant temporal discounting literature does not clearly address the effects of discounting future outcomes on social co-operation towards social dilemmas.

Temporal framing is the use of time as a context to a message (Nan et al., 2014). Nan (2014) found that individuals with a present temporal orientation are more persuaded by

short-term framing of a message. Conversely, long-term framing of a message more effectively persuades those with a future temporal orientation (Nan et al., 2014). The temporal context of a reward or loss further impact the effectiveness of messaging with future-oriented individuals preferring future rewards and immediate costs, and present-oriented individuals preferring future losses and immediate gains (Orbell et al., 2004).

Demographic factors have been demonstrated to influence the purchase of sustainable goods with age, gender, and parenthood frequently highlighted (e.g., Costa Pinto et al., 2011; McCright, 2010). Debate exists on the impact of age, with both younger (e.g., McCright, 2010) and older (e.g., Costa Pinto et al., 2011) age groups inclined to purchase sustainably. The question of age is further confused by the influence of parenthood (an inexact proxy for age) being influential in sustainable goods purchasing (Thomas et al., 2018). Gender is also influential, with females more predisposed to sustainable goods than males(e.g., Arnocky et al., 2014). The impact of gender is also apparent in parents, with mothers being more inclined towards sustainable purchasing than males (Thomas et al., 2018).

#### **Chapter 3 – Conceptual Development**

### 3.1 Introduction

Chapter 2 reviewed and summarised extant literature on sustainable goods, image congruence, self-construal, temporal orientation, temporal discounting, temporal framing, purchase intention, and demographic effects. Image congruence to a product or store has been consistently demonstrated as a factor in explaining purchase intention. Within the sustainability literature it forms an important cornerstone of the proposed comprehensive model of purchase intention. Sustainable goods require social co-operation and consideration of the long-term for consumers to overcome perceived trade-offs in cost and functionality. The extant literature was viewed with a social dilemma lens, suggesting that an individual's self-construal and temporal orientation are important factors in dealing with long-term, abstract problems. With the abstract and uncertain nature of future environmental outcomes, participants propensity to discount those temporal discounting is an important component of the proposed model. To investigate real world implications for these constructs, temporal framing has identified as able to be primed, to better understand if this can impact sustainable goods purchase intention in practice. The effects of demographics are also investigated to better understand the purchase intention of different groups of consumers.

Chapter 3 restates the research questions of this study, proposes a comprehensive model of sustainable goods purchase intention and outlines hypotheses to answer the research questions.

# 3.2 Research Questions

Four research questions are investigated to contribute to consumer behaviour literature on sustainable goods. This research seeks to understand better the trade-off consumers make when purchasing sustainable goods, to understand better the intention behaviour difference apparent in sustainable goods purchasing. The four research questions are:

- 1. Does image congruence, self-construal, temporal orientation, and temporal discounting impact consumer purchase intention of sustainable goods?
- 2. Does the presence of temporal framing impact consumer purchase intention of sustainable goods?
- 3. What demographic characteristics impact on purchase intention towards sustainable goods?
- 4. Do different consumers see lengths of time differently?

This research furthers an understanding of the environmental purchase intention literature by examining how image congruence, self-construal and temporal orientation inform an understanding of how consumers respond to sustainable goods trade-offs.

## 3.3 Conceptual model and Hypotheses

This research posits a trade-off that consumers make when purchasing sustainable goods, and so discusses constructs involved in decision making with a focus towards absorbing a direct personal cost with a future societal payoff. The conceptual model includes four key elements of the self: image congruence, interdependent self-construal, independent self-construal, and temporal orientation. The model depicts the expected relationship between image congruence, interdependent self-construal, independent self-construal, and temporal orientation on purchase intention. The model also considers the moderation effect temporal discounting is expected to have on the proposed relationships with purchase intention. Temporal framing is expected to enhance purchase intention; where the temporal frame of a message and the temporal orientation of a participant is matched, higher purchase intention will result. Age, gender, and parenthood are influential and used to group and compare the model.



Figure 1: Conceptual model illustrating the hypotheses proposed in this study.

### 3.3.1 Image Congruence and Purchase Intention

Image congruence is an established predictor of purchase intention (e.g., Blackwell et al., 2006; Hosany & Martin, 2012; Pervin, 1967; Sirgy et al., 2000; Stern et al., 1977). Image congruence to 'green' products positively impacts the purchase intention of 'green' products (e.g., Griskevicius et al., 2010; Oliver & Lee, 2010). As an established construct with a generally well understood impact on purchase intention, image congruence is an important component of the proposed conceptual model, this study seeks to create a comprehensive model of purchase intention towards sustainable goods, considering key aspects of the self. Environmental issues are society wide, with long-term behaviour change needed, incorporating the effects of individual self-image as part of this further advance the discussion on sustainable goods purchase intention.

An individual with image congruence with sustainable consumption, they will be more inclined to accept any trade-offs associated with the consumption of a sustainable good to support their self-concept. That is, the costs and lack of clear benefits to their immediate selves will be of lower importance than staying true to their self-image. Because such individuals with an image congruence towards sustainability and pro-environmental behaviours are more likely to have purchase intention towards sustainable goods, Hypothesis 1 states:

H1: Consumers with greater image congruence towards sustainable consumption exhibit higher purchase intention towards sustainable goods.

#### 3.3.2 Self-construal and Purchase Intention

Individuals with an interdependent self-construal act in line with the goals and expectations of those around them (Markus & Kitayama, 1991; Ybarra & Trafimow, 1998). As the consumption of sustainable products is becoming increasingly important to Western society (Abeliotis et al., 2010; Olsen et al., 2014; Prothero et al., 2010), interdependent selfconstrual will lead individuals to act in line with these expectations. Interdependent individuals co-operate more when faced with a social dilemma (Utz, 2004). Therefore, by acting according to societal expectations, they are more likely to have purchase intention towards sustainable goods. Acting in a more co-operative manner with society would involve maximising the long-term societal benefit of a purchase, leading to an increase in the purchase intention towards sustainable goods. Interdependent individuals seek to maximise the safety and security of the consumption of goods purchased (Joshi & Rahman, 2015; Zhang & Mittal, 2007). Purchasing sustainable goods represents a co-operative action where
the benefits of the consumption (versus non-sustainable consumption) benefit broader society. Furthermore, sustainable goods have less environmental harm, and thus longer-term positive environmental outcomes. As such consuming sustainable goods is a co-operative action promoting long-term safety and security with interdependent individuals likely to have increased purchase intention towards sustainable goods. Hypothesis 2a states:

H2a: Consumers with higher interdependent self-construal exhibit higher purchase intention towards sustainable goods.

Individuals with an independent self-construal seek to maximise the utility and outcomes of their consumption (Markus & Kitayama, 1991; Ybarra & Trafimow, 1998). Therefore, the perceived trade-off associated with sustainable goods (Kaufman, 2014; Tanner & Wölfing Kast, 2003) does not maximise the consumption outcomes for independent individuals, thus reducing purchase intention. Furthermore, independent individuals are less likely to co-operate towards a social goal (Utz, 2004) and more likely to compete for resources (Arnocky et al., 2007). With an increase in competition for resources, and a decrease in social co-operation, independent individuals may consume sustainable goods if this is in line with their personal goals; however, they are more likely to not purchase sustainable goods. Lower social co-operation will reduce the need to consume sustainable goods for social benefit. The increased tendency for competition will lead to maximising outcomes and a reduced likelihood to accept potential negative attributes of sustainable goods. Therefore, as independent self-construal increases, purchase intention towards sustainable goods is expected to decrease. Thus, Hypothesis 2b states:

H2b: Consumers with higher independent self-construal exhibit lower purchase intention towards sustainable goods.

#### 3.3.3 Temporal Orientation and purchase Intention

Sustainable goods are those with lower environmental impacts including, biodegradable, recycled, low energy use, and products with reduced packaging (e.g., Costa Pinto et al., 2014; Muster, 2012). These goods have been categorised as functionally inferior or perceived as having lower value (Griskevicius et al., 2007; Gupta & Sen, 2013; Kaufman, 2014; Tanner & Wölfing Kast, 2003). Choosing a sustainable product requires accepting a long-term future benefit in exchange for short-term costs.

Therefore to accept a trade-off with a future benefit and immediate cost, consumers are demonstrating a greater consideration of future consequences. Therefore, consumers with higher temporal orientation, are more willing to act with a future outcome in mind, increasing their likelihood of accepting the trade-off associated with sustainable goods. Thus consumers with higher temporal orientation will exhibit an increased purchase intention towards sustainable goods. Therefore, Hypothesis 3 states:

H3: Consumers with a future temporal orientation will exhibit higher purchase intention towards sustainable goods.

### 3.3.4 Temporal Discounting

Temporal discounting results in a preference for short-term rewards because consumers adjust the value of the future reward down (discounting it) in comparison to present-day value (Joshi & Fast, 2013). Consumers must consider whether to pay a cost now, with a future reward; or save money with the immediate reward of this. Thus, consumers are unconsciously choosing between immediate and delayed rewards, with the delayed reward, being the avoidance of a loss (i.e. of habitat, avoidance of sea-level rise, or avoidance of pollution) (Kaufman, 2014; Tanner & Wölfing Kast, 2003). Temporal discount rates also differ between losses and gains (e.g., Hardisty et al., 2013).

Image congruence predicts purchase behaviour as individuals seek to act in a manner congruent with their own self-image (e.g., Abel et al., 2013; Hosany & Martin, 2012; Oliver & Lee, 2010). To consume sustainable goods in-line with their self-concept individuals must be willing to accept a short-term cost with a long-term reward (avoidance of a loss). Therefore, an image congruent consumer exhibiting a high rate of temporal discounting toward a future gain would view the gain with a reduced discount rate, thus being less inclined to make the purchase necessary to avoid it. Thus, temporal discounting moderates the relationship between image congruence and purchase intention. As such, Hypothesis 4a states:

H4a: Temporal discounting will moderate the relationship between image congruence and purchase intention towards a sustainable good.

Interdependent individuals act in a more co-operative manner in a social dilemma decision such as the purchase of sustainable goods (Utz, 2004). Co-operation with the aims and goals of their surrounding group also characterises interdependent individuals (Ybarra & Trafimow, 1998). Therefore, interdependent individuals are more likely to purchase sustainable goods to benefit the group around them. Interdependent individuals also seek to maximise the safety and security of purchases. However, where an interdependent individual also has a high rate of discounting, they will place a lower value on future losses and thus be less likely to act to bring it to fruition. As such, Hypothesis 4b:

H4b: Temporal discounting will moderate the relationship between interdependent self-construal and purchase intention towards a sustainable good.

Independent individuals are more likely to act to enhance their lives and are less likely to follow the expectations of society (Markus & Kitayama, 1991; Ybarra & Trafimow, 1998). They also seek to maximise their own outcomes and would be less likely to accept a trade-off

that threatened that outcome. However, where an independent individual has a reduced level of temporal discounting, they will place a higher value on the future and will discount it less relative to the value of today's making it the best form of value maximisation. Therefore, a lower rate of temporal discounting would moderate the relationship between independent self-construal and temporal discounting. As such, Hypothesis 4c states:

H4c: Temporal discounting will moderate the relationship between independent self-construal and purchase intention towards a sustainable good.

Temporal orientation and temporal discounting are linked, with a future temporal orientation generally associated with a low rate of temporal discounting. Thus, consumers with high consideration of future consequences are likely to discount future losses less relative to today's value, making the trade-off for sustainable goods more desirable. However, where a consumer has an increased temporal discount rate and a future temporal orientation rate, there is likely to be a preference for the immediate decision and thus reduced likelihood of purchase intention for sustainable goods. As such, Hypothesis 4d states:

H4d: Temporal discounting will moderate the relationship between temporal orientation and purchase intention towards a sustainable good.

# 3.3.5 Demographic Influences

Age is a debated influence on purchase intention towards sustainable goods in the literature with suggestions made in favour of both older and younger age groups (e.g., Costa Pinto et al., 2011; Ekholm & Olofsson, 2017; McCright, 2010; McCright et al., 2013; Sundblad et al., 2007). McCright, (2010) presents a convincing argument suggesting that increased education and awareness in younger age groups will positively impact sustainable goods purchase intention. Therefore, Hypothesis 5a states:

H5a: Younger participants will have a higher purchase intention than older participants towards sustainable goods.

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Gender influences sustainable goods purchase intention (e.g., Arnocky et al., 2014; Blocker & Eckberg, 1997; Luchs et al., 2011; McCright, 2010; Yates et al., 2015), with differing mechanisms proposed. Females are more environmentally conscious than males with non-public actions (Yates et al., 2015). A non-public action suggests a more altruistic and less status-driven behaviour with the purchase of most sustainable goods being somewhat private apart from briefly at the point of purchase. Societal gender expectations also suggest a greater purchase intention by females, with females, considered nurturers and thus more inclined to have a long-term focus on the safest and most secure outcome (Thomas et al., 2018). As such, Hypothesis 5b states:

H5b: Female participants will have a higher purchase intention than male participants toward sustainable goods.

Parenthood influences pro-environmental behaviours (e.g., Costa Pinto et al., 2011; McCright, 2010). Parents have a vested interest in long-term environmental outcomes for the benefit of their children. Sustainable behaviours in parents may be the result of perceived health benefits rather than an inclination for sustainable goods; for example, a desire to reduce chemical exposure around children (Schäfer et al., 2012). However, mothers are expected to take a nurturing role with a long-term focus on health and safety; while a father is more likely to focus on material wellbeing at the potential expense of the environment (Thomas et al., 2018). Despite debate about the mechanism, strong support exists for parenthood being influential on sustainable goods purchase intention. Therefore Hypothesis 5c states:

H5c: Parents will have a higher purchase intention than non-parents towards sustainable goods.

#### 3.3.6 Temporal Framing of Messages

Temporal framing uses time as a context in which to frame a message. Short-term framing persuades present-oriented individuals effectively, while long-term framing persuades future-oriented individuals (Nan et al., 2014). Orbell (2004) found that in future-oriented consumers viewing positive outcomes as lasting into the future and positive outcomes as immediate had higher persuasive value. Conversely, consumers with a present orientation when presented with immediate positive outcomes and future adverse outcomes were more persuaded.

Sustainable goods present a trade-off, where a long-term reward may be gained, in exchange for an immediate cost (Kaufman, 2014; Tanner & Wölfing Kast, 2003). Therefore sustainable consumption must require consideration of longer-term consequences to make the immediate trade-off acceptable. Thus, priming the temporal frame of an individual leading to more consideration of the future, or the present would influence purchase intention. That is, a future temporal frame would make the longer-term time frame more salient, increasing purchase intention of sustainable goods. Conversely, a present temporal frame would increase the salience of a short-term time frame, decreasing purchase intention of sustainable goods. Therefore, H6a states:

H6a: Participants primed with a future-focussed message will have higher purchase intention towards sustainable goods than those primed with a present-focussed message.

Orbell (2004) found that individuals were more persuaded when a match existed between temporal framing and temporal orientation. Therefore, where a match between the someone with a future orientation and a future-focussed message, or a present orientation and a present-focussed message occurs, purchase intention towards sustainable goods is expected to increase. Conversely, a mismatch of the temporal frame and temporal orientation (e.g., present-focussed message with future orientation, or future-focussed message with present orientation) will decrease purchase intention. Consumers with a present orientation will view this as increased cost and disregard future-oriented benefits. Conversely, a present temporal frame presented to future-orientated consumers will heighten their perception of costs and lower their expectations of benefits. As such, in individuals with a mismatch, purchase intention towards sustainable goods will be decreased. Therefore, Hypothesis H6b states that:

H6b: Participants with a match between their temporal orientation, and a message prime will have a higher purchase intention towards sustainable goods than those with a mismatch.

#### **3.4** Chapter summary

Chapter 3 outlined presented a comprehensive model of sustainable purchase intention with thirteen hypotheses proposed to test the model and address the four research questions this study seeks to answer. Sustainable goods are perceived as having a trade-off attached to their purchase, have a distant and uncertain reward, and the positive environmental outcomes sought require social co-operation on a large scale. Therefore, purchase intention towards sustainable goods must be the result of a complex and multifaceted set of factors inherent in a consumer.

To contribute to extant literature around this complex and multifaceted purchasing process, the proposed model brings together image congruence, interdependent self-construal, independent self-construal, temporal orientation, temporal discounting, to help explain purchase intention towards sustainable goods. Temporal framing, age, gender, and parenthood are proposed to influence the conceptual model.

Chapter 4 follows this chapter and operationalises the proposed conceptual model. The research philosophy underpinning this research is discussed, data collection methods outlined, the sample frame detailed, and the steps taken in the development of the final survey instrument.

#### **Chapter 4 – Methodology**

### 4.1 Introduction

Chapter 4 details the operationalisation of the conceptual model, with the researcher taking a post-positivist approach to the research. This research builds on previous studies looking at image congruence, self-construal, temporal orientation, temporal discounting, and purchase intention. Prior studies have utilised quantitative methods, including surveys and experiments (e.g., Arnocky et al., 2007; Böhm & Pfister, 2005; D'Amico & Scrima, 2016; Hosany & Martin, 2012; Joireman et al., 2003; Levine, Bresnahan, Park, Lapinski, Wittenbaum, et al., 2003) with this study applying similar techniques. This chapter describes the choice of research paradigm, details the development and evolution of the survey instrument, and identifies the sample population.

#### 4.2 Research Philosophy

This study examines the effects of image congruence; self-construal; temporal orientation; temporal discounting; and temporal framing, on purchase intention towards sustainable goods. The understanding of self-construal, temporal orientation, temporal discounting, and purchase intention are that these traits are measurable and the relationships testable. Due to the measurable and testable nature of the constructs, a post-positivist worldview has been adopted (Creswell, 2009). This research tests the current understanding of how areas of literature interact and as such, uses a quantitative methodology (Creswell, 2009).

Creswell (2009) details five critical assumptions that researchers with a postpositivist make:

- absolute truth is unattainable; therefore, a hypothesis is never provable, but a failure to reject may occur,
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- a theory is being tested and as such claims may be made and refined, or abandoned and replaced with other, more substantial claims,
- that "data, evidence, and rational considerations shape knowledge" (Creswell, 2009, p. 7), therefore data may be collected using measures completed by respondents,
- that research seeks to develop relevant, true statements; these statements use the relationship among variables to help describe a relationship of interest,
- that the researcher must remain objective to conduct a competent inquiry and conduct an examination into research methods and conclusions looking for bias (Creswell, 2009).

# 4.3 Data collection

This research used an online survey distributed by Qualtrics to five New Zealand based research panels to collect data. Participants were sent a link to an anonymous survey. Participants responded to a series of survey items, manipulation scenarios, and demographic items. IBM SPSS V26 (IBM Corp., 2017) and IBM SPSS V25 AMOS (Arbuckle, 2017) software was used to analyse the survey data. Details of the type of scale items and manipulation scenarios used are in Section 4.6 – Survey Instrument.

# 4.4 Sample frame

Environmental research impacts the entire population with different groups having different attitudes. The sample sought was representative of the New Zealand population to understand the potentially differing viewpoints offered by age, gender, and socio-economic status. This research primarily addresses individual decision making and motivations; therefore, individual characteristics are emphasised in sample selection. The characteristics emphasised in sample selection have been demonstrated as impactful in extant literature. Age (e.g., Ekholm & Olofsson, 2017; McCright et al., 2013; Sundblad et al., 2007), gender (e.g., Arnocky et al., 2014; Blocker & Eckberg, 1997; Costa Pinto et al., 2014), personal income

(e.g., Graham, 1981; Wood, 1998), and educational level (e.g., Chan, 1996; Fisher et al., 2012) are the representative characteristics sought.

#### 4.4.1 Sample selection

A sample representative of the New Zealand population was sought from the Qualtrics. Qualtrics administered the sampling of the participants using five of their New Zealand based research panels. Under 18s were excluded from this sample due to reduced purchasing power, with over 18s having greater purchasing power, and autonomy over purchases.

# 4.4.2 Qualtrics Panel Aggregation

Qualtrics was selected for data collection as they offer aggregation of New Zealand research panels. When responses are requested, Qualtrics works with several panels in the localities sampled. For this research, Qualtrics sourced responses from five New Zealand research panels. Qualtrics was remunerated at a rate between \$7 and \$7.75 per completed response, covering payment to the participant (not disclosed) and sampling project management. Qualtrics pays each panel member equally, and participants are remunerated using the panel's preferred payment scheme, for example.

To ensure participants only respond once, Qualtrics uses IP addresses and panel identifiers. To ensure anonymity, panel identifiers were not supplied to the researcher. To ensure a consistent and accurate response from participants, participant responses are compared to their panel profile and previous surveys. Participants reporting large fluctuations between surveys are removed, for example, responding with large differences in age or income levels.

Other research providers were considered as was sampling initiated by the researcher. Attaining a representative sample was assured through a panel provider, with additional

mechanisms in place to validate accurate responses. The potential for professional survey takers completing the survey without due care was weighed against the possibility of a nonrepresentative sample, and self-selected respondents completing the survey without due care.

Qualtrics was contracted to provide responses representative of the New Zealand population, to suit the sample frame of this research. These respondents were selected across five research panels using stratified random sampling to create minimise to lessen the risk of systemic biases from a single panel, or non-random sampling technique. A degree of selfselection bias is evident however as respondents are free to participate, or not, based on a high-level description of the study.

#### 4.5 Testing and Development of the Survey Instrument

A pilot-test and two pre-tests were conducted to test and develop the final survey instrument detailed in Section 4.6, and refine the procedure, detailed in Section 4.7. The purpose of each test was to ensure participants could clearly understand the survey instrument and procedure, and to maximise the useable response rate of participants.

# 4.5.1 Pilot-test

A pilot test was distributed to friends, family, and colleagues with a request to pass along to friends with n = 83 responses received. The pilot-test distribution was used to test the face validity of the questions and collect feedback on the survey layout and comprehension. An opportunity to offer feedback was available at the end of the survey, and participants were encouraged to email the researcher with any additional feedback and comments. Informal discussions were held with participants to understand areas of confusion, unclear wording, or unnecessary difficulty.

Participants gave positive feedback on the readability of the questions. Comments were raised around the purpose and point of the temporal discounting choice activity, but

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most responses answered these questions in an appropriate manner where temporal discount rates could be calculated.

An attention check was added after the pilot test to ensure that participants understood and acknowledged the definition of sustainable products used in the research. This attention check consisted of multiple checkboxes where a participant would indicate all the characteristics they attributed to sustainable goods, after reading the research description. Two incorrect answers were included so that participants who did not correctly read or understand the description could be removed from the survey.

Based on feedback received from participants, the 30-item self-construal scale was split into six, 5-item groups to improve clarity and ensure readability and legibility across different screen sizes and devices. The 14-item temporal orientation scale was also split into two groups of 5- items and one group of 4- items.

#### 4.5.1.1 Pilot-Test Sample

A snowball sampling approach was used, with initial recruitment done through friends, family, and colleagues. As this research was done within the academic environment, and with friends and family working within government and business roles, the pilot sample was well educated and higher earning. The skewed sample may explain the generally high level of comprehension within the pilot test that was not repeated in the following pre-test.

#### 4.5.2 Pre-testing

Two stages of pre-testing were performed through the Qualtrics panel aggregation. Pre-Test 2 was commissioned in response to the poor acceptance rate of responses in Pre-Test 1. Pre-Test 2 incorporated several improvements designed to improve the general comprehension of the survey and remove confusion where possible.

#### 4.5.2.1 Pre-Test Deletion Criteria

Pre-Test 1 and Pre-Test 2 followed the same criteria for deletion of responses. These criteria were also used for the final data set, and the process for deletion is detailed further in Section 5.7. Results were deleted from the second pre-test dataset for several reasons:

- begun the survey, but submitted no information (Zero response);
- under 18 and ineligible for participation (age screening);
- begun the survey but not completed the survey (non-complete);
- failed an attention check (attention screening);
- incomplete or inadequate question response, including incalculable temporal discounting responses (incomplete).

# 4.5.2.2 Pre-Test One

Following the initial pilot-test, Pre-Test 1 was distributed using Qualtrics with a goal of 200 complete responses. Pre-Test 1 incorporated feedback from the Pilot Test, adding an attention check, and splitting the longer scales into groups of five items. The Pilot Test allowed for informal discussion with participants as these were often known to the researcher. These discussions highlighted readability and comprehension concerns in the questions. Changes were made to these, but further discussion with participants was not available with the research panel, a text feedback box was included for participants to offer their thoughts in. Contact was continued with some of the participants included in the Pilot Test and informal discussion was continued to understand if the changes they felt necessary had been included in Pre-Test 1.

Pre-Test 1 collected n = 453 responses with useable responses of n = 117. The percentage of useable responses was low at 25.8%, with 74.2% of responses, removed for not meeting the criteria outlined in Section 4.5.2.1. The summary of Pre-Test 1 deletions can be

seen in Table 4.6.1. The response to the survey was substantially different from the pilot test, possibly explained by a broader sampling with less emphasis on educated professionals.

Table 4.6.1		
Pre-Test 1 Deletions		
Reason	n	<i>n</i> deleted
Collected	453	
Zero Response	442	11
Age	363	79
Non-complete	204	159
Attention Check	166	38
Incomplete Response	117	49
Final	117	
Deletions	336	
% Rejected	74.2%	
% Accepted	25.8%	

*Note:* Table shows the number and reason for deletions in the first pre-test.

# 4.5.2.3 Pre-Test One Scale refinements

The non-completion rate in Pre-Test 1 suggested that participants may be not engaging with the survey or were having trouble comprehending the questions asked. While the survey was well received with an educated audience in the Pilot-Test, the results of the Pre-Test 1 made it clear that this degree of comprehension was not attainable with a more general population sample.

The critical areas of improvement were in overall comprehensibility of instructions, and complexity of activity choices.

All instructions were re-examined with additional bolding of text where necessary. The instructions and scenarios had been written to be read by an audience younger than those sampled. All instructions and scenarios had been tested using online reading comprehensions tools to be understandable with a twelve-year-old reading age (Readability Formulas, n.d.). Without substantially changing the survey, this was unable to be lowered. Instead, bold text and altered spacing of instructions were used to improve clarity. Concerns were raised about the 10-pair temporal discounting activities, with participants preferring a simpler approach. Three-pairs were removed from the activity, leaving seven-pairs. The text entry for participants to indicate their switching point was replaced with a more intuitive to use slider format.

# 4.5.2.4 Pre-Test Two

In response to the low response rate found in Pre-Test 1, Pre-Test 2 was conducted to test the comprehension of the survey instrument. The second pre-test incorporated the changes made in the earlier pre-test and pilot test. Changes made from the first to the second pre-test include the reduction of choices asked of participants, from ten-pairs per temporal discounting activity, to seven-pairs. The temporal discounting activities also replaced the text entry box with a slider on temporal discount activities. Instructions were also carefully re-read and additional spacing and bolding of text added to clarify instructions.

Pre-Test 2 collected n = 258, with useable responses of n = 131. Pre-Test 2 had a useable response rate of 50.8%, a noticeable improvement from 25.8% useable responses in Pre-Test 1. The number and reason for deletions are listed in Table 4.6.2.

Table 4.6.2

Pre-Test 2 Deletions		
Reason	n	<i>n</i> deleted
Collected	258	
Zero Response	256	2
Age	241	15
Non-complete	210	31
Attention Check	179	31
Incomplete Response	131	48
Final	131	
Deletions	127	
% Rejected	49.2%	
% Accepted	50.8%	

*Note:* Table shows the number and reason for deletions in the second pre-test.

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The focus of Pre-Test 2 was on improving the useable response rate from Pre-Test 1, additional data analysis to test the model was not performed at this stage. Pre-Test 2 was not initially included in the response collection contract with Qualtrics, but was completed due to the quality of responses received in Pre-Test 1. Therefore, completing another round of pre-testing before distribution of the final survey would not have been feasible. As such, Pre-Test 2 was used as the basis for the final survey instrument and further changes were not made.

#### 4.6 Survey Instrument

#### 4.6.1 Definition of Survey Constructs and Measurement Items

This study applies construct definitions taken from extant literature. Measures for image congruence, interdependent and independent self-construal, temporal orientation, and purchase intention were adapted from existing scales.

# 4.6.1.1 Image Congruence

Image congruence is defined as the degree to which individuals purchase goods based on their sense of self (e.g., Grubb & Grathwohl, 1967; Onkvisit & Shaw, 1987). With their sense of self (their self-concept) made up of the thoughts, feelings, and perceptions of their abilities, limitations, appearance, personality, and other characteristics (Graeff, 1996; Malhotra, 1988). This study adapted the established and validated six-item scale used by Escalas and Bettman (2003). A seventh item added by Escalas and Bettman (2005) was not used due to concerns about respondent comprehension. The image congruence scale was measured as a continuous variable with a seven-point Likert-type scale from 'Strongly Disagree' to 'Strongly Agree'. Therefore, a response of one would suggest that an individual has little to no image congruence with sustainable goods, while a response of seven would indicate a lot of image congruence with sustainable goods. Table 4.1.1 details the items used to measure image congruence, and the adaptations made to each item.

#### Table 4.1.1

Q	Item Wording	Adaptations
1	Sustainable products reflect who I am.	Replaced 'this brand', with 'sustainable products'.
2	I feel a personal connection to sustainable products.	Replaced 'this brand', with 'sustainable products'.
3	I use sustainable products to communicate who I am to other people.	Replaced 'this brand', with 'sustainable products'.
4	I think sustainable products help me become the type of person I want to be.	Replaced 'this brand', with 'sustainable products'.
5	I consider sustainable products to be "me" (it reflects who I consider myself to be or the way that I want to present myself to others).	Replaced 'this brand', with 'sustainable products'.
6	Sustainable products suit me well.	Replaced 'this brand', with 'sustainable products'.
	I can identify with this brand.	Not included in the study due to potential issues with comprehension.

Image Congruence Items

*Note:* Table shows a list of items and item adaptations, used to measure image congruence.

Presented with the image congruence scale were three questions measuring

respondent behaviour. See Table 4.1.2 for a list of items presented with the image congruence

scale and measuring current purchasing behaviour.

#### Table 4.1.2

Current Behaviour Items (Image Congruence) Items

Q	Item Wording	Modifications
7	I currently buy sustainable products.	Replaced 'this brand', with 'sustainable products'
0	Lastivaly seensh for systemship and yets in order to	Products. Depleced this brand, with sustainable
8	buy them.	products'.
9	I purchase more than one type of sustainable product.	Replaced 'this brand', with 'sustainable products'.

*Note:* Table shows a list of items and item modifications, used to measure current behaviour.

#### 4.6.1.2 Interdependent and Independent Self-Construal

Self-construal is the extent to which an individual sees themselves as either connected

to others (interdependent) or separate to others (independent) (Markus & Kitayama, 1991).

With interdependent individuals defining themselves based on relationships with those

around them, and independent individuals having a greater focus on their unique attributes

(Markus & Kitayama, 1991).

This study adapted the commonly used 30-item Singelis et al., (1999) scale. This scale contains two 15-item sub-scales, measuring interdependent self-construal, and independent self-construal. Singelis et al., (1999) tested this scale in countries with high power-distance, and with student samples. Therefore, items reference a professor or school. This study does not use a student sample, as such references professor or school were placed in brackets, with boss or work added. Not all participants were expected to have siblings, so an alternative, 'a very close friend' was added.

Participants responded to thirty items on a seven-point Likert-type scale ranging from 'Strongly Disagree' to 'Strongly Agree'. Despite being presented together interdependent self-construal and independent self-construal are measured separately as degrees of interdependence or independence. A response of one suggests a low degree of interdependence or independence, and a score of seven suggests a high degree of interdependence or independence. Both interdependence and independence are measured as continuous variables. Table 4.1.3 details the modifications made to the scale, and the items applicable to each variant of the scale.

Table 4.1.3

Q	Sub-Scale	Item Wording	Adaptations
1	Independent	I enjoy being unique and different from others	
-		in many respects.	
2	Independent	I can talk openly with a person who I meet for	
		the first time, even when this person is much	
		older than I am.	
3	Interdependent	Even when I strongly disagree with group	
		members, I avoid an argument.	
4	Interdependent	I have respect for the authority figures with	
	_	whom I interact.	
5	Independent	I do my own thing, regardless of what others	
	*	think.	
6	Interdependent	I respect people who are modest about	
	-	themselves.	
7	Independent	I feel it is important for me to act as an	
	*	independent person.	

Interdependent and Independent Self-Construal Items

8	Interdependent	I will sacrifice my self-interest for the benefit of the group I am in.	
9	Independent	I'd rather say "No" directly, than risk being misunderstood.	
10	Independent	Having a lively imagination is important to me.	
11	Interdependent	I should take into consideration my parents' advice when making education or career plans.	
12	Interdependent	I feel my fate is intertwined with the fate of those around me.	
13	Independent	I prefer to be direct and forthright when dealing with people I've just met.	
14	Interdependent	I feel good when I cooperate with others.	
15	Independent	I am comfortable being singled out for praise or rewards.	
16	Interdependent	If my brother or sister (or very close friend) fails, I feel responsible.	Added (or very close friend).
17	Interdependent	I often have the feeling that my relationships with others are more important than my own accomplishments.	
18	Independent	Speaking up during a meeting (or class) is not a problem for me.	Swapped the position of the word in brackets from (or a meeting) to (or class).
19	Interdependent	I would offer my seat in a bus to my boss (or my professor).	Swapped the position of the word in brackets from (or my boss) to (or my professor).
20	Independent	I act the same way no matter who I am with.	
21	Interdependent	My happiness depends on the happiness of those around me.	
22	Independent	I value being in good health above everything.	
23	Interdependent	I will stay in a group if they need me, even when I am not happy with the group.	
24	Independent	I try to do what is best for me, regardless of how that might affect others.	
25	Independent	Being able to take care of myself is a primary concern for me.	
26	Interdependent	It is important to me to respect decisions made by the group.	
27	Independent	My personal identity, independent of others, is very important to me.	
28	Interdependent	It is important for me to maintain harmony within my group.	
29	Independent	I act the same way at home that I do at work (or school).	Swapped the position of the word in brackets from (at work) to (at school).
30	Interdependent	I usually go along with what others want to do, even when I would rather do something different.	

*Note:* Table shows a list of items and item adaptations, used to measure interdependent and independent self-construal.

#### 4.6.1.3 Temporal Orientation

This research applies the definition used by Holman (1998) and Kees (2010); that temporal orientation is the extent to which people consider the outcomes of their behaviour and the way behaviour is influenced by future outcomes. This research adapted the well supported and validated fourteen item scale of Joireman et al., (2012). This scale contains two sub-scales, measuring future attitudes, and immediate attitudes. Participants responded to both sub-scales together, on a seven-point Likert-type scale from 'Extremely Uncharacteristic of Me' to 'Extremely Characteristic of Me'. Temporal orientation operates as a continuum from a score of one representing present-oriented, to a score of seven representing futureoriented. See Table 4.1.4 for full item wording, and if the item measures future, or immediate attitudes.

# Table 4.1.4Temporal Orientation Items

Q	Sub-Scale	Item Wording
1	Future	I consider how things might be in the future, and try to influence those things with my day to day behaviour.
2	Future	Often I engage in a particular behaviour in order to achieve outcomes that may not result for many years.
3	Immediate	I only act to satisfy immediate concerns, figuring the future will take care of itself.
4	Immediate	My behaviour is only influenced by the immediate (i.e., a matter of days or weeks) outcomes of my actions.
5	Immediate	My convenience is a big factor in the decisions I make or the actions I take.
6	Future	I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes.
7	Future	I think it is important to take warnings about negative outcomes seriously even if the negative outcome will not occur for many years.
8	Future	I think it is more important to perform a behaviour with important distant consequences than a behaviour with less important immediate consequences.
9	Immediate	I generally ignore warnings about possible future problems because I think the problems will be resolved before they reach crisis level.
10	Immediate	I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time.
11	Immediate	I only act to satisfy immediate concerns, figuring that I will take care of future problems that may occur at a later date.
12	Immediate	Since my day to day work has specific outcomes, it is more important to me than behaviour that has distant outcomes.
13	Future	When I make a decision, I think about how it might affect me in the future.

# 14 Future My behaviour is generally influenced by future consequences.

*Note:* Table shows a list of items used to measure temporal orientation.

# 4.6.1.4 Purchase Intention

Purchase intention is defined as the desire of an individual to purchase a product, based on their evaluation of that product (Grewal et al., 1998; Kang et al., 2013; Neumann et al., 2020; Wu & Chen, 2014). This study adapted a three-item loyalty scale from Algesheimer et al., (2005), like the purchase intention scale used by Kang et al. (2013). As this study measures purchase intention towards sustainable goods, a specific good with attributes and value is not described. As such, the three-item scale was adapted by replacing 'this brand' with 'sustainable products'. A fourth item was added measuring intention within the next six months, adapted from an item used by Algesheimer et al., (2005) to measure past behaviour. Participants responded to four items on a seven-point Likert-type scale measuring purchase intention as a continuous variable. Participants responded to statements from 'Strongly Disagree' to 'Strongly Agree'. A score of one would suggest low to no purchase intention towards sustainable goods, a score of seven would suggest high purchase intention towards sustainable goods. See Table 4.1.5 for the item wording and the adaptations made.

#### Table 4.1.5

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Q	Item Wording	Adaptations
1	I intend to buy sustainable products in the near future.	Replaced 'this brand', with 'sustainable products'.
2	I will actively search for sustainable products in order to buy them.	Replaced 'this brand', with 'sustainable products', replaced 'it' with them – "I would actively search for this brand in order to buy it".
3	I intend to buy different types of sustainable products than I do now.	Replaced mention of brand for sustainable goods and altered wording for comprehension – "I would actively search for this brand in order to buy it".
4	I will purchase sustainable products within the next six months.	Added a definite statement of purchase, with a timeframe in response to ambiguity in the first question.

#### Purchase Intention Items

Note: Table shows a list of items and item modifications, used to measure purchase intention.

#### 4.6.2 Temporal Discounting

Temporal discounting is defined an individual's preference for a smaller reward today, rather than a larger reward in the future (Joshi & Fast, 2013), expressed as the mathematical function V = A/(1+kD) (Green et al., 2007; Mazur, 1987). The six temporal discounting activities use the point where a response switches from a value today to a value in the future to calculate the extent to which they discount future rewards or costs, relative to today's value. The score calculated is continuous with a low score indicating a low discount rate to the future reward or cost, and a high score indicating a high discount rate towards the future reward or cost. A low discount rate indicates a high value is placed on the future reward or cost.

To collect data on respondent's temporal discounting rate, six activities were informed by Hardisty (2009). Gain Scenario 1, Gain Scenario 1 Calculation Choices, Loss Scenario 1, and Loss Scenario 1 Calculation Choices were collected baseline data for respondent's temporal discounting. Gain Scenario 2 and Loss Scenario 2 collected data on the effect of a temporal framing manipulation.

The scenarios for Gain Scenario 1, Gain Scenario 1 Calculation Choices, Loss Scenario 1, and Loss Scenario 1 Calculation Choices were adapted Hardisty (2009), with the list of choices given adapted to fit the survey instrument. The scenarios for Gain Scenario 2 and Loss Scenario 2 were informed by Hardisty (2009), but were written to fit the research context.

4.6.2.1 Gain Scenario 1

*Gain Scenario 1 Text:* Imagine you just won a lottery worth \$250, which will be paid to you immediately or in one year. The lottery commission is giving you the option of receiving a different amount if paid in one year.

See Table 4.2.1 for the choices presented to participants, see Table 4.2.2 for the calculation variation of the choices presented.

Table 4.2.1

Left Column	Right Column
Win \$250 Immediately.	Win \$350 one year from now.
Win \$250 Immediately.	Win \$330 one year from now.
Win \$250 Immediately.	Win \$310 one year from now.
Win \$250 Immediately.	Win \$290 one year from now.
Win \$250 Immediately.	Win \$270 one year from now.
Win \$250 Immediately.	Win \$250 one year from now.
Win \$250 Immediately.	Win \$230 one year from now.

Note: Table shows choices shown to participants to determine temporal discounting.

Table 4	4.2.2
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Gain Scenario 1 Calculation Choices
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Left Column	Right Column
Win \$250 Immediately.	Win \$250 plus an additional \$100 one year from now.
Win \$250 Immediately.	Win \$250 plus an additional \$80 one year from now.
Win \$250 Immediately.	Win \$250 plus an additional \$60 one year from now.
Win \$250 Immediately.	Win \$250 plus an additional \$40 one year from now.
Win \$250 Immediately.	Win \$250 plus an additional \$20 one year from now.
Win \$250 Immediately.	Win \$250 one year from now.
Win \$250 Immediately.	Win \$250 minus \$20 one year from now.

Note: Table shows choices shown to participants to determine temporal discounting.

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4.6.2.2 Loss Scenario 1

*Loss Scenario 1 Text:* Imagine you just received a speeding ticket worth \$250, which you must pay immediately or in one year. Your local police are giving you the option of paying a different amount if paid in one year.

See Table 4.2.3 for the choices presented to participants, see Table 4.2.4 for the calculation variation of the choices presented.

Table 4.2.3

Loss	Scenario	1	Choices
LUSS	Scenario	1	Choices

Left Column	Right Column
Pay \$250 Immediately.	Pay \$350 one year from now.
Pay \$250 Immediately.	Pay \$330 one year from now.
Pay \$250 Immediately.	Pay \$310 one year from now.
Pay \$250 Immediately.	Pay \$290 one year from now.
Pay \$250 Immediately.	Pay \$270 one year from now.
Pay \$250 Immediately.	Pay \$250 one year from now.
Pay \$250 Immediately.	Pay \$230 one year from now.

Note: Table shows choices shown to participants, to determine temporal discounting.

Table 4.2.4

Loss Scenario 1 Calculation Choices

Left Column	Right Column
Pay \$250 Immediately.	Pay \$250 plus an additional \$100 one year from now.
Pay \$250 Immediately.	Pay \$250 plus an additional \$80 one year from now.
Pay \$250 Immediately.	Pay \$250 plus an additional \$60 one year from now.
Pay \$250 Immediately.	Pay \$250 plus an additional \$40 one year from now.
Pay \$250 Immediately.	Pay \$250 plus an additional \$20 one year from now.
Pay \$250 Immediately.	Pay \$250 one year from now.
Pay \$250 Immediately.	Pay \$250 minus \$20 one year from now.

Note: Table shows choices shown to participants to determine temporal discounting.

#### 4.6.2.3 Gain Scenario 2

Gain Scenario 2 Text: Considering the following hypothetical scenario. Please carefully read the information below and think about how you would respond if asked to make this choice for real.

This scenario looks at people receiving a subsidy to install solar panels at home. Please do not let any opinions on local councils, or the way this proposal may work influence your decision making. The only thing that matters is the choice you would make.

Imagine that the local council is planning to trial a subsidy to encourage people to add solar panels to their household. Getting people to add solar panels to their house is important as it provides a clean source of local energy. The council has secured funding of \$500 per person for this project if it is done immediately, but if they wait an additional year, they may be able to offer a different amount of funding. You are being asked to make a series of choices, between receiving a subsidy immediately or receiving a different amount one year from now.

The two options were:

- 1) Receiving a \$500 subsidy immediately
- 2) Receiving a different sized subsidy, one year from now.

See Table 4.2.5 for the choices presented to participants.

Gain Scenario 2 Choices	
Left Column	Right Column
Receive \$500 Immediately.	Receive \$750 one year from now.
Receive \$500 Immediately.	Receive \$700 one year from now.
Receive \$500 Immediately.	Receive \$650 one year from now.
Receive \$500 Immediately.	Receive \$600 one year from now.
Receive \$500 Immediately.	Receive \$550 one year from now.
Receive \$500 Immediately.	Receive \$500 one year from now.
Receive \$500 Immediately.	Receive \$450 one year from now.

#### Table 4.2.5

Gain Scenario 2 Choices	Gain	Scenario	2	Choices
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*Note:* Table shows choices shown to participants to determine temporal discounting. 4.6.2.4 Loss Scenario 2

*Loss Scenario 2 Text:* Considering the following hypothetical scenario. Please carefully read the information below and think about how you would respond if asked to make this choice for real.

This scenario looks at people paying a cost to install solar panels. Please do not let any opinions on local councils, or the way this proposal may work influence your decision making. The only thing that matters is the choice you would make.

Imagine that the local council is planning a one-off fee to fund these solar panels. Getting these solar panels installed will provide another source of clean energy. The council will be funding this project from the one off fee. They know that the cost of the project if it is done immediately is \$500 per person. If the council delays the project by a year it will cost a different amount. You are being asked to make a series of choices, between paying your contribution to the project **immediately**, or delaying your payment and paying a different amount **one year from now**.

The two options were:

1) Paying a \$500 fee immediately

2) Paying a different sized fee, one year from now.

See Table 4.2.6 for the choices presented to participants.

Table 4.2.6	
Loss Scenario	2 Choices

Left Column	Right Column
Pay \$500 Immediately.	Pay \$750 one year from now.
Pay \$500 Immediately.	Pay \$700 one year from now.
Pay \$500 Immediately.	Pay \$650 one year from now.
Pay \$500 Immediately.	Pay \$600 one year from now.
Pay \$500 Immediately.	Pay \$550 one year from now.

Pay \$500 Immediately. Pay \$500 one year from now. Pay \$500 Immediately. Pay \$450 one year from now. *Note:* Table shows choices shown to participants to determine temporal discounting. 4.6.2.5 Self vs Others Activity

To determine the rate at which participants were oriented towards themselves or others, a scenario was presented to participants followed by paired choices like the temporal discounting activities. The activity was informed by Na et al. (2016) who adopted a paired choices methodology; and Hardisty (2009) to determine a participant's rate of temporal discounting.

The scenario presented the first choice of 12 or 24 bags as an individual or grouporiented decision. A gain and a loss scenario was presented to determine the extent to which gaining or losing something would result in different responses. Table 4.2.7 and Table 4.2.8 illustrate the choices offered to participants.

The scenario participants read prior to make their choice was:

*Self-Construal Scenario:* Moving on to something more specific. The following hypothetical scenario is designed to investigate decision making processes when similar options are compared.

The following scenario and questions concern a local council environmental initiative.

Imagine that your local council is trialling a program to reduce the dumping of rubbish in the landfill. To achieve this, the council has decided to offer ratepayers the choice of 12 or 24 rubbish bags for the year.

If a rate payer chooses 12 rubbish bags, they will receive credits (1 credit = \$1), that they can choose to donate towards a council run charitable trust focussing on environmental

issues, or apply to their rates bill. These credits will be granted in 12 equal amounts at the end of each month and as such will be equal in all senses, except who will benefit from the credit.

Alternatively, a ratepayer may choose 24 rubbish bags, if so they will incur a cost in credits (1 credit = \$1), they can choose to have these credits deducted from the council's contribution to the charitable trust (so that the trust receives less money), or pay for these on their rates bill (so that a higher rates bill is received). These credits will be transferred in 12 equal amounts at the end of each month and as such will be equal in all senses, except who will bear the cost.

We are not interested in your opinion of local councils, the mechanics of the proposal, or the motivations of the council in proposing this plan.

We are interested in the preference of people who will be personally affected.

Please assume you will be living in the same house one year from now, even if you are planning on moving.

Self-Construal Choice: Please choose the number of bags you would like to receive.1) 12 Bags2) 24 Bags

Table 4.2.7

DUI = CUISII UUI IICIIVIIV I I DUES	Self-Constru	al Activity -	- 12 Bags
-------------------------------------	--------------	---------------	-----------

Left Column	Right Column
84 credits towards your rates bill.	84 credits towards the charitable trust.
72 credits towards your rates bill.	72 credits towards the charitable trust.
60 credits towards your rates bill.	60 credits towards the charitable trust.
48 credits towards your rates bill.	48 credits towards the charitable trust.
36 credits towards your rates bill.	36 credits towards the charitable trust.
24 credits towards your rates bill.	24 credits towards the charitable trust.
12 credits towards your rates bill.	12 credits towards the charitable trust.

*Note:* Table shows choices shown to participants, to determine the switching point between a decision benefitting the self, and a decision benefitting others – shown to participants who selected 12 bags after the self-construal choice.

Table 4.2.8 Self-Construal Activity – 24 Bags

Left Column	Right Column
	84 credits deducted from contributions to the
84 credits added to your rates bill.	charitable trust.
	72 credits deducted from contributions to the
72 credits added to your rates bill.	charitable trust.
	60 credits deducted from contributions to the
60 credits added to your rates bill.	charitable trust.
	48 credits deducted from contributions to the
48 credits added to your rates bill.	charitable trust.
	36 credits deducted from contributions to the
36 credits added to your rates bill.	charitable trust.
	24 credits deducted from contributions to the
24 credits added to your rates bill.	charitable trust.
	12 credits deducted from contributions to the
12 credits added to your rates bill.	charitable trust.

*Note:* Table shows choices shown to participants, to determine the switching point between a decision benefitting the self, and a decision benefitting others – shown to participants who selected 24 bags after the self-construal choice.

# 4.6.3 Manipulation Scenarios

Two manipulation scenarios were introduced to prime participants. The first manipulation attempted to prime the participant to with a present focus, or a future focus. The second manipulation attempted to prime the participant toward an independent or interdependent self-construal. Both manipulation scenarios were adapted from word sorting exercises previously used to prime study participants (Brewer & Gardner, 1996; Haberstroh et al., 2002). In both manipulations participants were presented with a task involving word lists. Participants were randomly assigned to each condition.

# 4.6.3.1 Temporal Framing Manipulation

One of two lists were randomly presented to participants, the lists were identical apart from three words, in one list the three words related to the present day, in the other list the three words related to the future. Brewer and Gardner (1996) and Haberstroh (2002) asked participants to circle pronouns from a list of words. Participants in the current study identified three misspelt words from a list of seven and typed these into a text box. The misspelt words were either present-focussed, or future-focussed. Four other words were consistent between both lists. Requesting participants first identify and then re-type the misspelt words attempted to create a cognitive engagement with the relevant orientation. Baseline temporal discounting data had been collected, with a second set of temporal discounting values collected after respondents engaged with the manipulation. Table 4.3.1 is provided to detail the lists of words provided to respondents.

Table 4.3.1

Present	Future	Shared
Twoday	Footure	Purchasing
Immmmediatly	Tmorrrw	Consuming
Prsssent	Yaer	Goods
		Damage

Note: Table shows the list of words used to manipulate temporal framing.

# 4.6.3.2 Self-Construal Manipulation

Brewer and Gardner (1996) and Haberstroh (2002) presented participants with a list of words and asked them to identify pronouns. One group of participants were asked to circle pronouns related to the self, while the other group was asked to circle pronouns related to others (Brewer & Gardner, 1996; Haberstroh et al., 2002).

The pronoun circling task was adapted for use with an internet-based survey. The 'circling' presented to participants involved reading a list of words and dragging the words they felt most relevant to them, to a separate box.

The word lists both contained six words, the first list presented adjectives related to the self and the second list presented adjectives used to describe their community. Participants were asked to select a minimum of three words that they felt were most like themselves or most like their community. As discussed by Brewer (1996) and Haberstoh (2002), the pronoun circling task was implemented to prime an individual's self-construal. Individuals were primed to be thinking with a self-focus (adjectives relating to a selfdescription), or a community-focus (adjectives relating to their community). The pronouns are listed in Table 4.3.2.

Table 4.3.2Self-Construal Manipulation Word List

Characteristics of yourself	Characteristics of others	
Tall	Nurturing	
Humorous	Close	
Kind	Tight Knit	
Caring	Large	
Active	Anonymous	
Motivated	Isolated	
N <b>T</b> 1 1 1 1 0 1	1	

*Note:* Table shows the list of words used to manipulate self-construal.

# 4.6.4 Demographic Measures

Demographic information was collected to address two critical components of the study. Firstly, to accurately and thoroughly describe the sample and nature of participants responding to the survey. This research sought to collect a representative sample to enhance the generalisability and relevance of the data collected, and the findings presented. To determine representativeness of the New Zealand population 2013 Census data was identified for comparison, being the last complete census that results are available for. As such, demographic measures are informed by the 2013 Census individual form (Statistics New Zealand, 2013b) and the 2013 Census dwelling form (Statistics New Zealand, 2013a).

#### 4.6.4.1 Current Age

Age was collected as a screening question at the beginning of the survey instrument. See Table 4.4.1 for the list of ages offered in the survey instrument. Collecting demographic data on age allowed for comparison with national census data and for conclusions as to how representative of different age groups the sample was. Age is linked to differing environmental behaviours and attitudes (e.g., Ekholm & Olofsson, 2017; Fisher et al., 2012;

Sundblad et al., 2007).

Table 4.4.1
Current Age
Q1.2 What is your current age?
Under 18
18 to 19
20 to 24
25 to 29
30 to 34
35 to 39
40 to 44
45 to 49
50 to 54
55 to 59
60 to 64
65 to 69
70 and over
Note: Table shows the list of available age ranges shown to participants

*Note:* Table shows the list of available age ranges shown to participants.

#### 4.6.4.2 Identified Gender

Gender was also collected at the beginning of the survey instrument and used as a screening question. See Table 4.4.2 for the options presented. Gender was approached as a question where participants may choose the gender identity they best identify with – no questions requested biological sex. As such, the question was asked 'what gender do you identify with?'.

The aim of this research was a sample representative of the national population. The proportion of individuals expected to respond in a non-binary matter would have led to a low number of respondents in a category other than male or female, thus hindering statistical analysis involving gender as a variable. The representativeness of the sample was determined through comparison with the 2013 Census, the 2013 Individual Census form (Statistics New

Zealand, 2013b) only offered male and female as options. Therefore, other gender options could not be adequately compared with national census data.

Table 4.4.2
Identified Gender
Q1.3 What gender do you identify as?
Male
Female
Notes Table shows the list of evoluble condens shows to northing outs

*Note:* Table shows the list of available genders shown to participants.

4.6.4.3 Personal Annual Income

*Personal Annual Income:* Personal annual income was the third and final demographic screening measure. Personal annual income was collected to determine the representative nature of the sample. The format of the questions was informed by the 2013 Census form (Statistics New Zealand, 2013b), with additional options added at income levels above \$70,000. Digital distribution of the survey allowed greater flexibility and so data was able to be collected in \$10,000 increments up \$200,000. See Table 4.4.3 for the income options presented to participants.

Personal Annual Income   Q1.4 What is your personal annual income?   -   \$0 to \$10,000   \$10,001 to \$20,000   \$20,001 to \$30,000   \$20,001 to \$30,000   \$30,001 to \$40,000   \$40,001 to \$50,000   \$50,001 to \$60,000   \$60,001 to \$70,000   \$70,001 to \$80,000   \$80,001 to \$90,000   \$90,001 to \$100,000	Table 4.4.3
Q1.4 What is your personal annual income?   -   \$0 to \$10,000   \$10,001 to \$20,000   \$20,001 to \$30,000   \$30,001 to \$40,000   \$40,001 to \$50,000   \$50,001 to \$60,000   \$60,001 to \$70,000   \$70,001 to \$80,000   \$80,001 to \$90,000   \$90,001 to \$100,000	Personal Annual Income
- \$0 to \$10,000 \$10,001 to \$20,000 \$20,001 to \$30,000 \$30,001 to \$40,000 \$40,001 to \$50,000 \$40,001 to \$50,000 \$50,001 to \$60,000 \$60,001 to \$70,000 \$70,001 to \$80,000 \$80,001 to \$90,000 \$90,001 to \$100,000	Q1.4 What is your personal annual income?
\$0 to \$10,000 \$10,001 to \$20,000 \$20,001 to \$30,000 \$30,001 to \$40,000 \$40,001 to \$50,000 \$50,001 to \$50,000 \$50,001 to \$60,000 \$60,001 to \$70,000 \$70,001 to \$80,000 \$80,001 to \$90,000 \$90,001 to \$100,000	-
\$10,001 to \$20,000 \$20,001 to \$30,000 \$30,001 to \$40,000 \$40,001 to \$50,000 \$50,001 to \$50,000 \$60,001 to \$60,000 \$70,001 to \$70,000 \$80,001 to \$90,000 \$90,001 to \$100,000	\$0 to \$10,000
\$20,001 to \$30,000 \$30,001 to \$40,000 \$40,001 to \$50,000 \$50,001 to \$60,000 \$60,001 to \$70,000 \$70,001 to \$80,000 \$80,001 to \$90,000 \$90,001 to \$100,000	\$10,001 to \$20,000
\$30,001 to \$40,000 \$40,001 to \$50,000 \$50,001 to \$60,000 \$60,001 to \$70,000 \$70,001 to \$80,000 \$80,001 to \$90,000 \$90,001 to \$100,000	\$20,001 to \$30,000
\$40,001 to \$50,000 \$50,001 to \$60,000 \$60,001 to \$70,000 \$70,001 to \$80,000 \$80,001 to \$90,000 \$90,001 to \$100,000	\$30,001 to \$40,000
\$50,001 to \$60,000 \$60,001 to \$70,000 \$70,001 to \$80,000 \$80,001 to \$90,000 \$90,001 to \$100,000	\$40,001 to \$50,000
\$60,001 to \$70,000 \$70,001 to \$80,000 \$80,001 to \$90,000 \$90,001 to \$100,000	\$50,001 to \$60,000
\$70,001 to \$80,000 \$80,001 to \$90,000 \$90,001 to \$100,000	\$60,001 to \$70,000
\$80,001 to \$90,000 \$90,001 to \$100,000	\$70,001 to \$80,000
\$90,001 to \$100,000	\$80,001 to \$90,000
	\$90,001 to \$100,000
\$100,001 to \$110,000	\$100,001 to \$110,000
\$110,001 to \$120,000	\$110,001 to \$120,000
\$120,001 to \$130,000	\$120,001 to \$130,000

\$130,001 to \$140,000 \$140,001 to \$150,000 \$150,001 to \$160,000 \$160,001 to \$170,000 \$170,001 to \$180,000 \$180,001 to \$190,000 \$190,001 to \$200,000 \$200,001 or more

*Note:* Table shows the list of personal income ranges available to participants.

# 4.6.4.4 Current Marital Status

Marital status was the first of the non-compulsory demographic measures. See Table 4.4.4 for the options presented. Participants were given a list of options and asked to respond with their current marital status. The format of the questions was informed by the 2013 Census form (Statistics New Zealand, 2013b). However, the wording and number of items were simplified to be more readily understandable by the sample.

Table 4.4.4
Current Marital Status
Q14.1 What is your current marital status?
In a relationship
Divorced
De facto Relationship
Married
Separated
Single
Widowed

Note: Table shows the list of available relationship options shown to participants.

# 4.6.4.5 Highest Level of Education

Highest level of education of the respondent was collected as an optional question. The options presented were kept broader than in the 2013 Census individual form (Statistics New Zealand, 2013b) to reduce complexity for respondents. However, the options presented were designed for easy comparison to census data. See Table 4.4.5 for the education options provided. Table 4.4.5Highest Level of Education

Q14.2 What is your highest level of education?High SchoolDiplomaSome universityUndergraduate degreeSome postgraduatePostgraduate degreeProfessional degree (MBA etc.)Note: Table shows the list of education options shown to participants.

4.6.4.6 Sources of Income

Participants were asked to describe how they receive income. Multiple answers could

be selected to reflect the participants' circumstances. See Table 4.4.6 for the options

presented. The 2013 Census Form (Statistics New Zealand, 2013b) informed the sources of

income presented. Information was collected to aid in determining the sample

representativeness.

Table 4.4.6

Sources of Income

Q14.12 Which of the following best represent how you receive income? (Please select multiple options as appropriate).

Wages, salary, commissions, bonuses etc, paid by my employer

Self-employment, or business I own or work in.

Interest, dividends, rents, or other investments.

Superannuation (including veteran's pension)

Benefit (including unemployment, sickness, domestic purposes, invalid's or other government)

Student allowance

*Note:* Table shows the list of income source options shown to participants.

# 4.6.4.7 Country of Birth

Country of birth was recorded in the form of a dropdown list. Options were available

for all countries, excluding the possibility that someone would not have an appropriate option

to select. Country of birth data was collected in case the sample was highly diverse, and it
was considered that ethnicity could be adding additional variance to the conceptual model. See Table 4.4.7 for options presented.

Table 4.4.7

Country of Birth
Q14.15 In which country were you born?
World list offered
Note: Table shows a summation of the country of high antions shown to participants

*Note:* Table shows a summation of the country of birth options shown to participants.

4.6.4.8 Religion

Participants were asked to specify their religion from a list of provided options. If their chosen option was not available, an 'other' box with a text entry field was available. The religions displayed were chosen from the most common religions indicated by New Zealand Census Data (Statistics New Zealand, 2014a), and were based on a simplified version of the options given in the 2013 Census individual form (Statistics New Zealand, 2013b). See Table 4.4.8 for the options presented.

Table 4.4.8
Religion
Q14.16 What religion would you classify yourself as?
No religion
Christian
Sikh
Hindu
Muslim
Islam
Buddhist
Other

*Note:* Table shows the list of religion options shown to participants.

## 4.6.4.9 Number of People in Household

The number of people in the household was collected. Household size was collected as individuals living with others may have reduced freedom in purchasing decisions, and thus their shopping influences are impacted by those around them. Households of different sizes may also have different lifestyles and thus differing values. See Table 4.4.9 for the options presented.

Table 4.4.9
Number of People in Household
Q14.3 Including yourself, how many people are in your household?
One
Two
Three
Four
Five or more
<i>Note:</i> Table shows the numbers of household occupants shown to participants.

### 4.6.4.10 Nature of Household Occupants

In conjunction with the number of household occupants, participants responded to the nature of their household's occupants. Household information allowed participants to select all that apply, as necessary to describe the other members of their household. If no additional members were in the household, participants could leave the question blank. The nature of household occupants was collected as the nature of the occupants may affect purchasing and freedom of an individual to purchase in line with their values. The 2013 Census dwelling form (Statistics New Zealand, 2013a) informed the questions, but presented in a simpler manner . See Table 4.4.10 for the options presented.

Table 4.4.10

*Nature of Household Occupants* 

Q14.4 Select the appropriate boxes to show all the people who live in the same household as you

My legal husband or wife or civil union partner

My partner or de facto, boyfriend or girlfriend

My mother and/or father

My son(s) and/or daughter(s)

My brother(s) and/or sister(s)

My flatmate(s)

*Note*. The table shows the list of household occupants shown to participants. This question would only display to participants who stated that more than one person was in their household.

### 4.6.4.11 Number of Children

Participants were asked to indicate the number of children they have, to identify

whether they were a parent. The question was asked in addition to the Nature of Household

Occupants options listed in Table 4.4.10 to account for children for not living in the

household. See Table 4.4.11 for the options presented.

Table 4.4.11
Number of Children
Q14.5 How many children do you have? (Either living at home or elsewhere)
0
1
2
3
4
5+

*Note.* The table shows the options for the number of children offered to participants. This question would only display to participants who stated that more than one person was in their household

Age Range of Children: Participants were shown options to indicate the age range of

their children, relative to the number of children indicated in the preceding question.

Individuals were given a single selection option to account for the ages of Child 1, Child 2,

Child 3, Child 4, and for anyone indicating five or more children, multiple choices were

allowed, so all applicable age ranges could be selected. See Table 4.4.12 for the list of

options participants responded to.

Table 4.4.12						
Age Range of Children						
Q14.6/7/8/9/10/11 W	hat is the age rang	ge of your child?				
Child 1	Child 2	Child 3	Child 4	Child 5+		
0-3	0-3	0-3	0-3	0-3		
4-7	4-7	4-7	4-7	4-7		

8-11	8-11	8-11	8-11	8-11
12-15	12-15	12-15	12-15	12-15
16-19	16-19	16-19	16-19	16-19
20+	20+	20+	20+	20+

*Note.* This table shows the options for the age range of children shown to participants. This question was displayed horizontally and was transposed for formatting purposes. Depending on the number of children that participants indicated they had, different options were presented to suit. Child 5+ allowed for multiple options to be selected as needed.

### 4.6.4.12 Household Income

In addition to an individual respondent's income, a question requested their household income. The same income brackets were offered for household as for an individual, with participants asked to select the one appropriate to their circumstance. Household income was collected to assist ensure a representative sample – if personal income was not well-represented household income may be substituted. See Table 4.4.13 for the options participants responded to.

Table 4.4.13
Household Income
Q14.13 What is your household income?
-
\$0 to \$10,000
\$10,001 to \$20,000
\$20,001 to \$30,000
\$30,001 to \$40,000
\$40,001 to \$50,000
\$50,001 to \$60,000
\$60,001 to \$70,000
\$70,001 to \$80,000
\$80,001 to \$90,000
\$90,001 to \$100,000
\$100,001 to \$110,000
\$110,001 to \$120,000
\$120,001 to \$130,000
\$130,001 to \$140,000
\$140,001 to \$150,000
\$150,001 to \$160,000

\$160,001 to \$170,000 \$170,001 to \$180,000 \$180,001 to \$190,000 \$190,001 to \$200,000 \$200,001 or more

*Note:* Table shows the list of available household income ranges shown to participants.

### 4.6.4.13 Place of Residence

How the participant would describe their place of residence was requested. Three main cities, Auckland, Wellington, and Christchurch, were offered, followed by more general descriptions of towns. For locales other than Auckland, Wellington, and Christchurch, the data collected required participants to make a judgement on their community. Therefore, the data collected reflects how participants see and feel about their place of residence and allows them to classify it. See Table 4.4.14 for the options presented.

Table 4.4.14

Place of Residence
Q14.14 What best describes your current place of residence?
Auckland
Wellington
Christchurch
Small city
Large town
Small town
Rural
Other

*Note:* Table shows the list of available places of residence shown to participants.

## 4.6.5 Boundaries of Time Measure

Temporal Orientation and Temporal Discounting literature generally refers to different time periods, e.g., near future and far future, but does not clearly define these time periods. To understand how participants viewed time a sorting exercise was created. Participants dragged and dropped a unit of time into the box they would use to describe it. The units of time listed were 1 Day, 1 Week, 14 Days, 30 Days, 1 Month, 6 Weeks, 90 Days, 6 Months, 1 Year, 36 Months, 60 Months, 5 Years. The list was randomised to minimise the impact of the order. Participants categorised these units of time into, 'present', 'near future', 'far future'.

#### 4.7 Survey Procedure

Structurally the survey instrument contained four distinct sections: pre-manipulation and baseline measures; priming and measurement of temporal discounting; priming and measurement of self-construal; measurement of purchase intention, boundaries of time exercise, and collection of demographic information. See Appendix 1 for the full copy of the survey, including survey flow details.

Participants were welcomed to the survey with a brief information sheet introducing the researchers, university, and setting expectations on the length of time the survey should complete. The information sheet communicated that all responses would were anonymous and highlighted the human ethics approval received and contact details for any questions or concerns about the research.

After reading the participation sheet and continuing, three demographic screening questions were displayed. Participants responded with their age, gender, and personal annual income. Participants under the age of 18 were automatically thanked and removed from the survey. Qualtrics used age, gender, and personal annual income to manage the sampling process, removing participants from the survey if they responded with a criterion already over-represented in the data.

Following screening participants responded to the temporal orientation measure, resented as a seven-point Likert-type scale ranging from 'extremely uncharacteristic of me', to extremely characteristic of me'. Participants then responded with how enjoyable and functional they found shopping trips, before being presented with the baseline temporal discounting measures.

Participants were presented with the scenario and items for Temporal Discounting Gain Scenario 1, these presented a series of pairs with participants choosing between money today, or money in the future. Participants were randomly assigned to see either a value of money one year in the future, or the present-day value plus or minus an amount one year from now (the calculation condition. After responding to the paired choices, participants reiterated their switching point with a slider. Temporal Discounting Loss Scenario 1 repeated the procedure for Temporal Discounting Gain Scenario 1 but with a loss scenario.

Participants were then informed of the attributes of sustainable products used in this study in text form. Participants would then move to the next page, where they responded to multiple selection items, repeating these attributes, and adding two negative attributes that did not apply. Question was used as an attention check for the data analysis phase of the research.

Having seen the definition for sustainable goods participants responded to the image congruence measure. Following the image congruence measure, participants responded to the self-construal measure. The both the image congruence and self-construal measures were presented as seven-point Likert-type scales ranging from 'Strongly Disagree', to 'Strongly Agree'.

Following the measurement image congruence and self-construal, participants were presented with the first manipulation – a temporal framing manipulation. The temporal framing manipulation attempted to prime participants to present or future temporal orientation. Participants were randomly assigned to two groups; both groups identified misspelt words in a list and wrote them into text boxes. The first group saw words relating to the future; the second group saw words relating to the present. Participants were presented with the scenario and items for Temporal Discounting Gain Scenario 2, participants responded to a series of pairs with participants choosing between money today, or money in the future. Participants responded to the paired choices, and then reaffirmed their switching point with a slider. Participants then responded to Temporal Discounting Loss Scenario 2, repeating the procedure of Temporal Discounting Gain Scenario 2. Both temporal discounting scenarios used related to the environmental decision of installing solar panels on a house and the potential subsidy, or costs involved.

The second manipulation followed Temporal Discounting Loss Scenario 2. This manipulation attempted to prime participants to an interdependent or independent self-construal. Participants were randomly assigned to two groups; both groups dragged words from a list into a box. Participants in the first group were presented with a list containing words that they would use to describe themselves; the second group was presented with a list of words that would describe their community.

Following the self-construal manipulation participants responded to a choice. Participants chose between an option that gave them a personal cost with a community gain (the collection 12 rubbish bags annually), or personal gain with a community cost (the collection 24 rubbish bags annually). Depending on the choice of 12 or 24 bags of rubbish collected, participants responded to paired-choice questions framed to create a personal sacrifice with community gain, or a personal gain with community sacrifice. The selfconstrual activity was modelled on the temporal discounting activities, and respondents finished the activity by reaffirming their switching point with a slider.

Following the self-construal activity participants responded to items measuring the purchase intention construct. Four items were presented on a seven-point Likert-type scale ranging from 'strongly disagree' to 'strongly agree'.

The final activity participants responded to measured their time perception.

Participants were presented with a list of twelve units of time in a randomised order, these were clicked and dragged into one of three boxes representing categories of time: 'present', 'near future', and 'far future'. All participants saw all items and all categories.

The final type of question responded to was demographic measures. Participants responded with their current marital status; highest level of education; number of people and nature of people in the household; number of children and their ages; how they receive income; their household income; their current place of residence; their country of birth; and their religion. Following the demographic measures participants were thanked for their participation and given the opportunity to provide feedback, improvements, or issues they experienced through a textbox. The survey ended at this point.

### 4.7.1 Summary of the Survey Procedure

A summary of the survey procedure is detailed in this section to clarify the order of items seen by participants, and the items seen.

- 1. Survey Introduction
  - a. Welcome note introducing the researchers and study
  - b. Human ethics details
  - c. Statement of anonymity
  - d. Contact details for the researchers and human ethics convener
- 2. Screening Questions
  - a. Age under 18s thanked and removed from survey
  - b. Gender screening managed by Qualtrics
  - c. Personal Annual Income screening managed by Qualtrics
- 3. Construct measurement
  - a. Temporal orientation construct
  - b. Shopping enjoyment measure
- 4. Temporal discounting activities
  - a. Temporal Discounting Gain 1 OR Temporal Discounting Gain 1 Calculation
  - Temporal Discounting Loss 1 OR Temporal Discounting Loss 1 Calculation

- 5. Sustainable goods definition
  - a. Text definition
  - b. Attention check activity
- 6. Construct measurement
  - a. Image congruence
  - b. Self-construal
- 7. Temporal framing manipulation random assignment to groups
  - a. Word sort activity present-focussed OR future-focussed word sort activity future
- 8. Temporal discounting activities
  - a. Temporal Discounting Gain 2
  - b. Temporal Discounting Loss 2
- 9. Self-construal manipulation random assignment to groups
  - a. Word sort activity characteristics of self or word sort activity characteristics of community
- 10. Self-construal choice (select 12 bags OR 24 bags)
  - a. Self-construal activity select 12 bags others-benefit
    i. Others-framed paired choices
  - b. OR Self-construal activity select 24 bags self-benefit
    - i. Self-framed paired choices
- 11. Construct measurement
  - a. Purchase intention construct
- 12. Understanding boundaries of time activity
  - a. Sort twelve-items into three-categories
- 13. Demographic measures
  - a. Current marital status
  - b. Highest level of education
  - c. Number of people in household
    - i. If the answer to 13c is more than one, then nature of people in household was displayed
  - d. Number of children, either living at home or elsewhere
    - i. If the answer to 13d is more than one then options appear to indicate the age of each child
  - e. Description of how income is received
  - f. Household income
  - g. Country of birth
  - h. Religion

# 14. Conclusion

a. Participant thank you

b. Feedback textbox

15. Survey end.

#### 4.8 Chapter Summary

Chapter four detailed the methodology used to collect the data used to investigate the study research questions. A post-positivist research paradigm was discussed, with the study seeking to test the current understanding of the extant literature, as such a quantitative methodology was applied. The data collection and sample frame were discussed, with Qualtrics selected to distribute the survey to five aggregated panels to meet the desired level of representation of the New Zealand population.

The survey was tested and developed across a Pilot-Test and two Pre-Tests. The Pilot-Test was conducted through personal contacts of the researcher and snowball sampling, with informal discussions held to improve the flow of the survey instrument. Pre-Test 1 incorporated the Pilot-Test feedback and distributed this survey through Qualtrics to the survey panels. Pre-Test 1 demonstrated a low rate of useable responses, suggesting comprehensions issues. Further informal discussion with Pilot-Test participants and further refinement of the survey instrument was incorporated into Pre-Test 2, demonstrating an improvement in useable responses.

The final survey instrument incorporating feedback from the development process was detailed, with existing validated scales used to measure constructs, and adaptations made to items to suit the research context. Detail of these adaptations can be found in the tables included throughout Section 4.6. The procedure respondents followed was detailed, with a summary of the survey procedure found in Section 4.7.1.

Chapter 5 will detail the analysis of the collected data, and the results of the data analysis.

#### Chapter 5 – Results

#### 5.1 Introduction

Chapter 5 describes the research sample and provides a comparison with New Zealand Census data, details the analytical assumptions made, tests the reliability of the scales used, and reports the results of hypothesis testing and the testing of other variables.

The data was cleaned with the type and nature of data deletions detailed, leaving a total useable sample size of n = 483. Frequency analysis was performed on the sample to determine how representative of the national population the sample is. Normality assumptions are tested, as are multicollinearity assumptions. Tests are performed and results discussed on the effects of common method bias on the research. Reliability analysis and deletions of items are detailed for image congruence, interdependent self-construal, independent self-construal, temporal orientation, and purchase intention.

A range of statistical tests are performed on the hypotheses detailed in Chapter 3 – Conceptual Development. Hypotheses 1, 2a, 2b, and 3 are tested using a single multiple linear regression. Hypotheses 4a, 4b, 4c, and 4d are tested using multiple regression to determine a moderation effect. Hypotheses 5a, 5b, and 5c, 6a, and 6b are tested using independent samples *t*-tests. Additional testing is performed on the dataset seeking further understanding of the effects of key constructs and investigate respondents time perception.

### 5.2 Sample characteristics

### 5.2.1 Final Data Collection Data Deletions

The total number of recorded responses was n = 1010, with a useable data set of n = 483 (47.8%). Deletion of responses from the dataset occurred for six reasons; 1) participants had begun the survey but submitted no information (zero response); 2) participants were

under 18 and ineligible for participation (age screening); 3) participants had begun the survey but not completed it (non-complete); 4) participants failed an attention check (attention check); 5) participants had not answered all questions fully (incomplete response), or 6) participants were outliers. The number and reason for deletions are listed in Table 5.2.1.

Final Data Collection Deletions						
Reason	п	Number deleted				
Collected	1010					
Zero Response	994	16				
Age	967	27				
Non-complete Survey	762	205				
Attention Check	671	91				
Incomplete Response	491	180				
Outliers	483	8				
Deletions	527					
Final (cleaned data set)	483					
% Rejected	52.2%					
% Accepted	47.8%					

Table 5.2.1

*Note.* The table shows the number of deletions, categorised by the reason for deletions.

### 5.2.1.1 Deletion of Outliers

An assumption of multivariate data analysis is that the data contains few outliers. There is a balance needed between respecting the assumptions of data analysis and maintaining the maximum amount of data (Hair et al., 2019). As such outliers were considered on a case-by-case basis and responses were retained where there was no robust justification for removal.

Outliers were assessed visually with boxplots generated using SPSS. Box plots for image congruence, interdependent self-construal, independent self-construal, temporal orientation, and purchase intention indicated normal distribution. In total, there were 32 outliers. All 32 responses were considered for deletion and examined on a case-by-case basis by the researcher. The criteria used to delete outliers were a clear pattern in the answers throughout the survey, or straightlining of answers. If categorisation of an outlier was due to stronger opinions than other responses (e.g., frequent use of 1 or 7 as a response to a Likert-type scale) — the response was retained.

Eight outliers met the criteria for deletion and subsequently removed from the data set. Visual inspection of the responses demonstrated six instances of straightlining — with responses of all 7's, or all 4's. One respondent answered with the following pattern 1, 2, 3, 4, 3, 2, 1. One respondent had large blocks of similar responses unrelated to the questions (i.e., had indicated both a present and future temporal orientation, or highly interdependent and highly independent).

The histograms of the remaining data were relatively normal, as such the 24 responses identified as potential outliers did not cause issues with normality and were retained (Tabachnick & Fidell, 2007).

#### 5.2.2 Final Data Sample Characteristics

The sample data collected was representative of the New Zealand population in the categories considered for this research. Respondent age, gender, personal income, and education were within  $\pm$  10% of data found in the 2013 Census (Statistics New Zealand, 2013b). For further understanding of the sample, the number of household members, household income, and the relationship status of respondents is reported.

### 5.2.2.1 Respondent age

An examination of the participant sample, compared to Statistics New Zealand population data (Statistics New Zealand, 2013c) reveals a representative sample of the over 18 population. The panel data collected skewed slightly younger than the general population but remained within the research criteria for ages 18 to 70 and over. Table 5.3.1 demonstrates a comparison between the sample population and the 2013 Census data (Statistics New

Zealand, 2013c).

A ga Panga	10	%	Number in	% of Population	Sample % variance
Age Kange	n	01 11	Fopulation	Fopulation	fiolii Fopulation
Under 14	-	-	890,900	19.9	-19.9
18 to 19 <sup>a</sup>	42	8.8	305,940	6.8	1.9
20 to 24	81	16.5	333,840	7.5	9.0
25 to 29	65	13.4	305,320	6.8	6.6
30 to 34	38	7.7	286,300	6.4	1.3
35 to 39	56	12.0	273,570	6.1	5.9
40 to 44	53	11.2	310,570	6.9	4.3
45 to 49	35	7.3	308,630	6.9	0.4
50 to 54	21	4.3	311,720	7.0	-2.7
55 to 59	32	6.5	270,030	6.0	0.5
60 to 64	28	5.7	238,730	5.3	0.4
65 to 69	12	2.4	205,040	4.6	-2.1
70 and over	20	4.1	430,190	9.6	-5.5
Total	483	100	4,470,780	100.0	

Table 5.3.1Age of Final Sample

*Note.* The table shows the age ranges of the sample population, compared to national Census data. Data was not collected for individuals under the age of 14. Census data sourced from (Statistics New Zealand, 2013c).

<sup>a</sup> Census data age range is 15-19.

### 5.2.2.2 Respondent gender

An examination of gender data demonstrates a representative sample. Participants provided a self-categorised gender response to the question: "What gender do you identify as?". Males respondents make up 48.7% of the sample population and 48.9% of the New Zealand population; female respondents make up 51.3% of the sample population and 51.1% of the New Zealand population. Gender in this study refers to self-categorised gender with no inference made towards biological sex. Table 5.3.2 provides a comparison between the sample population and the national population from the 2013 Census Data (Statistics New Zealand, 2013d).

Gender	п	% of <i>n</i>	Number in Population	% of Population	Sample % variance from Population
Male	235	48.7	2,174,700	48.9	-0.2
Female	248	51.3	2,272,000	51.1	0.2
Total	483	100.0	4,446,700	100.0	

Table 5.3.2Final Sample Gender Results

*Note.* The table shows the gender make-up of the sample population, compared to national Census data. Census data sourced from (Statistics New Zealand, 2013d).

### 5.2.2.3 Respondent income

Examining the personal income levels of participants, compared with national census data demonstrates a representative sample. The largest difference between this study and census data was the \$70,001 to \$100,000 income bracket at 9.8% higher in the sample than the national population, within the  $\pm$  10% criteria defined for this research. To compare the sample population with the 2013 Census (Statistics New Zealand, 2014b), Table 5.3.3 offers a view of the data, matched to Census reporting.

					Sample %
			Number in	% of	variance from
Annual Income <sup>a</sup>	n	% of <i>n</i>	Population	Population	Population
\$0 to \$10,000 <sup>b</sup>	73	15.3	611,439	20.0	-4.7
\$10,001 to \$20,000	63	13.2	554,028	18.2	-4.9
\$20,001 to \$30,000	64	13.4	417,993	13.7	-0.3
\$30,001 to \$40,000	49	10.3	362,115	11.9	-1.6
\$40,001 to \$50,000	37	7.8	290,163	9.5	-1.7
\$50,001 to \$60,000	48	10.1	226,155	7.4	2.7
\$60,001 to \$70,000	27	5.7	169,209	5.5	0.1
\$70,001 to \$100,000	84	17.6	238,215	7.8	9.8
\$100,001 to \$150,000	24	5.0	111,126	3.6	1.4
\$150,001 or more	7	1.5	70,044	2.3	-0.8
Total	476	100.0	3,050,487	100.0	

Table 5.3.3Personal Annual Income of Final Sample Adjusted to Census Data

*Note.* The table shows the personal annual income of the sample population, compared to national Census data. Census data sourced from (Statistics New Zealand, 2014b). Due to non-response n may differ from other analyses.

<sup>a</sup> 'Not stated' in census data and '-' response from the survey excluded from the table.

<sup>b</sup> Individuals reporting 'loss' or 'zero income' in Census data are reported as 'Zero Income' — to match available the survey; this has been combined with \$0-\$10,000.

### 5.2.2.4 Respondent education

Comparing the final sample with national census data demonstrates a representative educational sample. All differences between the sample population and the national population are within the  $\pm$  10% criteria determined for this research. The final sample was slightly more educated than the national population data, with a greater proportion of undergraduate and postgraduate degree holders in the sample than the national population. Table 5.3.4 provides a comparison between the sample population and 2013 Census data (Statistics New Zealand, 2015).

Table 5.3.4	
Highest Education of Final Sample Adjusted to Census Data	

Highest Education	п	% of <i>n</i>	Number in Population	% of Population	Variance from Population
High school <sup>a</sup>	253	52.5	1,829,262	61.0	-8.5
Diploma <sup>b</sup>	57	11.8	570,066	19.0	-7.2
Undergraduate degree	108	22.4	408,444	13.6	8.8
Postgraduate degree	64	13.3	192,864	6.4	6.9
Total	482	100.0	3,000,636	100.0	

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*Note.* The table shows the educational attainment of the sample data, compared to national Census data. Census data sourced from (Statistics New Zealand, 2015) Due to non-response n may differ from other analyses.

<sup>a</sup> Statistics New Zealand data includes no qualification, and levels of NCEA achievement, 'High school' includes these.

<sup>b</sup> Level 4 and a Diploma are combined for this research.

### 5.2.2.5 Respondent number of people in the household

Respondents in this research predominantly lived within multi-individual households.

Four-person households were the largest group by a small margin at 26.1%, two-person

households were the second largest, at 23.8%, three-person the third largest at 22.4%, five or

more person households at 16.1%, and single-person households at 11.6% of the sample. See Table 5.3.5 for a summary of household size data.

Table 5.3.5		
Household Size Final Sample		
Household Size (Number)	п	% of <i>n</i>
One	56	11.6
Two	115	23.8
Three	108	22.4
Four	126	26.1
Five or More <sup>a</sup>	78	16.1
Total	483	100.0

*Note.* The table shows the household size of the sample data.

### 5.2.2.6 Respondent household income

The sample population captured a broad range of household incomes — 52.8% of the sample earned between \$0 and \$70,000 with 47.2% earning \$70,001 and above. The two most prominent income groups were \$40,001 to \$50,000 at 9.9% of the sample population and \$30,001 to \$40,000 at 8.7% of the sample population. As with the number of individuals in the household, household income in this sample provides broad coverage of different household income levels. See Table 5.3.6 for a summary of sample household income data.

Table 5.3.6

Tousenoid Annual Income of I that Sample Adjusted to Census Data				
Annual Income <sup>a</sup>	п	% of <i>n</i>		
\$0 to \$10,000 <sup>b</sup>	31	7.8		
\$10,001 to \$20,000	20	5.1		
\$20,001 to \$30,000	21	5.3		
\$30,001 to \$40,000	36	9.1		
\$40,001 to \$50,000	41	10.4		
\$50,001 to \$70,000	60	15.2		
\$70,001 to \$100,000	85	21.5		
\$100,001 or more	102	25.8		
Total	396	100.0		

Household Annual Income of Final Sample Adjusted to Census Data

*Note.* The table shows the annual household income for the sample population.

#### 5.2.2.7 Respondent relationship status

Most respondents were in a relationship, with 60.2% being 'in a relationship', 'de facto relationship', or 'married'. 'Single' participants are the second largest group at 29.2% of the sample. 'Divorced', 'widowed', and 'separated' participants make up the final 10.3% of the study. See Table 5.3.7 for a summary of participant relationship status.

Table 5.3.7

*Current Relationship Status of Final Sample* 

Marital Status	п	% of <i>n</i>
In a relationship <sup>a</sup>	95	19.7
Divorced	29	6.0
De facto Relationship	54	11.2
Married	142	29.4
Separated	10	2.1
Single <sup>b</sup>	141	29.2
Widowed	12	2.5
Total	483	100.00

*Note.* The table shows the relationship status of the sample population. Due to non-response *n* may differ from other analyses.

### 5.3 Analytical Assumptions

Multivariate data analysis refers to statistical techniques that simultaneously analyse multiple measurements on participants under investigation and allow for the analysis of multiple independent and dependent variables (Hair et al., 2019). Following the steps described by Hair et al. (2019), the data set was cleaned of participants who had not adequately responded to the required questions or who did not pass attention checks.

Before testing the proposed hypotheses, the data was assessed against three critical statistical assumptions; the number of outliers (deletion of outliers is detailed in Section 5.2.1.1), normality of data, and levels of multicollinearity (Hair et al., 2019). Independence of responses must also be met (Allen et al., 2014).

#### 5.3.1 Normality

The explore function of SPSS was used to assess the normality of the data. The criteria used to determine the normality of the data was a visual examination of the histogram, looking for symmetry (Allen et al., 2014), and skewness and kurtosis values not exceeding -2 to 2 (Lewis-Beck, 2004).

Examination of construct histograms and evaluation of skewness and kurtosis found all constructs demonstrated acceptable data normality. Table 5.4.1 reports a summary of the skewness and kurtosis values for all constructs tested.

Table 5.4.1

Construct Data Normality			
Construct	Skewness	Kurtosis	
Image Congruence	345	.043	
Self-Construal Interdependent	092	.123	
Self-Construal Independent	100	.590	
Temporal Orientation	.070	.252	
Purchase Intention	672	.621	

*Note:* Table shows a summary of the normality statistics for constructs used in this research. All constructs fell within the acceptable skewness and kurtosis criteria range of -2 to +2 (Lewis-Beck, 2004).

### 5.3.2 Multicollinearity

Multivariate statistical techniques assume low multicollinearity between variables (Hair et al., 2019). Multicollinearity is tested in this research using the collinearity diagnostics contained within SPSS. To determine the variance inflation factors (VIF) for all constructs in the research, and to reduce the impact of variance in the independent variable (O'brien, 2007), multiple iterations were performed changing the dependent variable in each instance as suggested by Gaskin (2011). Criteria from Hair et al. (2019) was applied to assess multicollinearity, VIF factors below 10 are acceptable, while tolerances < 0.1 are considered

for possible corrections (Allen et al., 2014). See Table 5.5.1, for exact VIF values for each construct, and each iteration performed.

As shown in Table 5.5.1, all VIF values are within the criteria of < 10 defined for this study. The largest VIF value is 2.013, well below 10, indicating minimal multicollinearity between constructs. All tolerances are higher than the 0.100 threshold defined for this study. The lowest tolerance value is 0.497, well above the 0.100 threshold that would give cause for concern. Considering the VIF and tolerance values, acceptable levels of multicollinearity are present in the five constructs tested.

			Dependent
Construct	Tolerance	VIF	Variable
Self-Construal Interdependent	.813	1.230	
Self-Construal Independent	.832	1.202	Image
Temporal Orientation	.955	1.047	Congruence
Purchase Intention	.808	1.238	
Image Congruence	.500	1.999	
Self-Construal Independent	.859	1.164	Self-Construal
Temporal Orientation	.952	1.051	Interdependent
Purchase Intention	.513	1.951	
Image Congruence	.517	1.935	
Self-Construal Interdependent	.867	1.153	Self-Construal
Temporal Orientation	.951	1.051	Independent
Purchase Intention	.497	2.013	
Image Congruence	.502	1.992	
Self-Construal Interdependent	.813	1.229	Temporal
Self-Construal Independent	.805	1.242	Orientation
Purchase Intention	.499	2.005	
Image Congruence	.815	1.227	
Self-Construal Interdependent	.841	1.190	Purchase
Self-Construal Independent	.807	1.239	Intention
Temporal Orientation	.958	1.044	

Table 5.5.1

Construct Multicollinearity Analysis

*Note:* Table shows each iteration of multicollinearity analysis, following the recommendation of Gaskin (2011).

### 5.4 Common Method Variance

Common Method Variance (CMV), also known as common method bias refers to variance attributable to measurement method rather than theory (Podsakoff et al., 2003). CMV is a form of systemic measurement error (Podsakoff et al., 2003; Podsakoff et al., 2012). CMV is of concern to researchers as it may impact on construct reliability and validity, influence variable relationships and thus hypothesis testing, and lead to incorrect accounts of construct variance in a model (Podsakoff et al., 2003; Podsakoff et al., 2012).

### 5.4.1 Potential Sources of Common Method Variance

There are multiple potential sources of Common Method Variance (CMV) within this research, common rater (consistency motif), social desirability, item complexity and ambiguity, scale format, and scale length (Podsakoff et al., 2003; Podsakoff et al., 2012). During the design of the survey, sources of CMV were considered and the survey designed to minimise the effect of these.

Common rater bias may result in participants seeking out similarities in unrelated questions to maintain consistency between their cognitions and attitudes (Podsakoff et al., 2003; Podsakoff et al., 2012). To reduce the effect of common rater bias more than six items were placed between similar constructs, increasing the temporal distance between similar items (Podsakoff et al., 2012; Weijters et al., 2009). Temporal discounting activities were a focus due to the repeated nature of the measure.

Sustainability research has an inherent risk of social desirability bias. To minimise the effect of social desirability bias written scenarios and questions were presented with neutral language, care was also taken by the researcher to avoid communicating any judgement or

'correct' answer (Podsakoff et al., 2012). For participants to feel comfortable answering truthfully without fear of their responses being judged, the anonymity of the responses was communicated to participants (Podsakoff et al., 2003; Podsakoff et al., 2012). Furthermore, an independent third party (Qualtrics) managed survey distribution, creating a further distance between the respondents and the researcher, minimising the risk of participants feeling judged.

Item complexity and ambiguity allow respondents to place their own meaning on an item rather than the intended interpretation or answer inconsistently as the respondent may not understand them (Podsakoff et al., 2003; Podsakoff et al., 2012). To minimise item complexity all scale items had common sources of ambiguity such as double-barrelled items, vague concepts, or uncommon language removed (Podsakoff et al., 2003; Podsakoff et al., 2003; Podsakoff et al., 2003; Podsakoff et al., 2012). Section 4.6 highlights the modifications made to simplify the language of the self-construal scale, since the original self-construal scale contained ambiguous items. Examples of changes made to avoid ambiguity in the self-construal scale include changing a reference to a (potentially non-existent) sibling or replacing references to a professor, with a more relevant reference to a boss.

Likert-type scales were used to measure the constructs, except for the paired choices activities measuring temporal discounting. Therefore, the scale format may introduce CMV (Podsakoff et al., 2003; Podsakoff et al., 2012). The nature of the questions lends themselves to a Likert-type scale, and deviation from this may alter conceptual meaning (Podsakoff et al., 2012). Furthermore, frequently changing the presentation of questions risks introducing confusion and adding cognitive strain. Constructs were frequently interspersed with different types of activities, including paired choice activities, scenarios to read and understand, and sorting activities. However, the format of each construct was generally similar to minimise the risk of changing expectations. Thus, the mix of activity types ensured that variety was

present within the survey instrument, without unduly straining the participant or changing the conceptual meaning of items.

Scale length is another source of CMV (Podsakoff et al., 2003). This research contains several longer scales, for example the self-construal scale consists of 30 items. To maximise readability across device types, and not overload participants with text, longer scales were clustered into groups of five items. Clustering items into five item groups risks introducing CMV with participants finding recent item responses more accessible in their short-term memory (Podsakoff et al., 2003). When constructing the survey, this risk was acknowledged and considered against the risk of participants finding the survey cognitively draining to complete. An overly draining survey may have led to random answering to proceed, creating a different and undesirable source of variance within the survey.

### 5.4.2 Harman's Single Factor Test

Harman's single factor test was used to diagnose if CMV is of concern within this study. Harman's single factor test is widely used to diagnose common method variance (Podsakoff et al., 2003). Harman's single factor test involves loading all items in a study onto a single factor and examining the unrotated factor extraction to ensure no item accounts for the majority (greater than 50%) of the variances explained (Podsakoff et al., 2003).

Harman's single factor test determined the risk of common method variance within the dataset. Items were forced to load on a single factor. Then the percentage of variance explained by each item was checked to ensure no single factor accounted for too much variance within the model (Podsakoff et al., 2003). Twenty-eight items with eigenvalues greater than 1 were identified. The highest percentage of variance accounted by a single item was 20.380%, no other items account for more than 10% of variance explained — suggesting that common method variance is of minimal concern within the dataset as no single factor accounts for a majority of the variance (Podsakoff et al., 2003).

### 5.4.3 Common Latent Factor

Although Harman's single factor test is widely used to detect common method variance, other tests are considered more rigorous at detecting common method bias (Fuller et al., 2016). A common latent factor analysis was performed in IBM SPSS V25 AMOS (Arbuckle, 2017), Gaskin (2017). with a criterion of a 0.200 delta between the model and the model with a common latent factor (e.g., Gaskin, 2017; Serrano Archimi et al., 2018).

A limited amount of common method variance was found in the temporal orientation construct, the interdependent self-construal construct, and the independent self-construal construct. In the temporal orientation construct, six of the thirteen items measuring temporal orientation demonstrated a delta greater than 0.200. In the interdependent self-construal construct three of the eleven items demonstrated a delta greater than 0.200. In the independent self-construal construct three of the eleven items demonstrated a delta greater than 0.200. In the independent self-construal construct three of the eleven items demonstrated a delta greater than 0.200.

A common latent factor analysis demonstrated that some common method variance is apparent between items measuring temporal orientation and the temporal orientation construct, between items measuring interdependence and the interdependent self-construal construct, and items measuring independence and the independent self-construal construct. Fuller et al. (2016) demonstrate that a substantial level of common method variance is necessary to create common method bias in a study. Therefore, the presence of some common method variance is noted as a limitation in the study, but it is not considered to be at levels that would create a substantial adverse effect on the results.

#### 5.5 Reliability Analysis

Cronbach's alpha and factor analysis were conducted in SPSS to determine the reliability of the five constructs used. Image congruence, interdependent self-construal, independent self-construal, temporal orientation, and purchase intention scales were tested and validated.

A Cronbach's alpha statistic was generated for each scale to demonstrate internal consistency. A high alpha coefficient is desirable on a per construct basis as the items in each scale are measuring an affective construct (Taber, 2018). Therefore, a higher Cronbach's alpha value indicates the internal consistency of the construct. This research applies the 0.70 criteria value for Cronbach's alpha values recommended by Hair et al. (2019).

Factor analysis determines the unidimensionality or multidimensionality of constructs and helps to understand the variance explained by each item (Hair et al., 2019). This research applies a 0.50 cut off as a minimum for factor analysis where a higher cut off is impractical. Based on recommendations by Field (2013) and Guadagnoli and Velicer (1988), to consider retaining a scale item with a loading between 0.50 and 0.60, at least four other items measuring the construct are required to have loadings greater than 0.6. Furthermore, Hair et al. (2019), suggest a 0.5 cut off as a minimum for research with at least n = 120, the presented research has n = 483. To maximise internal reliability, scale items with low loadings were acceptable only when they met the specific criteria and made a justifiable theoretical contribution to the scale.

All constructs demonstrated Cronbach's alpha greater than 0.70. The majority of items had factor loadings greater than 0.6. Constructs with any loading of between 0.50 and 0.60 had the required four or more items with loadings of greater than 0.60. Thus, all constructs demonstrated reliability in line with the criteria of this research.

For multi-factor constructs correlation matrix values were used to determine the type of rotation applied. As no substantial correlation of items was evident in any of the assessed constructs (Allen et al., 2014) an orthogonal rotation method, varimax was applied, rather than an oblique rotation method.

### 5.5.1 Image Congruence

Cronbach's alpha for the six-item Image Congruence (IC6) scale was 0.925

demonstrating an acceptable level of internal reliability.

A factor analysis using principal component analysis performed on the IC6 scale

demonstrates a single component. All items on this component load above 0.60,

demonstrating reliability of the scale (Hair et al., 2019). See Table 5.6.1 for a summary of the

item loadings, and Cronbach's alpha for the Image Congruence scale.

Image Congruence Items					
Q	Item Wording	Factor loadings			
5	I consider sustainable products to be "me" (it reflects who I consider myself to be or the way that I want to present myself to others).	0.901			
4	I think sustainable products help me become the type of person I want to be.	0.878			
2	I feel a personal connection to sustainable products.	0.862			
3	I use sustainable products to communicate who I am to other people.	0.849			
6	Sustainable products suit me well.	0.823			
1	Sustainable products reflect who I am.	0.799			
	Cronbach's Alpha	0.925			

Table 5.6.1

Note: Table shows a summary of the items used to measure the image congruence construct, and the factor loadings of each item.

## 5.5.2 Self-Construal Sub-Scales

Interdependent self-construal and independent self-construal each contain fifteen

items. Due to high cross loading or Cronbach's a outside of the research criteria, four items

were deleted from the interdependent self-construal sub-scale, leaving a total of eleven items; and four items were deleted from the independent self-construal sub-scale, also leaving a total of eleven items.

## 5.5.2.1 Self-Construal – Interdependent Sub-Scale

The final eleven items comprising the interdependent self-construal sub-scale had a Cronbach's alpha of 0.776. Four items of original fifteen items measuring interdependent self-construal were deleted.

A principal component factor analysis with Varimax rotation revealed three components making up the interdependent self-construal sub-scale. Some cross-loading was present on the scale; with one item falling between 0.50 and 0.60. All other items had loadings greater than 0.60, thus sufficient items with loadings greater than 0.60 were present to retain this item. See Table 5.6.2 for a summary of the items used to measure the interdependent sub-scale and the factor loading of each item.

	*	Faster Londings		
			Factor Loadings	8
Q	Item Wording	Component 1	Component 2	Component 3
3	Even when I strongly disagree with group members, I avoid an argument.	0.188		0.796
14	I feel good when I cooperate with others.	0.765	0.188	
17	I often have the feeling that my relationships with others are more important than my own accomplishments.		0.719	0.177
16	If my brother or sister (or very close friend) fails, I feel responsible.		0.699	
28	It is important for me to maintain harmony within my group.	0.675	0.163	0.346
6	I respect people who are modest about themselves.	0.674	0.159	-0.124

Table 5.6.2

4	I have respect for the authority figures with whom I interact.	0.649		0.328
8	I will sacrifice my self-interest for the benefit of the group I am in.	0.338	0.647	
30	I usually go along with what others want to do, even when I would rather do something different.		0.393	0.646
23	I will stay in a group if they need me, even when I am not happy with the group.		0.609	0.303
26	It is important to me to respect decisions made by the group.	0.580		0.309
	Cronbach's Alpha	0.776		

*Note:* Table shows a summary of the final items used to measure interdependent selfconstrual and the factor loadings of each item. The component matrix used Varimax Rotation.

Deletion 1: A factor analysis was performed using principal component analysis with Varimax rotation revealing four items with factor loadings below 0.50. The first item considered for deletion was Item 12, 'I feel my fate is intertwined with the fate of those around me', with loadings of 0.303 and 0.418 on components 2 and 3. Intertwined fate is an item somewhat different from other items, with most items offering more concrete assertions such as 'I often have the feeling that my relationships with others are more important than my own accomplishments.' The more ambiguous nature of the question suggests it may have been answered differently to others and had no specific theoretical value to the construct.

*Deletion 2:* Analysis of the remaining fourteen items showed three items loading below 0.50. Item 11, 'I should take into consideration my parents' advice when making education or career plans' was the second item considered for deletion, with loadings of 0.331, 0.290, and 0.337. The item wording suggests a close relationship with the family unit. Because of the family focus, respondents may have interpreted it differently from the intended meaning of the scale. Thus, the deletion was appropriate due to the potential ambiguity in the question, and lack of unique theoretical value to the construct. *Deletion 3:* Analysis of the remaining thirteen items showed two items loading below 0.50. Item 21, 'My happiness depends on the happiness of those around me' was the third item considered for deletion, with loadings of 0.276, 0.479 and 0.177 on all three components. At face value the item appears to represent interdependent self-construal accurately, does not explicitly mention a group or relationships of importance to the respondent and as such may have been overlooked by participants or interpreted differently than intended.

*Deletion 4:* Analysis of the remaining items showed one item not meeting the criteria of this research. Item 19, 'I would offer my seat in a bus to my boss (or my professor)' was considered for deletion. The item loaded on all three components, 0.247, 0.512, 0.131. Despite a loading between 0.50 and 0.60, additional items greater than 0.60 were needed to meet the recommendations of Hair (2019). Within the New Zealand cultural context, this item may be overly abstract, with respondents outside of the largest centres (Auckland, Wellington, Christchurch, Dunedin) unlikely to have local bus routes or meaningful access to public transport. Therefore, respondents may conceptually comprehend the question, but find it challenging to place themselves in a situation where this is necessary.

### 5.5.2.2 Self-Construal – Independent Sub-Scale

The final independent self-construal sub-scale had 11 items reporting a Cronbach's  $\alpha$  of .762. Four items were deleted from the original 15 items measuring the independent self-construal sub-scale as they did not meet acceptable criteria for loadings in this research. Nine of the eleven items had factor loadings higher than 0.6 with two loadings between 0.50 and 0.60. Therefore, for each item with loading between 0.50 and 0.60, there were at least four items with loadings > 0.60 meeting the criteria set out in this research. See Table 5.6.3 for a

summary of the items used to measure the independent sub-scale and the factor loading of

each item.

### Table 5.6.3

Self-Construal – Independent Sub-Scale Items

		Factor Loadings		
Q	Item Wording	Component 1	Component 2	Component 3
20	I act the same way no matter who I am with.	0.834	-0.143	
10	Having a lively imagination is important to me.	-0.107	0.814	
25	Being able to take care of myself is a primary concern for me.		0.109	0.811
29	I act the same way at home that I do at work (or school).	0.761		
24	I try to do what is best for me, regardless of how that might affect others.	0.102		0.750
27	My personal identity, independent of others, is very important to me.		0.682	0.196
1	I enjoy being unique and different from others in many respects.	0.244	0.645	-0.320
2	I can talk openly with a person who I meet for the first time, even when this person is much older than I am.	0.634	0.147	
7	I feel it is important for me to act as an independent person.		0.624	0.218
13	I prefer to be direct and forthright when dealing with people I've just met.	0.562		0.205
18	Speaking up during a meeting (or class) is not a problem for me.	0.547		0.158
	Cronbach's Alpha	0.762		

*Note:* Table shows a summary of the final items used to measure independent self-construal and the factor loadings of each item. The component matrix used Varimax Rotation.

Deletion 1: A factor analysis using principal components extraction with Varimax

rotation found three items with loadings below 0.50, these were considered for deletion. Item

22, 'I value being in good health above everything' was the first item considered for deletion

with loadings on all three components of 0.259, 0.363, 0.373. This item was somewhat unlike

other items and possibly interpreted by participants differently from other items in the scale. The item held no specific or unique theoretical value to the construct.

*Deletion 2:* A factor analysis was performed on the remaining 14 items. Item 9, 'I'd rather say "No" directly, than risk being misunderstood' had loadings on all three components of 0.419, 0.214, 0.241. This item was unlike other scale items — thus answers inconsistent with other items may have occurred. The item held no specific or unique theoretical value to the construct.

*Deletion 3:* Analysis of the remaining thirteen items resulted in two items with loadings below 0.5. Item 5, 'I do my own thing, regardless of what others think' was considered for deletion, with loadings on all three components, 0.126, 0.392 and 0.394. At face value this item reflects the core construct of independence from others. However, measurement of independence happens in other items that may offer a substitute to this item such as, 'I feel it is important for me to act as an independent person', meaning the item had no unique theoretical value to the construct.

*Deletion 4:* Analysis of the remaining twelve items demonstrated one item with loadings lower than 0.5. Item 15, 'I am comfortable being singled out for praise or rewards' was the final item considered for deletion, with loadings on components 1 and 3, of 0.446 and 0.174. The item, while focusing on the individual, does not appear incompatible with interdependent self-construal and may not accurately reflect the independent sub-scale.

### 5.5.3 Temporal Orientation

The final items comprising the temporal orientation construct had a Cronbach's alpha of 0.817. One item of the original fourteen items measuring temporal orientation was deleted, leaving a total of thirteen items.

The initial factor analysis using principal component analysis with varimax rotation demonstrated three components in the temporal orientation scale. Three components were unexpected as the temporal orientation scale should demonstrate two components, immediate, and future.

*Deletion 1:* Evaluation of the pattern matrix highlighted item 5, 'My convenience is a big factor in the decisions I make or the actions I take', as not meeting the criteria of the study, with factor loadings of 0.497, -0.354, and 0.346. Not only did the item demonstrate cross-loading, but it was beneath the accepted 0.50 loading for this study. Whilst convenience may imply a short-term action; the item was not explicitly temporally related. Therefore, the presence of cross loading across three components, and the presence of an unexpected third component, suggests this item was measuring something other than temporal orientation.

Following the deletion of item 5 the number of components was reduced to two, one reflecting immediate, and the other reflecting future. All items had loadings > 0.6, meeting the criteria for this research. See Table 5.6.4 for a summary of the items as used to measure the temporal orientation construct, as well as their factor loadings.

Table 5.6
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			Factor Loadings	
Q	Sub-Scale	Item Wording	Immediate	Far
11	Immediate	I only act to satisfy immediate concerns, figuring that I will take care of future problems that may occur at a later date.	0.812	0.154
3	Immediate	I only act to satisfy immediate concerns, figuring the future will take care of itself.	0.754	
14	Future	My behaviour is generally influenced by future consequences.	0.166	0.750
4	Immediate	My behaviour is only influenced by the immediate (i.e., a matter of days or weeks) outcomes of my actions.	0.739	0.171
9	Immediate	I generally ignore warnings about possible future problems because I think the problems will be resolved before they reach crisis level.	0.716	

Temporal Orientation Items

13	Future	When I make a decision, I think about how it might affect me in the future.	0.123	0.698
1	Future	I consider how things might be in the future, and try to influence those things with my day to day behaviour.	0.155	0.684
10	Immediate	I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time.	0.671	0.165
12	Immediate	Since my day to day work has specific outcomes, it is more important to me than behaviour that has distant outcomes.	0.669	
2	Future	Often I engage in a particular behaviour in order to achieve outcomes that may not result for many years.		0.668
6	Future	I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes.		0.654
7	Future	I think it is important to take warnings about negative outcomes seriously even if the negative outcome will not occur for many	0.141	0.625
8	Future	I think it is more important to perform a behaviour with important distant consequences than a behaviour with less important immediate consequences.		0.577
		Cronbach's Alpha	0.817	

*Note:* Table shows a summary of the items to measure the temporal orientation construct, and the factor loadings of each item. The component matrix used Varimax Rotation.

### 5.5.4 Purchase Intention

The Cronbach's alpha for the four-item purchase intention scale was 0.904, acceptable for this research. A factor analysis using principal component analysis performed on the purchase intention scale showed extraction of a single component. All four items had loadings greater than 0.8, above the 0.7 thresholds recommended by Hair (2019) as indicative of well-defined structure. See Table 5.6.5 for a summary of items used to measure purchase intention and their factor loadings.

Purchase Intention	ms
	Component
Q Item Wording	Matrix

		0.701	
	Cronbach's Alpha	0.904	
4	I will purchase sustainable products within the next six months	0.854	
3	I intend to buy different types of sustainable products than I do now	0.876	
2	I will actively search for sustainable products in order to buy them	0.893	
1	I intend to buy sustainable products in the near future	0.905	

*Note:* Table shows a summary of the items to measure the purchase intention construct, and the factor loadings of each item.

#### 5.6 Manipulation Checks

Temporal Discounting and Self-Construal were manipulated to understand the effects of these constructs on purchase intention. To determine the efficacy of the manipulation scenarios four methods of analysis were used to compare variable means; independent samples *t*-test, paired-samples *t*-test, ANOVA, and a crosstab supported by a Chi-square. Across all methods of analysis, a significance value of  $p \le .05$  was used.

### 5.6.1 Temporal Framing Manipulation

Manipulation of a respondent's temporal frame was conducted using a word selection activity, detailed in Section 4.6.3.1. Participants responded to either a present-focussed or future-focussed temporal framing manipulation with groups created according to the manipulation they saw. Before and after seeing the manipulation, participants responded to activities designed to measure their rate of temporal discounting, to understand if their temporal frame had been altered.

Independent samples *t*-tests were used to compare the temporal discounting rates and purchase intention between those who responded to the present-focussed manipulation, and those who responded to the future-focussed manipulation. See Section 4.6.3.1 for further details on the manipulation. Three independent samples *t*-tests were performed to determine the efficacy of the temporal framing manipulation. These tests were comparing the mean temporal discounting gain results (TDG), comparing the mean temporal discounting loss

results (TDL), and comparing the mean purchase intention. See Section 4.6.2 for details of the temporal discounting activities and see Table 5.7.1 for a summary of the independent samples *t*-tests results. Therefore, the temporal framing manipulation did not influence TDG, TDL, or purchase intention.

Two further independent samples *t*-tests were used to compare mean temporal discounting rates in the calculation manipulation. See Section 4.6.2.1 for details of the baseline temporal discounting gains (TDGB) activities, and Section 4.6.2.2 for details of the baseline temporal discounting loss (TDLB) activities. The first independent samples *t*-test compared the mean of TDGB between those who responded to a calculation activity, and those who responded to a non-calculation activity; no significant difference was found. The second independent samples *t*-test compared the mean of TDLB between those who responded to a non-calculation activity; no significant difference was found. The second independent samples *t*-test compared the mean of TDLB between those who responded to a calculation activity, and those who responded to a non-calculation activity; no significant difference was found. See Table 5.7.1 for a summary of the independent samples *t*-test. As there was no significant difference between the calculation and non-calculation conditions the data was treated as homogenous during further analysis.

Table 5.7.1

Dependent Variable	Manipulation	n	Sig 2 Tail	Mean Difference
TDG	Temporal Framing	483	.475	0.012
TDL	Temporal Framing	483	.284	0.020
Purchase Intention	Temporal Framing	483	.844	-0.022
TDGB	Calculation	483	.168	-0.018
TDLB	Calculation	483	.330	-0.013

Manipulation Checks – Independent Samples t-test: Temporal Framing Manipulation

*Note:* Table shows a summary of the results testing the effect of the temporal framing manipulation on temporal discounting towards a gain (TDG), temporal discounting toward a loss (TDL), and purchase intention. The table also shows a summary of the results of the calculation manipulation on the baseline (pre-temporal framing manipulation) temporal discounting towards a gain (TDGB), and temporal discounting towards a loss (TDLB).
# 5.6.2 Self-Construal Manipulation

Self-construal was manipulated using a word sorting activity detailed in Methodology Section 4.6.3.2. Participants responded to either a self-focussed, or others-focussed selfconstrual manipulation (Self-Construal Manipulation) with groups created according to the manipulation they responded to. After completing the manipulation activity, participants were asked to make a choice (Self-Construal Choice), keeping a benefit for themselves (self), or donating it to others (others). After making the self or others choice, an activity required participants to select the extent they would allocate a reward to themselves, or to a community group (Self-Construal Activity). The results of this choice were then converted into a continuous score in the same manner as the temporal discounting rate. See Section 5.8 for details on how this score was calculated. Further information about the choice and activities participants completed is available in Methodology Section 4.6.2.5.

To determine the efficacy of the self-construal manipulation two independent samples *t*-tests were performed. The first independent samples *t*-test compared the mean self-construal activity score between the two self-construal manipulation groups (self or others). The first independent samples *t*-test was not significant, suggesting no effect from the self-construal manipulation. The second independent samples *t*-test compared the mean purchase intention between the two self-construal manipulation groups. The second independent samples *t*-test was not significant, suggesting no effect from the samples *t*-test samples *t*-test samples *t*-test from the self-construal manipulation. The second independent samples *t*-test compared the mean purchase intention between the two self-construal manipulation groups. The second independent samples *t*-test samples *t*-test from the self-construal manipulation. See Table 5.7.2 for further details.

Data was recorded on the decision participants made, a self-decision, or an others decision. A cross-tab and Chi-Square compared the choices made in the self-construal choice (self or others), with the self-construal manipulation (self or others) seen. The Chi-square did

not demonstrate a significant difference in the choice made, based on the manipulation seen.

See Table 5.7.2 for further details.

With no difference between the means of the self-construal activity and purchase intention, or in the self-construal choice, the self-construal manipulation was found to have no effect. Therefore, regardless of manipulation group, all data was treated as homogenous.

Table 5.7.2

				Sig 2	Mean
Test Type	Dependent Variable	Pair	п	Tail	Difference
Independent	Self-Construal	Self-Construal	470	824	1 1 2 5
Samples <i>t</i> -test	Activity	Manipulation	4/9	.024	-1.155
Independent	Durchass Intention	Self-Construal	102	012	0.012
Samples <i>t</i> -test	Purchase Intention	Manipulation	483	.912	0.012
Crosstab with Chi-	Salf Construct Chains	Self-Construal	102	222	
Square	Sen-Construal Choice	Manipulation	483	.333	—

Manipulation Checks – Self-Construal

*Note:* Table shows a summary of the tests performed to understand the impacts of the self-construal manipulation, and the results of the self-construal self or others choice. Some variables may not have been forced response, as such all cases with missing data are excluded from the analysis; therefore, values of n may vary. Some items were also conditions presented to different participants, again leading to variations in n.

# 5.6.3 Effect of all manipulations

In total, two manipulations created four conditions; Table 5.7.3 demonstrates the

possible conditions. Participants may have responded to the following combinations of

manipulation conditions:

- present-focussed temporal frame, self-construal self;
- future-focussed temporal frame, self-construal self;
- present-focussed temporal frame, self-construal others; or
- future-focussed temporal frame, self-construal others.

Table 5.7.3

Demonstration of Four Possible Manipulation Conditions

ï	Present-focussed temporal frame	Future-focussed temporal frame
Self-construal self	1	2
Self-construal others	3	4

*Note:* Table shows a summary of the conditions in the study.

Participants saw one of the four possible conditions, prior to the measurement of purchase intention. An ANOVA was used to compare the means of purchase intention between the four possible conditions. The ANOVA demonstrated no significant difference in the mean of purchase intention between the four conditions, as such, the data was treated as homogenous. See Table 5.7.4 for a summary of the ANOVA results.

Table 5.7.4

Effect of all Manipulation Conditions on Purchase Intention

Test Type	Variable	Grouping Variable	п	Sig 2 Tail
ANOVA	Purchase Intention	Manipulation Conditions	483	.489

*Note:* Table shows the results of an ANOVA test to assess the impact of all four manipulation conditions on Purchase Intention.

# 5.7 Criteria for Data Cleaning

Data were cleaned in a five-stage process, applied in the same order to the pilot-test, pre-test one, pre-test two, and final data set. The five stages were as below, each stage was applied sequentially so a response may not have met retention criteria across multiple steps, but the response will be deleted at the first failed criteria:

- 1. Zero Response
- 2. Screened due to age
- 3. Response non-completion
- 4. Failure of attention checks
- 5. Insufficient information provided to calculate a temporal discount rate across any temporal discounting activity.

In steps one to three, responses were deleted according to a lack of provided information or falling outside of the sample frame of the research. Respondents were a 'Zero response' if a survey was recorded as having been opened and an attempt begun, but where no answers had been given (including to the initial age screening question). Respondents selecting 'Under 18' for their age were automatically sent to the end of the survey as they were outside the sample frame for this research, and ethics approval to study individuals under 18 had not been granted. Responses where 'Under 18' were selected were recorded as begun, but no information was recorded after the age question. Responses were deleted or considered non-complete, where the Qualtrics software recorded the participants as not having reached the end of the survey. Responses considered non-complete may have contained partial data but did not answer all questions before exiting the survey and so were deleted from the data set.

In step four, participants were deleted according to the responses given to two attention check questions. The attention check followed a description of sustainable goods. Following the description of sustainable goods, on a separate page, was a multiple-choice question presenting seven options, five options describing attributes of sustainable goods, two options described negative attributes, not attributable to sustainable goods. Responses were deleted if a participant selected one or both of the negative attributes. Responses were kept if only some of the five positive attributes were selected, indicating that participants had read and recalled information from the provided description. In step five, responses were screened based on a second attention check. A second attention check asked participants to identify three misspelt words from a list and input the correctly spelt version into a text box. The second attention check also served as a manipulation, priming participants with words suggesting the present, or the future. Responses did not meet the criteria for retention where the written response was not related to the listed words. Participants mostly followed the instructions and identified the misspelt words; however, some inputted the words with the misspelling. Both correctly and incorrectly spelt words were accepted. However, responses, including unrelated words, or random letters, were deleted.

In step five, responses were deleted that did not provide sufficient information to calculate a consumers' temporal discount rate. For the purposes of this research, insufficient information to answer the temporal discounting activities means a response that exhibits multiple switches between options, rendering the intended answer unclear. Literature, where the temporal discounting measure was adapted from also, applies this definition (e.g., Hardisty & Weber, 2009). The temporal discounting activities ask the participant to choose between an option today, or an option in one year. Therefore, participants are expected to exhibit one clear switch, where the option in one year is equivalent, or superior to, the option today. Thus, participants exhibiting multiple switching points, as many as one switch per option, may be trying to answer the question in a short time with little thought, to move past the forced response. Without a clear delineation between the past and present option, a transparent and impartial calculation of the participant's temporal discount rate was not possible. As such, responses, where switching multiple times was evident, were deleted.

#### 5.8 Calculating a Temporal Discount Score

Temporal discounting is frequently expressed as the function:

$$V = A/(1+kD)$$

where V is the subjective value of the reward (indifference point) of a reward of A (baseline value), D is the time delay until the reward is received, and k is the rate of discounting (Green et al., 2007; Mazur, 1987). To solve for k, and calculate a participant's discount rate, the Mazur (1987) equation can be written as:

$$k = (A - V)/(VD)$$

Expressed as an example, a participant who identified that they would accept \$250 today, but \$270 in one year from now would have an indifference point of \$260. Assuming an indifference point of \$260 the equation would appear as:

$$k = (260-250)/(250*1)$$
  
 $k = 0.04$ 

Therefore, such a participant would have a temporal discounting value of k = 0.04, a relatively low value, suggesting a low rate of discounting toward future gains.

To calculate the value of the indifference point, without any undue influence or interpretation by the researcher a clear switch between the baseline value (today), and the future value (one year) was necessary. Participants were instructed to make only one switch to define an indifference point clearly. Hurst (2011) applied criteria to the selection of indifference points where more than one switch was made by a participant, the higher of the two was used for analysis. Where all future values were selected, the highest possible value was determined to be their switching point (Hurst et al., 2011). With only seven pairs offered to participants, the criteria of Hurst (2011) were considered inappropriate for participants who exhibited switching. Instead, no switching was accepted, with participants removed from the dataset who switched more than once. The research could attempt to decide which switch was 'appropriate' or 'correct' to retain data; however, this was seen to introduce an inappropriate possibility of bias and inconsistency. For participants who answered all future values; however, their indifference point was taken as the highest available value, in line with Hurst (2011). For participants who only answered the present-day value, the present-day value taken as the indifference point.

# 5.9 Hypothesis Testing

Multiple regression analysis and independent samples *t*-tests were performed to test the hypotheses introduced in Section 3.3. Criteria for significance in this research was the commonly used threshold of p < .05. For a summary of hypotheses, see Table 5.8.1. Relationships with a significance threshold of p < .10 are highlighted for discussion.

Table 5.8.1

List of Resea	rch Hypotheses
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	Hypothesis
H1	Consumers with greater image congruence towards sustainable consumption exhibit higher purchase intention towards sustainable goods.
H2a	Consumers with higher interdependent self-construal exhibit higher purchase intention towards sustainable goods.
H2b	Consumers with higher independent self-construal exhibit lower purchase intention towards sustainable goods.
Н3	Consumers with a future temporal orientation will exhibit higher purchase intention towards sustainable goods.
H4a	Temporal discounting will moderate the relationship between image congruence and purchase intention towards a sustainable good.
H4b	Temporal discounting will moderate the relationship between interdependent self- construal and purchase intention towards a sustainable good.
H4c	Temporal discounting will moderate the relationship between independent self- construal and purchase intention towards a sustainable good.
H4d	Temporal discounting will moderate the relationship between temporal orientation and purchase intention towards a sustainable good.
H5a	Younger participants will have a higher purchase intention than older participants towards sustainable goods.
H5b	Female participants will have a higher purchase intention than male participants toward sustainable goods.
H5c	Parents will have a higher purchase intention than non-parents towards sustainable goods.
Нба	Participants primed with a future-focussed message will have higher purchase intention towards sustainable goods than those primed with a present-focussed
H6b	message. Participants with a match between their temporal orientation, and a message prime will have a higher purchase intention towards sustainable goods than those with a mismatch.

*Note:* Table shows a summary of the hypotheses tested in this research

# 5.9.1 Statistical Tests Performed

Two main statistical tests were performed to test the hypotheses. Hypotheses 1, 2a,

2b, 3, 4a, 4b, 4c, and 4d, were tested using multiple regression analysis. Hypotheses 5a, 5b,

6a, and 6b were tested with independent samples t-tests. All data were analysed using IBM

SPSS V25 (IBM Corp., 2017).

Cohen's (Cohen, 1988) recommendations for assessing the effect size of results are applied. To determine the effect size of independent samples *t*-tests and paired-samples *t*-tests Cohen's *d* statistic is used (Cohen, 1988). Whilst Cohen (1988) presents effect size criteria as guidelines, commentary will be made within the guidelines as suggested. The criteria used to determine effect size are presented in Table 5.8.2.

Table 5.8.2

$\alpha \cdot \cdot \cdot \cdot \cdot$	1,	
( riteria for	determining	$\rho f f \rho c f s 17 \rho$
	actermining	

Effect Size	Cohen's d	Cohen's $f^2$
Trivial Effect	0 to 0.1	0 to 0.02
Small Effect	0.1 to 0.3	0.02 to 0.15
Medium Effect	0.3 to 0.5	0.15 to 0.35
Large Effect	0.5 and greater	0.35 and greater

*Note:* Table demonstrates the suggested effect size criteria for Cohen's d and Cohen's  $f^2$  tests (Cohen, 1988). Where a result is equivalent to the boundary between two effect sizes, the greater of the two size categories is stated in line with Cohen's (1988) treatment of criteria as greater than or equal to.

# 5.9.2 Hypotheses 1, 2a, 2b, 3, 4a, 4b, 4c, and 4d

A single multiple linear regression was performed to test the relationship between the four antecedent constructs and purchase intention: and the moderating effect of temporal discounting toward a gain (TDG) on the relationship of the four antecedent constructs with purchase intention. Overall the model accounted for 51.6% of the variance in purchase intention ( $R^2 = .516$ , F(9,473) = 55.929, p < .001). Figure 2 illustrates the relationships tested

in this regression, with results detailed in Table 5.8.3.



Figure 2: Conceptual model illustrating Hypotheses 1 through 4d.

*Hypothesis 1:* Support was found for Hypothesis 1, image congruence significantly predicted purchase intention ( $\beta = .622, p < .001, f^2 = 0.388$ ), with the  $f^2$  value demonstrating a large effect.

*Hypothesis 2a:* Support was found for Hypothesis 2a with interdependent selfconstrual significantly predicting purchase intention ( $\beta = .144$ , p < .001,  $f^2 = 0.036$ ), with the  $f^2$  value suggesting a small effect.

*Hypothesis 2b:* Support was not found for Hypothesis 2b, with independent selfconstrual not significantly predicting purchase intention ( $\beta = .039$ , p = .274,  $f^2 = 0.004$ ) with the  $f^2$  value suggesting a trivial effect.

*Hypothesis 3:* Support was not found for Hypothesis 3. Temporal orientation did not significantly predict purchase intention ( $\beta = .049$ , p = .138,  $f^2 = 0.06$ ), with the  $f^2$  value suggesting a small effect.

Hypotheses 4a, 4b, 4c, and 4d propose that temporal discounting towards a gain moderates the relationships with purchase intention towards sustainable goods of, image congruence, self-construal, and temporal orientation. To test for moderation interaction variables were created. Means-centred variants of the four antecedent constructs were used to reduce the effect of multicollinearity. The interaction variables were created by multiplying the means-centred antecedent construct, by temporal discounting towards a gain (TDG) (Aiken & West, 1991; Whisman & McClelland, 2005). TDG is the temporal discounting score calculated after the temporal framing manipulation, temporal discounting gain activity. Further detail on the calculation of the temporal discounting score is discussed in Section 5.8. To demonstrate the interaction effect scatterplots for interdependent self-construal and independent self-construal are included in Figure 3, with TDG grouped by low, medium, and high (calculated using natural breaks in the data).

*Hypothesis 4a:* Support was not found for Hypothesis 4a. TDG did not significantly moderate the relationship between image congruence (IC) and purchase intention (IC x TDG,  $\beta = .043$ , p = .236,  $f^2 = 0.04$ ), with the  $f^2$  value suggesting a small effect.

*Hypothesis 4b:* Support was found for Hypothesis 4b. TDG significantly moderated the relationship between interdependent self-construal (INT-SC) and purchase intention (INT-SC x TDG,  $\beta = -0.83$ , p = .038,  $f^2 = 0.010$ ), with the  $f^2$  value suggesting a small effect. An examination of the scatterplot displayed in Figure 3 demonstrates a positive moderation effect. The effect is most pronounced for low temporal discounting individuals. As the interdependence of each group of temporal discounting increases, so does the purchase intention. Therefore, in individuals with a low level of discounting of future outcomes, high interdependence results in high purchase intention.

*Hypothesis 4c:* Support was found for Hypothesis 4c. TDG significantly moderated the relationship between independent self-construal (IND-SC) and purchase intention (IND-SC x TDG,  $\beta = .102$ , p = .010,  $f^2 = 0.014$ ), with the  $f^2$  value suggesting a small effect. An

examination of the scatterplot displayed in Figure 3 demonstrates a positive moderation effect. The effect is most pronounced for high temporal discounting individuals. As the independence of each group of temporal discounting increases, purchase intention increases. Therefore, despite a high level of discounting of future outcomes, high independence results in high purchase intention.

*Hypothesis 4d:* Support was not found for Hypothesis 4d. TDG did not significantly moderate the relationship between temporal orientation (TO) and purchase intention (TO x TDG,  $\beta = -0.014$ , p = .680,  $f^2 = 0.02$ ), with the  $f^2$  value suggesting a small effect.

Table 5.8.3Results of Hypotheses 1, 2a, 2b, 3, 4a, 4b, 4c, and 4d

							Effect	
Hypothesis	Independent Variable	$\mathbb{R}^2$	β	р	VIF	$f^2$	Size	_
H1	Image Congruence		.622	<.001	1.261	0.388	Large	
H2a	Interdependent Self- Construal		.144	<.001	1.205	0.036	Small	
H2b	Independent Self-Construal		.039	.274	1.258	0.004	Small	
H3	Temporal Orientation		.049	.138	1.082	0.006	Small	
	Temporal Discounting Gain	.516	.013	.704	1.063	0.002	Small	
H4a	IC x TDG Interaction		.043	.236	1.284	0.004	Small	
H4b	INT-SC x TDG Interaction		083	.038	1.529	0.010	Small	
H4c	IND-SC x TDG Interaction		.102	.010	1.496	0.014	Small	
H4d	TO x TDG Interaction		014	.680	1.098	0.002	Small	

*Note:* Table shows the results of a multiple regression analysis with five antecedent constructs and four interactions effects. The dependent variable of this analysis is purchase intention. The hypothesis each result relates to is noted. The interaction effect of image congruence and temporal discounting is reported as IC x TDG; of interdependent self-construal and temporal discounting as INT-SC x TDG; of independent self-construal and temporal discounting as IND-SC x TDG; and of temporal orientation and temporal discounting as TO x TDG



Interaction of Interdependent Self-Construal and Temporal Discounting on Purchase Intention

Figure 3: Scatterplots demonstrating the interaction effects of interdependent self-construal and temporal discounting, and independent self-construal and temporal discounting.

#### 5.9.3 Hypotheses 5a, 5b, and 5c

Hypotheses 5a, 5b, and 5c address differences in the value of purchase intention between groups — comparing the difference between older and younger respondents, males and females, and parents and non-parents. Hypotheses 5a and 5c found no support, while Hypothesis 5b was supported. See Table 5.8.4 for a summary of results for Hypothesis 5a, 5b, and 5c.

*Hypothesis 5a:* An independent samples *t*-test was performed to compare purchase intention between those above (n = 201, Older) the median age range of the study and those below (n = 282, Younger). Levene's test was not significant, and so equal variances are assumed. The *t*-test was not statistically significant p = .121; thus, there was no support for Hypothesis 5a.

*Hypothesis 5b:* An independent samples *t*-test was performed to compare the purchase intention of male respondents (n = 235) and female respondents (n = 248). Levene's test was significant, and so equal variances are not assumed. There was a significant difference between male respondents (M = 4.581, SD = 1.294) and female respondents (M = 4.959, SD = 1.127) *t*(464.128) = -3.404, *p* <.001. Females demonstrated .377 greater purchase intention towards sustainable goods with a medium effect found. Thus, Hypothesis 5b is supported.

*Hypothesis 5c:* An independent samples *t*-test was performed to compare the purchase intention of non-parents (n = 256, responded with 0 children) and parents (n = 222, responded with 1 or more children). Levene's test was not significant, and so equal variances are assumed. There was no significant difference in the purchase intention of parents and non-parents p = .619. Therefore, Hypothesis 5c is unsupported.

Hypothesis	Grouping Variable	п	Sig 2 Tail	Mean Difference	Cohen's d	Effect Size
H5a	Median Age	483	.121	.176	0.143	Small
H5b	Gender	483	.001	377	0.310	Medium
H5c	Parenthood	478	.558	.066	0.054	Trivial

Table 5.8.4Results of Hypotheses 5a, 5b, and 5c

*Note:* Table summarises the key findings of independent samples *t*-tests performed to test Hypothesis 5a (Median Age, above and below), Hypothesis 5b (Gender, Male and Female), and Hypothesis 5c (Parenthood, no children and one or more children). Purchase intention was the dependent variable for all three tests. Participants were not required to answer demographic questions in the latter half of the survey so *n* may vary between tests.

#### 5.9.4 Hypotheses H6a, and 6b

Hypotheses 6a and 6b address differences in the value of purchase intention between groups – comparing the difference between participants who responded to a temporal framing manipulation – either present or future-focussed, and between participants who had a match between their temporal orientation and the temporal framing manipulation they responded to. Hypotheses 6a and 6b were unsupported. See Table 5.8.5 for a summary of results.

*Hypothesis 6a Manipulation Condition:* An independent samples *t*-test was performed to compare purchase intention between those who responded to a present (n = 231) or future (n = 252) manipulation. Levene's test was not significant, and so equal variances are assumed. The *t*-test demonstrated no significant difference between those who saw a present (M = 4.787, SD = 1.208), or future (M = 4.765, SD = 1.243) manipulation t(481) = 0.196, p = .844. Therefore, Hypothesis 6a is unsupported.

*Hypothesis 6b:* To test Hypothesis 6b participants were shown two manipulations, a present-focussed temporal framing manipulation (present manipulation), and a future-focussed temporal framing manipulation (future manipulation). Hypothesis 6b addressed a match between a consumer's temporal orientation and the manipulation they were shown. Two conditions were created, mismatched and matched;

1) *Mismatched condition:* Participants who responded to the present manipulation and had a high temporal orientation OR; responded to the future manipulation and had a low temporal orientation;

2) Matched condition: Participants who responded to the present manipulation and had a low temporal orientation OR; responded to the future manipulation and had a high temporal orientation.

An independent samples *t*-test was performed to compare purchase intention between those in the mismatched (n = 249) or matched (n = 234) condition. Levene's test was not significant, and so equal variances are assumed. There was no significant difference between those who were mismatched (M = 4.778, SD = 1.159), or matched (M = 4.772, SD = 1.294) manipulation t(481) = 0.051, p = .959. Therefore, hypothesis 6b is unsupported.

Table 5.8.5Results of Hypotheses 6a, and 6b

Hypothesis	Grouping Variable	п	Sig 2 Tail	Mean Difference	Cohen's D	Effect Size
Нба	Temporal Manipulation Condition	483	.844	.022	0.018	Trivial
H6b	Temporal Manipulation Condition Match	483	.959	.006	0.005	Trivial

*Note:* Table summarises the key findings of independent samples *t*-tests performed to test Hypothesis 6a (Present or Future manipulation), and Hypothesis 6b (Mismatch or match between temporal orientation and present or future manipulation). Purchase intention was the dependent variable for both tests.

#### 5.10 Exploration of Model Effects

Following testing of the thirteen hypotheses, further post-hoc exploration of the data was performed to better understand the study constructs. The supported hypotheses informed the direction of this analysis, with particular focus paid to constructs with significant results during hypothesis testing. Further testing was performed on self-reported behavioural items, self-construal, demographic effects, temporal discounting, and respondent's time perception.

### 5.10.1 Reported Behaviour

Two behavioural questions were included to determine the relationship between the conceptual model and self-reported behaviour. Two multiple regressions were performed, the first with one behavioural dependent variable, the second with the second behavioural dependent variable. The first question required participants to rate the extent to which they actively search for behavioural products to buy them (Green Search). The second question required participants to rate the extent to which purchase more than one type of sustainable

product (Multibuy). Four antecedent constructs were tested; image congruence, interdependent self-construal, independent self-construal, and temporal orientation.

The four antecedent constructs accounted for 52.5% variance in green search ( $R^2 = .522$ , F(4,478) = 130.286, p < .001).

Image congruence significantly predicted green search ( $\beta = .727, p < .001, f^2 = 0.474$ ), with the  $f^2$  value demonstrating a large effect. Interdependent self-construal ( $\beta = .013, p = .703, f^2 = 0.002$ ), independent self-construal ( $\beta = .051, p = .147, f^2 = 0.006$ ), and temporal orientation ( $\beta = .036, p = .273, f^2 = 0.004$ ) did not significantly predict green search.

The four antecedent constructs accounted for 35.6% variance in multibuy ( $R^2 = .356$ , F(4,478) = 65.925, p < .001).

Image congruence ( $\beta = .555$ , p < .001,  $f^2 = 0.280$ ) and temporal orientation ( $\beta = .080$ , p = .034,  $f^2 = 0.011$ ) significantly predicted multibuy. Image congruence demonstrated a large effect size, with temporal orientation demonstrating a trivial effect size. Interdependent self-construal ( $\beta = .058$ , p = .147,  $f^2 = 0.005$ ) and independent self-construal ( $\beta = -.004$ , p = .922,  $f^2 = 0.008$ ) did not significantly predict multibuy. See Table 5.9.1 for further details.

					Cohen's
Independent Variable	Dependent Variable	<b>R</b> <sup>2</sup>	β	р	$f^2$
Image Congruence			.727	<.001	0.474
Interdependent – Self-Construal	Green Search	522	.013	.703	0.002
Independent – Self-Construal	Green Search	.922	051	.147	0.006
Temporal Orientation			.036	.273	0.004
Image Congruence			.555	<.001	0.280
Interdependent – Self-Construal	Multibury	256	.058	.147	0.005
Independent – Self-Construal	Winnouy	.550	004	.922	0.008
Temporal Orientation			.080	.034	0.011

*Note:* Table summarises the results of two multiple regression models. The first model tests the relationship of four antecedent constructs with Green Search. The second model tests the relationship of four antecedent constructs with Multibuy.

Hypothesis 5a related to age, Hypothesis 5b, Gender, and Hypothesis 5c, parenthood. Support was only found for Hypothesis 5b with a significant difference found in purchase intention between male and female respondents. Therefore, a multiple regression was performed on green search and multibuy, with the dataset split into male and female groups. For the male group, the four antecedent constructs accounted for 48.5% variance in green search ( $R^2 = .485$ , F(4,230) = 54.055, p < .001).

For male participants image congruence significantly predicted green search ( $\beta = .704, p < .001, f^2 = 0.427$ ), with the  $f^2$  value demonstrating a large effect. Interdependent self-construal ( $\beta = .012, p = .821, f^2 = 0.002$ ), independent self-construal ( $\beta = .086, p = .123, f^2 = 0.012$ ), and temporal orientation ( $\beta = .077, p = .117, f^2 = 0.012$ ) did not significantly predict green search.

For the female group the four antecedent constructs accounted for 56.7% variance in green search ( $R^2 = .567$ , F(4,243) = 79.640, p < .001).

For female participants image congruence significantly predicted green search ( $\beta$  = .755,  $p < .001, f^2 = 0.530$ ), with a large effect demonstrated. Interdependent self-construal ( $\beta$  = .026,  $p = .562, f^2 < 0.001$ ), independent self-construal ( $\beta$  = -.031,  $p = .498, f^2 = 0.002$ ), and temporal orientation ( $\beta$  = .002,  $p = .972, f^2 < 0.001$ ) did not significantly predict green search. See Table 5.9.2 for further details.

Effect of gender on purchase	behaviour –	Green	Searci	h
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Independent Variable	Dependent Variable	Grouping Variable	R <sup>2</sup>	β	Р	Cohen 's $f^2$
Image Congruence	Crean Saarah	Mala	105	.704	<.001	0.427
Interdependent-Self-Construal	Green Search	Iviale	.403	.012	.821	0.002

Independent – Self-Construal				086	.123	0.012
Temporal Orientation				.077	.117	0.012
Image Congruence				.755	<.001	0.530
Interdependent - Self-Construal	Crean Saarah	Famala	.567	.026	.562	< 0.001
Independent – Self-Construal	Jreen Search	Female		031	.498	0.002
Temporal Orientation				.002	.972	< 0.001

*Note:* Table summarises the results of two multiple regression models. The first model tests the relationship of four antecedent constructs with Green Search, with male respondents. The second model tests the relationship of four antecedent constructs with Green Search, with female respondents.

For the male group, the four antecedent constructs accounted for 28.1% variance in multibuy ( $R^2 = .281$ , F(4,230) = 22.475, p < .001).

For male participants image congruence significantly predicted multibuy ( $\beta = .490, p$ < .001,  $f^2 = 0.205$ ), with the  $f^2$  value demonstrating a large effect. Interdependent selfconstrual ( $\beta = .020, p = .747, f^2 < 0.001$ ), independent self-construal ( $\beta = .054, p = .407, f^2 =$ 0.03), and temporal orientation ( $\beta = .029, p = .612, f^2 = 0.001$ ), did not significantly predict multibuy.

For the female group the four antecedent constructs accounted for 44.4% variance in multibuy ( $R^2 = .444$ , F(4,243) = 48.460, p < .001).

Image congruence ( $\beta = .615$ , p < .001,  $f^2 = 0.369$ ), and temporal orientation ( $\beta = .125$ , p = .012,  $f^2 = 0.012$ ) significantly predicted multibuy. Image congruence demonstrated a large effect, with temporal orientation demonstrating a trivial effect. Interdependent self-construal ( $\beta = .088$ , p = .087,  $f^2 = 0.002$ ), and independent self-construal ( $\beta = -.045$ , p = .384,  $f^2 = 0.004$ ) did not significantly predict multibuy. See Table 5.9.3 for further details.

|--|

	Dependent					Cohen
Independent Variable	Variable	Grouping Variable	$\mathbb{R}^2$	β	P	's <i>f</i> <sup>2</sup>
Image Congruence	Multibuy	Male	.281	.490	<.001	0.205

Interdependent – Self-Construal				.020	.747	< 0.001
Independent – Self-Construal				.054	.407	0.003
Temporal Orientation				.029	.612	0.001
Image Congruence				.615	<.001	0.369
Interdependent – Self-Construal	N /	Ferrela	111	.088	.087	0.012
Independent – Self-Construal	winnbuy	remale	.444	045	.384	0.004
Temporal Orientation				.125	.012	0.026

*Note:* Table summarises the results of two multiple regression models. The first model tests the relationship of four antecedent constructs with Multibuy, with male respondents. The second model tests the relationship of four antecedent constructs with Multibuy, with female respondents.

# 5.10.2 Further Effects of Interdependent Self-Construal

To understand the influence of individual self-construal in the conceptual model data was split into those with interdependent self-construal below (Low Interdependence) the mean value (4.700), and those above (High Interdependence). In the low interdependence group, the model accounts for 43.6% of variance ( $R^2 = .436$ , F(4,246) = 347.517, p < .001). In the high interdependence group, the model accounts for 51.5% of variance ( $R^2 = .515$ , F(4,227) = 36.353, p < .001). Comparing the model by group suggests that there is greater predictive value within the model when participants have high interdependence.

Low Interdependence: For those with low interdependence; image congruence ( $\beta = .604, p < .001, f^2 = 0.366$ ) and interdependence congruence ( $\beta = .118, p = .017, f^2 = 0.017$ ) were significant predictors of purchase intention. Independent self-construal and temporal orientation did not significantly predict purchase intention. Image congruence demonstrated a large effect with interdependent self-construal demonstrating a trivial effect.

*High Interdependence:* For those with high interdependence; image congruence ( $\beta = .666, p < .001, f^2 = 0.421$ ), was a significant predictors of purchase intention. Interdependent self-construal and independent self-construal did not significantly predict purchase intention, with temporal orientation significant at a .01 level ( $\beta = .091, p = .053, f^2 = 0.016$ ). Image

congruence demonstrated a large effect, with temporal orientation demonstrating a trivial

effect. See Table 5.9.4 for a summary of the two multiple regressions.

# Table 5.9.4

*Exploration of Hypotheses Effects – Low and High Interdependence* 

	Dependent					Cohen
Independent Variable	Variable	Grouping Variable	$\mathbb{R}^2$	β	P	's $f^2$
Image Congruence				.604	<.001	0.366
Interdependent – Self-Construal	Purchase	T and Internation on damage	126	.118	.017	0.017
Independent – Self-Construal	Intention	Low Interdependence	.430	.045	.370	0.004
Temporal Orientation				.038	.441	0.002
Image Congruence				.666	<.001	0.421
Interdependent – Self-Construal	Purchase	High	515	.036	.460	0.002
Independent – Self-Construal	Intention	Interdependence	.515	.049	.339	0.004
Temporal Orientation				.091	.053	0.016

*Note:* Table summarises the results of two multiple regression models. The first model tests the relationship of four antecedent constructs with Purchase Intention, with low interdependence respondents. The second model tests the relationship of four antecedent constructs with Purchase Intention, with high interdependence respondents.

# 5.10.3 Further Effects of Independent Self-Construal

To understand the influence of individual self-construal in the conceptual model data was split into those with independent self-construal below (Low Independence) the mean value (4.938), and those above (High Independence). In the low independence group, the model accounts for 48.4% of the variance (R2 = .484, F(4,225) = 54.602, p < .001). In the high independence group, the model accounts for 47.6% of variance (R2 = .476, F(4,248) = 56.217, p < .001). Comparing the model by group suggests that there is greater predictive value within the model when participants have high independence.

Low Independence: For those with low independence; image congruence ( $\beta =$ 

.650, p < .001,  $f^2 = 0.422$ ) was a significant predictor of purchase intention. Interdependent self-construal ( $\beta = .091$ , p = .075,  $f^2 = 0.016$ ) predicted purchase intention at a 0.1 significance level. Independent self-construal and temporal orientation did not significantly

predict purchase intention. Image congruence demonstrated a large effect with interdependent self-construal demonstrating a trivial effect.

*High Independence:* For those with high independence; image congruence ( $\beta = .571, p < .001, f^2 = 0.358$ ), interdependent self-construal ( $\beta = .183, p < .001, f^2 = 0.056$ ), and independent self-construal ( $\beta = .106, p = .032, f^2 = 0.019$ ) were all significant predictors of purchase intention. Temporal orientation did not significantly predict purchase intention. Image congruence demonstrated a medium effect, interdependent self-construal a small effect, and independent self-construal a trivial effect. See Table 5.9.5 for a summary of the two multiple regressions.

Table 5.9.5Exploration of Hypotheses Effects – Low and High Independence

	Dependent					Cohen
Independent Variable	Variable	Grouping Variable	$\mathbb{R}^2$	β	Р	's <i>f</i> ²
Image Congruence				.571	<.001	0.358
Interdependent-Self-Construal	Purchase Intention	I ow Indonondonoo	176	.183	<.001	0.056
Independent – Self-Construal		Low independence	.470	.106	.032	0.019
Temporal Orientation				.063	.192	0.008
Image Congruence				.650	<.001	0.422
Interdependent – Self-Construal	Purchase	TT: 1. T. 1	.493	.091	.075	0.016
Independent – Self-Construal	Intention	High Independence		.034	.494	0.002
Temporal Orientation				.060	.217	0.008

*Note:* Table summarises the results of two multiple regression models. The first model tests the relationship of four antecedent constructs with Purchase Intention, with low independence respondents. The second model tests the relationship of four antecedent constructs with Purchase Intention, with high independence respondents.

# 5.10.4 Further Effects of Demographics

To further understand the effects reported in the model, further analysis was

undertaken using four of the demographic variables collected, age, gender, parenthood, and

personal income.

# 5.10.4.1 Age

To understand the effect of older and younger participants a multiple regression was performed on the model, grouped by those with an above mean (Older, Age Range, 35 to 39) age, and those with a below mean age (Younger). For older participants, the model accounted for 43.7% of the variance ( $R^2 = .437$ , F(4,196) = 38.009, p < .001). For younger participants, the model accounted for 56.7% of the variance ( $R^2 = .567$ , F(4,277) = 90.699, p < .001).

Older For older participants image congruence ( $\beta = .594$ , p < .001,  $f^2 = 0.335$ ) and interdependent self-construal ( $\beta = .115$ , p = .040,  $f^2 = 0.021$ ) were significant predictors of purchase intention. Image congruence demonstrated a medium effect with interdependent self-construal demonstrating a small effect.

*Younger:* For younger participants image congruence ( $\beta = .645$ , p < .001,  $f^2 = 0.437$ ) and interdependent self-construal ( $\beta = .138$ , p = .003,  $f^2 = 0.031$ ) were significant predictors of purchase intention. Image congruence demonstrated a large effect with interdependent self-construal demonstrating a small effect. See Table 5.9.6 for a summary of the multiple regression grouped by older and younger participants.

Independent Variable	Dependent Variable	Grouping Variable	<b>R</b> <sup>2</sup>	ß	Р	Cohen' s $f^2$
Image Congruence	, and the	, unuone		.645	<.001	0.437
Interdependent – Self-Construal	Purchase	011		.138	.003	0.031
Independent – Self-Construal	Intention	Older	.367	.088	.053	0.014
Temporal Orientation				.029	.478	0.002
Image Congruence				.594	<.001	0.335
Interdependent – Self-Construal	Purchase Intention	Vouecoe	127	.115	.040	0.021
Independent – Self-Construal		rounger	.437	.009	.879	< 0.001
Temporal Orientation				.106	.052	0.019

Effect of older and younger participants on the proposed model

*Note:* Table summarises the results of two multiple regression models. The first model tests the relationship of four antecedent constructs with Purchase Intention, with older respondents. The second model tests the relationship of four antecedent constructs with Purchase Intention, with younger respondents.

# 5.10.4.2 Gender

A multiple regression was performed with the data split into male and female respondents. For male respondents, the model accounted for 45.5% of the variance (R2 = .455, F(4,230) = 47.954, p < .001) and for female respondents the model accounted for 57.5% of the variance (R2 = .575, F(4,243) = 82.087, p < .001).

*Male respondents*: For male respondents, image congruence was a significant predictor of purchase intention ( $\beta = .610$ , p < .001,  $f^2 = 0.344$ ), demonstrating a medium effect. Independent self-construal fell between 90 and 95% significance ( $\beta = .096$ , p = .094,  $f^2 = 0.013$ ), demonstrating a trivial effect. Neither temporal orientation nor interdependent self-construal were significant.

*Female respondents:* For female respondents image congruence ( $\beta = .642, p < .001, f^2 = 0.454$ ) and interdependent self-construal ( $\beta = .240, p < .001, f^2 = 0.105$ ) were significant predictors of purchase intention. Image congruence demonstrated a large effect size and interdependent self-construal a small effect size. See Table 5.9.7 for a summary of the results of a multiple regression split by gender.

Cohen Dependent Variable  $\mathbb{R}^2$ Independent Variable Grouping Variable 's  $f^2$ ß Р Image Congruence .610 <.001 0.344 Interdependent – Self-Construal .030 .580 0.002 Purchase Male .455 Independent - Self-Construal Intention .096 .094 0.013 **Temporal Orientation** .028 .582 0.001 Image Congruence .642  $<.001 \quad 0.454$ Purchase .575 Female Interdependent – Self-Construal Intention .240 <.001 0.105

*Effect of gender on the proposed model* 

3.7	<b>T</b> 11	•	.1	1.	0.	1.1.1	•	1 1	 <b>C</b>	1 1	.1
Temp	oral Orientati	on							.055	.201	0.001
Indep	endent – Self	-Con	strual						.012	.799	< 0.001

*Note:* Table summarises the results of two multiple regression models. The first model tests the relationship of four antecedent constructs with Purchase Intention, with male respondents. The second model tests the relationship of four antecedent constructs with Purchase Intention, with female respondents.

# 5.10.4.3 Effects of Parenthood

A multiple regression was performed comparing non-parents and parents. For nonparents, the model accounted for 60% of the variance ( $R^2 = .600$ , F(4,217) = 81.425, p < .001). For parents, the model accounted for 44.7% of the variance ( $R^2 = .447$ , F(4,251) = 50.638, p < .001).

Non-parent respondents: For non-parents image congruence ( $\beta = .689, p < .001, f^2 = 0.502$ ) and interdependent self-construal ( $\beta = .211, p < .001, f^2 = 0.083$ ) were significant predictors of purchase intention. Image congruence demonstrated a large effect with interdependent self-construal demonstrating a trivial effect. Independent self-construal and temporal orientation were not significant predictors of purchase intention.

*Parent respondents:* For parents image congruence ( $\beta = .550$ , p < .001,  $f^2 = 0.298$ ), independent self-construal ( $\beta = .117$ , p = .031,  $f^2 = 0.020$ ), and temporal orientation ( $\beta = .103$ , p = .034,  $f^2 = 0.030$ ) were significant predictors of purchase intention. With image congruence demonstrating a large effect size, independent self-construal a small effect size, and temporal orientation a small effect size. Interdependent self-construal was not a significant predictor of purchase intention. See Table 5.9.7 for further details.

	Dependent					Cohen
Independent Variable	Variable	Grouping Variable	$\mathbb{R}^2$	β	Р	's $f^2$
Image Congruence	D 1			.689	<.001	0.502
Interdependent – Self-Construa	1 Purchase	Non-Parents	.600	.211	<.001	0.083
Independent-Self-Construal	Intention			024	.606	< 0.001

Effect of parenthood on the proposed model

Temporal Orientation				.013	.762	<0.001
Image Congruence Interdependent – Self-Construal Independent – Self-Construal Temporal Orientation	Purchase Intention	Parents	.447	.550 .073 .117 .103	<.001 .156 .031 .034	0.298 0.021 0.020 0.030

*Note:* Table summarises the results of two multiple regression models. The first model tests the relationship of four antecedent constructs with Purchase Intention, with non-parents. The second model tests the relationship of four antecedent constructs with Purchase Intention, parents.

# 5.10.4.4 Personal Income

Multiple regression was performed on the model, split into two groups, a personal income below (Lower Income) the mean (30,000-40,000) of the study greater than the mean value (Higher Income). For lower income participants the model accounts for 55.9% of the variance ( $R^2 = .567$ , F(4,251) = 79.435, p < .001). For higher income participants the model accounts for 45.7% of the variance ( $R^2 = .457$ , F(4,222) = 46.764, p < .001).

*Lower income group:* Image congruence ( $\beta = .644$ , p < .001,  $f^2 = 0.422$ ) and

interdependent self-construal ( $\beta = .189, p < .001, f^2 = 0.060$ ) were significant predictors of purchase intention. With image congruence demonstrating a large effect size and interdependent self-construal a trivial effect.

# *Higher income group:* For higher income participants image congruence ( $\beta$ =

.592, p < .001,  $f^2 = 0.357$ ) and independent self-construal ( $\beta = .115$ , p = .036,  $f^2 = 0.020$ ) were significant predictors of purchase intention. With image congruence demonstrating a large effect size and independent self-construal demonstrating a trivial effect. See Table 5.9.9 for details of the multiple regression split by low and high personal income.

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Lifect of personal	meome		proposed	mouci

	Dependent					Cohen
Independent Variable	Variable	Grouping Variable	$\mathbb{R}^2$	β	Р	's $f^2$
Image Congruence	Purchase	L outon In como	550	.644	<.001	0.422
Interdependent – Self-Construal	Intention	Lower Income	.339	.189	<.001	0.060

Independent – Self-Construal				016	.732	0.002
Temporal Orientation				.075	.085	0.013
Image Congruence				.592	<.001	0.357
Interdependent – Self-Construal	Purchase	Higher Income	157	.093	.077	0.013
Independent – Self-Construal	Intention	figher income	.437	.115	.036	0.020
Temporal Orientation				.035	.489	0.002

*Note:* Table summarises the results of two multiple regression models. The first model tests the relationship of four antecedent constructs with Purchase Intention, with lower income respondents. The second model tests the relationship of four antecedent constructs with Purchase Intention, with higher income respondents.

# 5.11 Model Effect on Temporal Discounting

To determine if the conceptual model had a predictive value on an individual's temporal discounting rate a multiple regression was performed with temporal discounting towards an environmental gain (TDG) and an environmental loss (TDL). The model contained four antecedent constructs: image congruence, interdependent self-construal, independent self-construal, and temporal orientation.

The four antecedent constructs accounted for 2.5% of the variance in TDG ( $R^2 = .025$ ,

$$F(4,478) = 3.122, p = .015).$$

Image congruence and interdependent self-construal did not significantly predict TDG. Independent self-construal ( $\beta = -.109$ , p = .031,  $f^2 = 0.19$ ), and temporal orientation ( $\beta = .099$ , p = .034,  $f^2 = 0.016$ ) significantly predicted TDG. Independent self-construal demonstrated a trivial effect size, as did temporal orientation.

A multiple regression with TDL as a dependent variable demonstrated no significant results and so is not reported. For details of the multiple regression with TDG as a dependent variable see Table 5.10.1.

				(	Cohen's
Independent Variable	Dependent Variable	$\mathbb{R}^2$	β	р	$f^2$
Image Congruence			.091	.070	0.019
Interdependent – Self-Construal	TDC	025	045	.362	0.024
Independent – Self-Construal	IDG	.023	109	.031	0.016
Temporal Orientation			.099	.034	0.016
Nota: Table shows the results of for	ur antecedent constructs	with to	mnoral d	iscounting	

Table 5.10.1Effect of the Conceptual Model on Temporal Discounting

*Note:* Table shows the results of four antecedent constructs with temporal discounting towards an environmental gain (TDG) as the dependent variable.

# 5.12 Boundaries of Time

To investigate how respondents understand three time-related terms commonly cited in the literature, a frequency analysis was used to determine the categorisation of 'present', 'near future', and 'far future'. These three terms are commonly cited in extant literature, without clear definition of what they mean to respondents.

# 5.12.1 Time Perception

Participants responded to a sorting exercise, categorising twelve units of time into three categories, 'present', 'near future', and 'far future'. To determine a delineation between each term, a majority of 50.1% of participants had to categorise a unit of time the same way. See Table 5.11.1 for a summary of the frequencies reported by participants. The findings suggest a clear delineation between 'present' and 'near future' of between 14 and 30 days, and between 'near future' and 'far future', of six months and one year. The final delineation is less decisive than the others, with 45.28% of respondents considering one year to be near future, and 51.57% considering one year to be far future.

# Table 5.11.1

		Categorisation				
	Present	Near Future	Far Future			
1 Day	97.48%	2.29%	0.23%			
1 Week	79.19%	19.86%	0.96%			
14 Days	66.08%	33.16%	0.76%			

Categorisation of Units of Time

30 Days	36.99%	60.20%	2.81%
1 Month	30.79%	67.24%	1.97%
6 Weeks	16.71%	78.23%	5.06%
90 Days	7.18%	78.46%	14.36%
6 Months	3.93%	71.50%	24.57%
1 Year	3.15%	45.28%	51.57%
36 Months	0.99%	17.49%	81.53%
60 Months	1.98%	8.15%	89.88%
5 Years	0.95%	3.31%	95.74%

*Note:* Table summarises the category of responses that time was categorised as, represented as a percentage. Bold represents the largest percentage.

# 5.12.2 Displayed Value of Time – Effect on Time Perception

Within the twelve units of time offered to participants, four items represented the same two measurements of time: 30 Days and 1 Month, and 60 Months and 5 Years. Therefore, rational participants should rank these two items equally. However, frequency analysis suggests that this is not the case with each 30 Days and 1 Month being categorised differently, as was 60 Months and 5 Years. See Table 5.11.1 for a summary of the frequency analysis.

*30 Days and 1 Month:* To confirm the result observed in frequency analysis a pairedsamples *t*-test was performed to compare the mean value of 30 days (M = 1.67, SD = 0.53), with the mean value of 1 Month (M = 1.71, SD = 0.50). On average participants considered 30 Days to be closer to 'present' by 0.039, t(379) = -1.838, p = .067, Cohen's d = 0.077 than they did 1 Month. However, the difference was not statistically significant at the 95% threshold and a trivial effect size was demonstrated.

60 Months and 5 Years: To confirm the observed difference between 60 Months and 5 Years a paired samples *t*-test was used compare the mean value of 60 Months (M = 2.89, SD = 0.35), with the mean value of 5 Years (M = 2.95, SD = 0.27). On average participants considered 5 Years to be closer to 'far future' by 0.530 than they did 60 Months. The difference was statistically significant with a small effect size t(379) = -2.745, p = .006, Cohen's d = 0.17. Therefore, despite 5 Years and 60 Months being equivalent units of time, on average, 5 Years had a statistically significant higher mean, than 60 Months. See Table 5.11.2 for details.

Table 5.11.2								
Paired samples t-tests comparing time values								
Pair			Mean	Cohen's				
Grouping Variable	п	Sig 2 Tail	Difference	d				
30 Days – 1 Month	380	.067	039	0.077				
60 Months – 5 Years	380	.006	530	0.17				

*Note:* Table shows the results of a paired samples *t*-test comparing the means of 30 Days and 1 Month, and 60 Months and 5 Years.

#### 5.12.3 High and Low Temporal Orientation – Effect on Time Perception

With the prior frequency analysis establishing a baseline series of delineation points and a basis for future discussion, a second frequency analysis split by low (present-focussed) and high (future focussed) temporal orientation was performed. Temporal orientation was tested to understand if present-focussed individuals saw shorter periods of time as more likely to be near or far future, and to see if the opposite would hold for future-focussed individuals.

Low and high temporal orientation individuals saw the change from present to near future as occurring between 14 and 30 days. However, the delineation between near and far future occurred at different points in time for low and high temporal orientation individuals. Low temporal orientation individuals saw 1 year (58.29%) as being far future, suggesting the change from near to far future occurs between 6 months and 1 year. High temporal orientation individuals categorised 1 year as near future (52.48%), suggesting high temporal orientation individuals see the change from near to far future occurring between 1 year and 36 months.

To understand at which points the differences in responses between low and high temporal orientation individuals were statistically significant, an independent samples *t*-test

was performed on each of the twelve presented units of time. Significant differences between low and high temporal orientation individuals were found at 1 Month, 6 Weeks, and 1 Year.

*1 Month:* A statistically significant difference was found at 1 Month with low temporal orientation individuals (M = 1.771, SD = .48) categorising 1 Month 0.119 higher (a more future rating) than high temporal orientation individuals (M = 1.652, SD = .51) t(401.120) = 2.434, p = .015, Cohen's d = 0.243, a medium effect size.

*6 Weeks:* The difference at 6 Weeks was statistically significant with low temporal orientation individuals (M = 1.929, SD = .48) categorising 6 Weeks 0.090 higher than high temporal orientation individuals (M = 1.838, SD = .42) t(393) = 2.023, p = .047, Cohen's d = 0.200, a medium effect size.

*I Year:* The difference at 1 Year was statistically significant with low temporal orientation individuals (M = 2.550, SD = .56) categorising 1 Year 0.121 higher than high temporal orientation individuals (M = 2.416, SD = .55) t(411) = 2.445, p = .028, Cohen's d = 0.217, a medium effect size.

See Table 5.11.3 for a summary of the significant independent samples *t*-tests performed.

Table 5.11.3

		10	Sig 2	Mean	Cohen's
Variable	Grouping Variable	n	Tail	Difference	d
1 Month	Temporal Orientation (Low High)	406	.015	.119	0.243
6 Weeks	Temporal Orientation (Low High)	395	.047	.090	0.200
1 Year	Temporal Orientation (Low High)	413	.028	.121	0.217

Summary of Key Independent Samples t-tests

*Note:* Table summarises the key findings of independent samples *t*-tests on participant's categorisation of time. Participants were not required to categorise all items; thus, *n* may vary between tests.

# 5.12.4 Effect of Demographics on Time Perception

To consider the potential effect of age, gender and parenthood, independent samples *t*-tests were performed using; age (older and younger than median), gender (male and female), and parenthood (no children, or one or more children).

The only significant effects were found between male (n = 192) and female (n = 213)participants when categorising 60 months. Despite being an equivalent length of time, no significant difference was found between for male (n = 198) and female (n = 225)respondents categorising 5 Years.

Gender difference in 60 months: Levene's test was significant, and so equal variances are not assumed. The *t*-test was statistically significant, with male respondents (M = 2.83, SD = .47) categorising 60 Months 0.097 lower than female respondents (M = 2.92, SD = .28) t(307.700) = -2.499, p = .013, Cohen's d = 0.062, a small effect size.

*Gender Difference in 5 Years*: Levene's test was not significant and so equal variances are assumed. The *t*-test was not statistically significant, with male respondents (M = 2.94, SD = .28) categorising 60 Months 0.097 lower than female respondents (M = 2.96, SD = .25) t(421) = -0.634, p = .527, Cohen's d = 0.062, a small effect size. See Table 5.11.4 for further details.

Table 5.11.4		
Independent Samples t-tests	Comparing Ti	ime by Gender

Variable	Grouping Variable		n	Sig 2 Tail	Mean Difference	Cohen's d
60 Months	Gender: Male, Female	4	05	.013	097	0.062
5 Years	Gender: Male, Female	4	23	.527	016	0.062

*Note:* Table summarises the *t*-test comparing males and female perceptions of 60 months and 5 years.

*Male Categorisation of 30 Days and 1 Month:* A paired samples *t*-test was conducted on male participants to determine if there is a difference in the perception of 30 days (M =

1.68, SD = .56) and 1 Month (M = 1.71, SD = .52). Male participants did not demonstrate a statistically significant difference in their categorisation of 30 Days and 1 Month t(179) = -1.135, p = .258, Cohen's d = 0.062.

*Male Categorisation of 60 Months and 5 years:* A paired samples *t*-test was conducted on male participants, to determine if there is a difference in the perception of 60 Months (M = 2.85, SD = 0.43) and 5 Years (M = 2.94, SD = 0.28). Male participants demonstrate a statistically significant difference in their categorisation of 60 Months and 5 Years t(176) = -3.027, p = .003, Cohen's d = 0.265. A medium effect size was demonstrated, with 5 Years rated as closer to the term 'far future', than 60 Months.

*Female Categorisation of 30 Days and 1 Month:* A paired samples *t*-test was conducted on female participants to determine if there is a difference in the perception of 30 Days (M = 1.66, SD = .51) and 1 Month (M = 1.71, SD = .48). Female participants did not demonstrate a statistically significant difference in their categorisation of 30 Days and 1 Month t(199) = -1.445, p = .150, Cohen's d = 0.091.

*Female Categorisation of 60 Months and 5 Years:* A paired samples *t*-test was conducted on female participants to determine if there is a difference in the perception of 60 Months (M = 2.94, SD = .25) and 5 Years (M = .295, SD = .26). Female participants did not demonstrate a statistically significant difference in their categorisation of 60 Months and 5 Years t(202) = -.654, p = .514, Cohen's d = 0.058. For a summary of the paired-samples *t*-tests performed to demonstrate male and female differences in the categorisation of 30 Days and 1 Month, and 60 Months and 5 Years, see Table 5.11.5.

Table 5.11.5

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Pairea Samples	t-tests Comp	paring 1ime	by Genaer

			Sig 2	Mean	Cohen's
Comparison Pair	Grouping Variable	n	Tail	Difference	d
30 Days & 1 Month	Gender: Male	180	.258	033	0.062

60 Months & 5 Years	Gender: Male	177	.003	096	0.265
30 Days & 1 Month	Gender: Female	200	.150	045	0.091
60 Months & 5 Years	Gender: Female	203	.514	015	0.058

*Note:* Table summarises the key findings of paired-samples *t*-tests on participant's 30 Days and 1 Month, and 60 Months and 5 Years. Data was split into male and female groups. Participants were not required to categorise all items; therefore, *n* may vary between tests.

## 5.13 Chapter Summary

Chapter 5 detailed and reported on the results of the data analysis performed to test the hypotheses proposed in Chapter 3.

A representative sample was demonstrated with respondent age, gender, personal income, and education being within  $\pm$  10% of national census data. A final sample size of n = 483 was analysed after the data was cleaned. Analytical assumptions were tested, with all data found to be normally distributed and with low levels of multicollinearity below concern. Low levels of common method bias were detected using a common latent factor test, but not at levels of concern.

Factor analysis was performed on each of the constructs, with items considered for deletion where necessary to ensure reliable measures. A manipulation check was also performed to understand the effectiveness of manipulations in the study. No significant difference was found in the factors manipulated (temporal discounting and self-construal), nor in purchase intention. Therefore, all data was treated as homogenous.

Four of thirteen hypotheses were supported. In Hypotheses 1 and 2a, image congruence and interdependent self-construal were found to positively impact purchase intention towards a sustainable good. Hypothesis 4b was supported with temporal discounting found to positively moderate the relationship between independent self-construal and purchase intention towards a sustainable good. Hypothesis 5b was supported with female participants found to have a

higher purchase intention than males towards sustainable goods. See Table 5.12.1 for a

summary of the hypotheses.

Table 5.12.1

List of Research Hypotheses					
	Hypothesis	Support			
H1	Consumers with greater image congruence towards sustainable consumption exhibit higher purchase intention towards sustainable goods.	Supported			
H2a	Consumers with higher interdependent self-construal exhibit higher purchase intention towards sustainable goods.	Supported			
H2b	Consumers with higher independent self-construal exhibit lower purchase intention towards sustainable goods.	Not Supported			
Н3	Consumers with a future temporal orientation will exhibit higher purchase intention towards sustainable goods.	Not Supported			
H4a	Temporal discounting will moderate the relationship between image congruence and purchase intention towards a sustainable good.	Not Supported			
H4b	Temporal discounting will moderate the relationship between interdependent self-construal and purchase intention towards a sustainable good.	Supported			
H4c	Temporal discounting will moderate the relationship between independent self-construal and purchase intention towards a sustainable good.	Supported			
H4d	Temporal discounting will moderate the relationship between temporal orientation and purchase intention towards a sustainable good.	Not Supported			
H5a	Younger participants will have a higher purchase intention than older participants towards sustainable goods.	Not Supported			
H5b	Female participants will have a higher purchase intention than male participants toward sustainable goods.	Supported			
H5c	Parents will have a higher purchase intention than non-parents towards sustainable goods.	Not Supported			
Нба	Participants primed with a future-focussed message will have higher purchase intention towards sustainable goods than those primed with a present-focussed message.	Not Supported			
H6b	Consumers with greater image congruence towards sustainable consumption have higher purchase intention towards sustainable goods.	Not Supported			

*Note:* Table shows a summary of the hypotheses tested in this research and whether the hypothesis was supported

To help understand impacts on behaviour as well as purchase intention, two behaviour

related questions were included; if a participant seeks out sustainable goods (green search)

and if the participant buys multiple types of sustainable goods (multibuy). Image congruence

significantly predicted green search. Image congruence and temporal orientation significantly predicted multibuy.

To better understand the effects of the tested constructs, further testing was conducted. The first additional test run was to compare the results of the model, with the data split into low interdependence and high interdependence respondents. The second additional test was with the data split into low independence and high independence respondents. Demographics were used to further understand the model with the data split by older and younger respondents, males and females, non-parents and parents, and lower and higher income respondents. Additionally, the conceptual model was performed with temporal discounting towards a gain as the dependent variable.

Low and High Interdependence: For low interdependence respondents, image congruence and interdependent self-construal significantly predicted purchase intention. For high interdependence respondents image congruence significantly predicted purchase intention, with temporal orientation noted for its significance at a p < 0.1 level.

Low and High Independence: For low independence respondents, image congruence, interdependent self-construal, and independent self-construal significantly predicted purchase intention. For high independence respondents image congruence significantly predicted purchase intention, with interdependent self-construal noted for its significance at a p < 0.1 level.

Older and Younger Respondents: For older respondents, image congruence and interdependent self-construal were significant predictors of purchase intention, with independent self-construal noted for its significance at a p < 0.1 level. For younger respondents, image congruence and interdependent self-construal were significant predictors of purchase intention, with temporal orientation noted for its significance at a p < 0.1 level.

*Males and Females:* For males, image congruence was a significant predictor of purchase intention with independent self-construal noted for its significance at a p < 0.1 level. For females, image congruence, and interdependent self-construal were significant predictors of purchase intention.

*Non-Parents and Parents:* For non-parents, image congruence, and interdependent self-construal were significant predictors of purchase intention. For parents, image congruence, independent self-construal, and temporal orientation were significant predictors of purchase intention.

*Lower and Higher Income:* For lower income participants, image congruence and interdependent self-construal were significant predictors of purchase intention, with temporal orientation noted for its significance at a p < 0.1 level. For higher income participants, image congruence, and independent self-construal were significant predictors of purchase intention, with interdependent self-construal noted for its significance at a p < 0.1 level.

*Temporal Discounting* – *Gain:* No significant relationships were found between the conceptual model and temporal discounting towards a loss, so only relationships with temporal discounting towards a gain were reported. Independent self-construal, and temporal orientation were significant predictors of temporal orientation towards a gain, with image congruence noted for its significance at a p < 0.1 level.

Participants responded to an activity where they were presented with different units of time, and they were asked to sort these into categories they felt best represented that unit. The categories presented were 'present', 'near future', 'far future'. The sample studied determined that 14 Days was a 'present' time frame and 30 Days was a 'near future' time frame, 6 Months was a 'near future' time frame, and 1 Year was a 'far future' time frame.
To understand if there was a difference in how the participants the same unit of time, presented two ways; 30 Days and 1 Month, and 60 Months and 5 Years, were both included in the sorting exercise. Participants interpreted each differently, with the difference between 30 Days and 1 Month significant at a p < 0.1 level, and the difference between 60 Months and 5 Years statistically significant. For males there was a statistically significant difference between 60 Months and 5 Years, but not for females, and a statistically significant difference between how males and females rated 60 Months. There was a statistically significant difference between low and high temporal orientation individuals.

Chapter 6 discusses the results highlighted in Chapter 5 in the context of extant literature. Interpretation of the researcher will be added to these results with discussion on why results are similar or different to what existing literature suggests should be the case.

#### **Chapter 6 – Discussion**

### 6.1 Introduction

Chapter 6 discusses the results presented in Chapter 5. The discussion presents the results in the context of extant literature and contributes to the advancement of this literature. This study answers four research questions. Answers to the research questions contribute to the gaps in the literature detailed in the literature review and the conceptual development.

This research contributes to an understanding of what drives consumers to purchase sustainable goods. Increasingly society is calling for greater awareness of environmental harm, and greater actions to be taken by business, government, and consumers (e.g., Costa Pinto et al., 2014; Olsen et al., 2014; Prothero et al., 2010). However, while consumers indicate their desire to act in a more environmentally positive manner, only some follow through with their behaviour (Prothero et al., 2011; United Nations Environment Program, 2005).

Purchasing sustainable goods is the consequence of a complex series of decisions made by consumers', likely subconsciously. Public product reviews and extant literature suggest that part of this series of decisions is a need to make trade-offs (e.g., Consumer, n.d.b, n.d.-c; Kaufman, 2014; Stock, 2015; Tanner & Wölfing Kast, 2003). This research proposes a conceptual model comprising image congruence, self-construal, and temporal orientation as internal factors to explore the decision-making process considering these tradeoffs. This investigation into consumer intentions towards purchasing sustainable goods is structured around four research questions:

1. Does image congruence, self-construal, temporal orientation, and temporal discounting impact consumer purchase intention of sustainable goods?

- 2. Does the presence of temporal framing impact consumer purchase intention of sustainable goods?
- 3. What demographic characteristics impact on purchase intention towards sustainable goods?
- 4. Do different consumers see lengths of time differently?

Thirteen hypotheses were proposed, with four supported in the data analysis reported in Chapter 5, Table 6.1.1 lists these hypotheses and their support. Further exploration of the data set was conducted, with discussion on participants reported behaviours, the effects of self-construal on the model, and the effect of demographics on the model. Participants also responded to an activity where they categorised units of time. The results of this activity will be discussed and presented in the context of what this means for an academic understanding of time, and in practice.

#### 6.2 Hypothesis Testing

1 11 .1

Hypotheses will be discussed with reference to their conceptual basis and result implications. Hypotheses 1, 2a, 4c, and 5b were supported. See Table 6.1.1 for a summary of the hypotheses and their support.

Table 6.1.1

List of Research Hypotheses		
	Hypothesis	Support
H1	Consumers with greater image congruence towards sustainable consumption exhibit higher purchase intention towards sustainable goods.	Supported
H2a	Consumers with higher interdependent self-construal exhibit higher purchase intention towards sustainable goods.	Supported
H2b	Consumers with higher independent self-construal exhibit lower purchase intention towards sustainable goods.	Not Supported
Н3	Consumers with a future temporal orientation will exhibit higher purchase intention towards sustainable goods.	Not Supported
H4a	Temporal discounting will moderate the relationship between image congruence and purchase intention towards a sustainable good.	Not Supported

H4b	Temporal discounting will moderate the relationship between interdependent self-construal and purchase intention towards a sustainable good.	Supported
H4c	Temporal discounting will moderate the relationship between independent self-construal and purchase intention towards a sustainable good.	Supported
H4d	Temporal discounting will moderate the relationship between temporal orientation and purchase intention towards a sustainable good.	Not Supported
H5a	Younger participants will have a higher purchase intention than older participants towards sustainable goods.	Not Supported
H5b	Female participants will have a higher purchase intention than male participants toward sustainable goods.	Supported
H5c	Parents will have a higher purchase intention than non-parents towards sustainable goods.	Not Supported
Нба	Participants primed with a future-focussed message will have higher purchase intention towards sustainable goods than those primed with a present-focussed message.	Not Supported
H6b	Consumers with greater image congruence towards sustainable consumption have higher purchase intention towards sustainable goods.	Not Supported

*Note:* Table shows a summary of the hypotheses tested in this research and whether the hypothesis was supported

# 6.2.1 Hypotheses 1, 2a, 2b, and 3

Four hypotheses compose the basic model proposed in this research. Hypotheses 1,

2a, 2b, and 3. This research contributes to an understanding of what factors influence consumer purchase intention towards sustainable goods. The model accounts for 51.6% of the variance in purchase intention indicating that the identified factors go some way towards explaining consumer purchase intention towards sustainable goods. Image congruence and interdependent self-construal were both found to be significant predictors of purchase intention p <.001. Independent self-construal was not a significant predictor of purchase intention. Image congruence demonstrated a large effect size, and interdependent selfconstrual and temporal orientation had small effect sizes. Overall the results demonstrate that image congruence provides the greatest influence on purchase intention for sustainable goods, followed by interdependent self-construal.

# 6.2.1.1 Hypothesis 1 – Image Congruence

Image congruence has a positive relationship on consumer intention to purchase sustainable goods. One possible interpretation of the results may be that an individual's selfimage works in the face of a belief that their actions would only have a little impact on positive environmental outcomes (Oliver & Lee, 2010). Oliver and Lee (2010) found that image congruence was a stronger predictor of purchase intention towards a sustainable good than the social value of a car purchase, or the willingness to search for 'green' information. More broadly studies show that individuals seek to act in a manner congruent with their image when choosing products or stores (e.g., Blackwell et al., 2006; Graeff, 1996; Hosany & Martin, 2012). Hypothesis 1 stated that: *Consumers with greater image congruence towards sustainable consumption exhibit higher purchase intention towards sustainable goods*.

The type of purchase can influence the extent to which a sustainable good is a social signal for consumers (Griskevicius et al., 2010), or the congruence between the consumer and other consumers of the product (Blackwell et al., 2006; Sirgy et al., 2000). This research did not provide a store (e.g., Ibrahim & Najjar, 2008), product (e.g., Oliver & Lee, 2010), or a specific fellow consumer (e.g., Hosany & Martin, 2012). Instead participants responded to and reflected on the concept of sustainable goods with their own perceptions of the goods and the type of people that may use them. Individuals with a strong environmental or sustainable self-image would appear to consider purchase decisions against their self-image and their perceived image of what constitutes a sustainable good.

The influence of image congruence as a predictor of purchase intention suggests that despite the complex and multi-faceted of sustainable goods purchasing, a consumer's selfimage is the dominant part of their decision making. It is perhaps unsurprising that when deciding alternative options for purchase, a purchaser makes purchase decisions to match their self-image. An analogy may be found in other areas of image congruence research, with participants being willing to spend more money on brand name products to match their self-image (e.g., Escalas & Bettman, 2003); this type of purchase also presents a short-term cost and is paired with long-term opportunity cost. This study reinforces the current understand of image congruence as a strong motivator of purchase intention and contributes by suggesting that the concept of sustainability is a motivating factor, not just a specific product, store, or perceived image of fellow sustainable goods consumers. When viewed in the context of extant literature this study further suggests that image congruence with the product is an important factor in overcoming negative (real or perceived) product attributes.

# 6.2.1.2 Hypothesis 2a and 2b – Self-Construal

Self-construal is the degree to which a person has an others- (interdependent), or a self- (independent) focus (Arnocky et al., 2007; Singelis, 1994). This research treated self-construal in line with its original conceptualisation by Singelis (1994), whereby the characteristics of independence and interdependence are somewhat at odds with each other (i.e., someone is either others- or self- focussed) and therefore, interdependent and independent self-construal were hypothesised as having opposite effects. The measurement of self-construal was treated as two continuous sub-scales, the extent of interdependence and the extent of independence, rather than a single dichotomous measure (e.g., D'Amico & Scrima, 2016; Hardin et al., 2004).

This research found that interdependent self-construal was a significant predictor of purchase intention towards sustainable goods. Interdependent individuals responded as hypothesised, choosing a 'safe' and co-operative product. Independent self-construal did not significantly predict purchase intention. The results suggest that independent individuals may be ambivalent towards sustainable goods. That is independent individuals do not have a specific intention either way, simply choosing to maximise their individual benefit at the time of purchase.

Two explanations exist for the support of interdependent self-construal as a positive predictor of purchase intention. The first, that interdependent individuals prefer security in their product purchases (e.g., Hamilton & Biehal, 2005; Zhang & Mittal, 2007), with safety and security gained from consuming sustainable goods, regardless of belief in their long-term efficacy. For these individuals purchasing sustainable goods may be offsetting uncertainty about the future, with 'greener' goods unlikely to result in negative outcomes, and quite likely to result in positive outcomes. Consumers are becoming increasingly aware of the potential harm of non-sustainable goods, increasing the salience of sustainable goods are unlikely to benefit the consumer incurring the immediate cost of consumption, suggesting an element of co-operation is necessary to explain the significance of interdependence as a predictor of purchase intention.

The second explanation for the significance of interdependent self-construal relates to the pro-social attitudes of interdependent individuals. With interdependent individuals demonstrated to be motivated by co-operation (Arnocky et al., 2007). As environmental issues have gained increasing societal attention (e.g., Olsen et al., 2014; Prothero et al., 2010; Ramirez, 2013), consumers can be reasonably expected to have greater awareness of the impacts of their purchasing on the environment, and the consequential impacts on society. Interdependent individuals seek to maximise outcomes for others preferring co-operative behaviours over self-maximising behaviours. As such the purchase intention towards sustainable goods by interdependent individuals is likely to be a manifestation of this prosocial and co-operative attitude.

Motivations were not tested in this research, however the most likely explanation for the significance of interdependent self-construal as a positive predictor of purchase intention is an interplay between both the safety of the goods, and the pro-social nature of the benefits experienced. Interdependent individuals are therefore more willing to accept a cost to themselves to minimise the risk of their purchase, and increase the benefits to others. This finding also builds on Arnocky et al's., (2007) finding that interdependent self-construal predicts co-operation as a motivator of pro-environmental behaviour. This research demonstrates a significant link between interdependence and purchase intention, while Arnocky et al., (2007) did not find a direct link between interdependence and behaviour. Considering the time period between the publication of Arnocky et al., (2007) and the present research it is likely that the social and environmental costs of non-sustainable consumption have become more salient to consumers in the intervening years, contributing to the difference in finding. The significant finding of this research when read in the context of interdependent consumers being pro-social in their purchasing behaviours (e.g., Zhang & Mittal, 2007), further supports co-operation as a trait of interdependent individuals, and implies that it is an underlying trait influencing purchase intention.

This research did not demonstrate a significant effect of independent self-construal on purchase intention. This finding is consistent Arnocky et al., (2007), who did not demonstrate support for independence predicting pro-environmental behaviour. However, by examining motivations Arnocky et al., (2007) demonstrated that independence would lead to competition for resources, rather than co-operation. Arnocky et al., (2007) further found that independent self-construal predicted egoistic concerns for the environment, that is selffocussed concerns, rather than others-focussed concerns. Both findings lend support to the understanding that independent individuals are primarily concerned about themselves. An argument could be made that independent individuals, who are pro-environmental, may be positively driven to consume sustainable goods. However, further testing on egoistic motivation is outside the scope of the present research and is not further explored. In addition, Arnocky et al., (2007) indicated (although not significant) beta values suggesting an opposite effect on behaviour between interdependent and independent. However, examining this argument, and the non-significant findings of the present research and the Arnocky et al., (2007) findings, it is more likely that independent individuals may be ambivalent to sustainable goods. That is, they have no specific and significant intent in either direction, choosing instead to purchase products they see as maximising their own outcomes at the time of purchase.

Considering Arnocky et al., (2007) the present results suggests that the effect of interdependence is driven by safety and security, and social co-operation. Independence did not have a significant effect suggesting an ambivalence towards sustainable goods by independent individuals. Therefore, independence does not predict a specific intention either positive, or negative.

# 6.2.1.3 Hypothesis 3 – Temporal Orientation

Temporal orientation is considered a factor in the difference between a consumer's intention to consume sustainable goods and their actual behaviour (e.g., Eyal et al., 2009; Gupta & Sen, 2013; Liberman & Trope, 1998). An individual's perception of time covers a spectrum from present-to future-focussed. The application of temporal orientation to sustainability suggests that future-focussed temporal orientation would better predict future behaviour (Eyal et al., 2009). Environmental costs and outcomes are generally in the future. More broadly, future-focussed individuals are expected to place increased weight on the future benefits of sustainable goods.

Hypothesis 3 stated that: *Consumers with a future temporal orientation will exhibit higher purchase intention towards sustainable goods*. Although the relationship between temporal orientation and purchase intention was not statistically significant (p = .138), the conceptual strength of this variable in sustainable goods research suggests it remains a variable of interest. Extant literature suggests that the higher a participant's temporal orientation, the higher their intention to purchase sustainable goods. This suggestion reflects a consensus that future-focussed individuals may be more inclined towards sustainable goods (e.g., Eyal et al., 2009; Gupta & Sen, 2013). Loda et al., (2013), found further that futurefocussed individuals base their values on maximising future rewards.

# 6.2.2 Hypotheses 4a, 4b, 4c, and 4d

A consumer's temporal discount rate is the extent to which they adjust the value of a future outcome (discounting it), compared to a present-day outcome (Joshi & Fast, 2013). A high temporal discount rate, heavily discounts a future outcome, making it compare less favourably to a present-day outcome. Conversely, a low temporal discount rate places less discount on the value of the future outcome, making it compare more favourably to the present-day outcome. Sustainable goods have a future outcome, with a present cost attached (e.g., Fyfe, 2019; Kaufman, 2014). Therefore, a low temporal discount rate towards a future outcome is desirable for sustainable goods consumption.

Hardisty et al., (2013) demonstrate a difference between discount rates towards gains and losses. With the environmental status quo being an adverse outcome, and improvements made today yielding gains in the future, it was hypothesised that a temporal discount towards an environmental gain would moderate the relationships within the conceptual model. Four hypotheses were tested, with temporal discounting expected to moderate the relationship to purchase intention of: image congruence, interdependent self-construal, independent selfconstrual, and temporal orientation.

### 6.2.2.1 Hypothesis 4a

To consume in a manner consistent with self-image, individuals must also be willing to accept a short-term cost, with a long-term reward. Therefore, temporal discounting was expected to moderate the relationship with purchase intention. As such, Hypothesis 4a stated: *Temporal discounting will moderate the relationship between image congruence and purchase intention towards a sustainable good.* Temporal discounting was not found to significantly moderate the relationship between image congruence and purchase intention. As Hypothesis 1 demonstrated that image congruence is a significant predictor of purchase intention the lack of moderation suggests that image congruence is a stronger driver than temporal discounting. Consuming in line with one's self-image would appear to be more important than short-term versus long-term gains and rewards.

#### 6.2.2.2 Hypothesis 4b

Interdependent individuals are characterised by co-operation with the aims and goals of those around them (Utz, 2004; Ybarra & Trafimow, 1998). Interdependent individuals also prefer goods that maximise safety and security (Hamilton & Biehal, 2005). Sustainable goods represent both a co-operative choice, and a choice maximising safety and security. A high temporal discount rate would be expected to offset the preference by interdependent individuals for sustainable goods, as the future value would be discounted relative to today's value. As such, Hypothesis 4b stated; *temporal discounting will moderate the relationship between interdependent self-construal and purchase intention towards a sustainable good*. Temporal discounting was found to significantly moderate the relationship between interdependent self-construal and purchase intention. As Hypothesis 2a demonstrated, interdependent self-construal is also significant predictor of purchase intention, suggesting interdependence can be a significant predictor, and influenced by temporal discounting. The effect of temporal discounting was positive on the relationship between interdependence and purchase intention.

## 6.2.2.3 Hypothesis 4c

Independent individuals act to enhance their lives, with less inclination to follow societal expectations (Markus & Kitayama, 1991; Ybarra & Trafimow, 1998). Independent individuals also seek to maximise their outcomes, suggesting less willingness to accept a trade-off that would lessen those outcomes. Thus, independence is expected to have a negative impact on purchase intention. Given the need to accept a short-term cost to maximise a long-term gain, a low temporal discount rate is expected to enhance purchase intention. As such, temporal discounting is expected to moderate the relationship between independent self-construal and purchase intention. Hypothesis 4c stated: Temporal discounting will moderate the relationship between independent self-construal and purchase intention towards a sustainable good. Support was found for Hypothesis 4c, with temporal discounting moderating the relationship between independent self-construal and purchase intention. Furthermore, Hypothesis 2b demonstrated no significant relationship between independent self-construal and purchase intention. Therefore, independent self-construal has an indirect effect with purchase intention moderated by temporal discounting. Thus, these results suggest that independent self-construal requires an interaction with temporal discounting to impact purchase intention. Read et al., (2016) highlight that temporal discounting is reduced when future opportunity cost is fully accounted for. The effect of temporal discounting was positive on the relationship between independence and purchase intention. Therefore, for those with low, and high temporal discounting, higher independence led to higher purchase intention. The same effect held for medium temporal discounting but

was less pronounced than low and high temporal discounting groups. The current research suggests that independent individuals, who are seeking to maximise outcomes, may be placing a high discount on future environmental outcomes, but still be willing to purchase sustainable goods in pursuit of their own goal maximisation.

### 6.2.2.4 Hypothesis 4d

Temporal orientation and temporal discounting are linked, with a future focussed temporal orientation associated with a low rate of temporal discounting. Thus, individuals with a focus on the future are less likely to discount the future value of an outcome, relative to today's value. As such Hypothesis 4d states: *Temporal discounting will moderate the relationship between temporal orientation and purchase intention towards a sustainable good*. Significant moderated. Temporal orientation was also not found to be a significant predictor of purchase intention at a 95% level suggesting temporal effects play a smaller role in purchase intention towards sustainable products than hypothesised.

Temporal discounting was hypothesised to positively moderate the relationships of image congruence, interdependent self-construal, and temporal orientation, with purchase intention. With these three relationships no significant moderation was found. Temporal discounting was hypothesised to negatively moderate the relationship between independent self-construal and purchase intention, which it did. This result suggests that purchase intention when driven by individual goal maximisation is done so with low levels of discounting of a future gain. Independent individuals thus appear to have reduced discounting when they are seeking to maximise their outcomes from a purchase.

#### 6.2.3 Hypotheses 5a, 5b, and 5c

Hypotheses 5a, 5b, and 5c, were tested to better understand the effect of demographics identified to be influential to behaviour, impacted on the conceptual model of this study. Hypothesis 5a tested an effect of age, Hypothesis 5b, gender, and Hypothesis 5c, parenthood.

## 6.2.3.1 Hypothesis 5a – Age

Age is impactful on purchase intention towards sustainable goods (e.g., Costa Pinto et al., 2011; McCright, 2010). Younger participants, in this study those below the median age range of the study (35 to 39) were expected to have greater environmental awareness than older participant (above the median age range). As such Hypothesis 5a stated *Younger participants will have a higher purchase intention than older participants towards sustainable goods*.

Based on the results identified in the extant literature, younger participants were expected to be more inclined towards sustainable purchases. However, a significant difference between the groups was not found. Extant literature has found significant differences between younger and older participants (e.g., Costa Pinto et al., 2011; Ekholm & Olofsson, 2017; McCright, 2010; McCright et al., 2013; Sundblad et al., 2007). With no clear agreement on whether younger participants (e.g., Costa Pinto et al., 2011) or older participants (e.g., McCright, 2010) are more likely to purchase sustainable goods. Thus, this research reinforces the current confusion in the extant literature, as no significant result was found in support of either position. This research instead poses a question for future research, with ages appearing significantly different, could there be other drivers, associated with age that are being interpreted as age? A further discussion of the effects of younger and older participants on the conceptual model is discussed in Section 6.3.3.1.

# 6.2.3.2 Hypothesis 5b – Gender

Female consumers are more environmentally friendly and more inclined towards proenvironmental decision-making than males (Yates et al., 2015), and more likely to report sustainable consumption practices (Costa Pinto et al., 2014). As such Hypothesis 5b stated: *Female participants will have a higher purchase intention than male participants toward sustainable goods*. Support was found for this hypothesis with a significant difference found between male and female respondents, a medium effect size added further weight to the result. Females reported higher purchase intention than males did.

This study confirms previous findings in extant literature that females have a greater disposition towards sustainable goods than males (Brough et al., 2016; Costa Pinto et al., 2014; Yates et al., 2015). Different mechanisms have been suggested in the literature for this difference, Brough et al., (2016) suggest that environmental sustainability may be too 'feminine' for many males. Possibly due to socialised expectations with females seeking safety and security from purchases, rather than maximising outcomes (Thomas et al., 2018). Taking an assumption that all females are caring and nurturing, and all males are interested in maximising outcomes is overly simplistic. It is suggested that these behaviours may be feminine or masculine, rather than male or female allowing for further nuance (Brough et al., 2016). With feminine behaviours associated with maximising safety and security, and masculine behaviours seen as providing, and maximising outcomes, a strong parable can be drawn with interdependent and independent self-construal. Interdependent self-construal was found to be a positive predictor of purchase intention and independent self-construal had no significant relationship. Significant findings pointing to higher purchase intention from female consumers, and interdependent individuals suggest that maximising safety and security may be a strong driver in sustainable goods purchase intention.

A further exploration of the effects of gender on the conceptual model is discussed in Section 6.3.3.2.

### 6.2.3.3 Hypothesis 5c – Parenthood

Parenthood is understood to be a driver of purchase intention and behaviour, towards sustainable goods (e.g., Costa Pinto et al., 2011; McCright, 2010). Two mechanisms are often cited to explain why parents are more likely to exhibit environmentally sustainable behaviours; the first the vested interest in their child's future (e.g., Davidson & Freudenburg, 1996; Thomas et al., 2018); the second, the discontinuity in habits created by the child (e.g., Schäfer et al., 2012; Thomas et al., 2018; Verplanken & Roy, 2016). Given support in the extant literature, Hypothesis 5c stated: *Parents will have a higher purchase intention than non-parents towards sustainable goods.* The results of an independent samples *t*-test did not demonstrate support for Hypothesis 5c, with no significant difference in purchase intention between parents and non-parents.

The lack of difference between non-parents and parents indicates that prior support for parents having a pro-environmental mindset (e.g., Costa Pinto et al., 2011; McCright, 2010) may not hold true in all contexts. Schäfer et al., (2012) proposed that parents may have pro-environmental behaviours because of a desire to use fewer harmful chemicals around their children, not as a deliberate consumption choice. Suggesting that parents are driven to purchase products from a safety and security perspective. Therefore, as this study does not directly specify low harm products, parents' motivation for security may not being accurately captured by their attitudes towards sustainable goods. However, this study does not suggest that parents are pro-environmental or not proenvironmental — instead, suggesting that both groups are equally likely, or equally not likely to purchase sustainable goods. Therefore, previous findings in the literature may be suggesting a different driver of purchase intention, than a strictly pro-environmental driver.

A further exploration of the effects of parenthood on the conceptual model is discussed in Section 6.3.3.3.

#### 6.2.4 Hypotheses 6a, and 6b

Temporal framing has been shown to influence behaviours across a range of contexts (e.g., Arthur & Quester, 2004; Newcomb et al., 2000; Thaler & Helmig, 2013). Purchasing sustainable goods requires consumers to trade-off short-term gains, for long-term benefits. Matching an individual's temporal orientation with the temporal frame of a message has been demonstrated to enhance persuasion (Nan et al., 2014). Thus, someone with a future-orientation will be influenced by a future-framed message; with present-oriented individuals being influenced by present-framing of a message (Nan et al., 2014).

# 6.2.4.1 Hypotheses 6a

To consume sustainable goods, consumers are deciding, consciously or subconsciously to forego something today, for a later benefit. This requires consideration of the future, and future outcomes. Therefore, priming respondents to a future timeframe was expected to increase their willingness to consider long-term benefits, thus increasing purchase intention. Conversely, priming respondents to a present timeframe would be expected to reduce thinking on future benefits, thus reducing purchase intention. Hypothesis 6a stated: *Participants primed with a future-focussed message will have higher purchase intention towards sustainable goods than those primed with a present-focussed message*. Support was not found for Hypothesis 6a. Thus an exposure to a present manipulation may not be enough to shorten a respondent's temporal orientation, this would suggest that it is challenging to lengthen a temporal orientation by the same mechanism.

### 6.2.4.2 Hypothesis 6b

Highlighting the context of time, either short-term (present orientation), or long-term (future-oriented) persuades individuals with a matching temporal orientation (Nan et al., 2014). That is, short-term temporal framing will better persuade individuals with a present orientation, and long-term framing will better persuade individuals with a future orientation. Thus, Hypothesis 6b stated: *Participants with a match between their temporal orientation, and a message prime will have a higher purchase intention towards sustainable goods than those with a mismatch*. Hypothesis 6b was not supported.

This study partially responds to a call from Orbell and Kyriakaki (2008) for future research to investigate further the effects of temporal orientation and temporal framing on goal achievement. This study looks at purchase intention towards sustainable goods rather than goal attainment but finds that a match between temporal orientation and temporal frame does not impact purchase intention.

A caveat applies to the discussion of Hypotheses 6b as, no significant difference was found between those who saw the present-focussed or the future-focussed temporal framing manipulation. This is noted as a limitation of the present study.

# 6.3 Exploration of Model Effects

Thirteen hypotheses were tested, with four supported. To better understand the relationships within the conceptual model further testing was performed. The model was tested with a behavioural question as the dependent variable, with the model split into high and low independence, age, gender, parents and non-parents, and low and high personal

income. The conceptual model was also tested with temporal discounting towards a gain as the independent variable.

#### 6.3.1 Reported Behaviour

Two self-reported behavioural questions were included for comparison with the purchase intention scale. The behavioural items were 'I actively search for sustainable products in order to buy them' (Green Search), and 'I purchase more than one type of sustainable product' (Multibuy). Two multiple regressions were run using the conceptual model, the first with Green Search as the dependent variable, the second with Multibuy as the dependent variable. The conceptual model accounted for 52.2% of the variance in green search, with image congruence a significant predictor, having a large effect. The conceptual model accounted for 35.6% of the variance in multibuy, with multibuy significantly predicted by image congruence with a large effect and temporal orientation with a small effect. With purchase intention as the dependent variable, the model accounted for 51.6% of variance, with image congruence (large effect) and interdependent self-construal (small effect) significant predictors. The difference in the models for the three dependent variables suggest purchase intention has different drivers than actual behaviour. It also suggests that commonly understood drivers of intention do not reflect behavioural concerns.

The results of the conceptual model with green search as the dependent variable demonstrate significance for image congruence with a large effect. Therefore, only individuals with a strong image congruence with sustainable goods will actively seek out more sustainable products. Therefore, for individuals with lower image congruence to consume sustainable goods, convenience becomes a major factor, as previously suggested by Tanner et al., (2003).

The results of the conceptual model with multibuy as the dependent variable demonstrate significance for image congruence with a large effect, and temporal orientation with a small effect. Multibuy also had a lower variance explained than green search and purchase intention at 35.6%, suggesting that further research is needed to identify further factors. Consuming in line with their self-image is a factor in respondents' decisions to purchase multiple sustainable goods. However, in addition to image congruence temporal orientation is also significant. This demonstrates that as respondents become more future focussed, they are more likely to purchase multiple types of sustainable goods.

When compared to the model with purchase intention as the dependent variable, the significance of purchase intention and temporal orientation is not surprising. However, interdependent self-construal was significant in purchase intention, but not in green search or multibuy. This suggests that interdependent respondents may be responding to perceived social pressure and a desire to please the group in their intentions but are not actively behaving in line with those intentions.

Age, gender, and parenthood were hypothesised to influence purchase intention. A significant difference was found between the purchase intention of male and female respondents. For both male and female respondents green search was significantly predicted by image congruence with a large effect size. For both male and female respondents multibuy was significantly predicted by image congruence, for female respondents temporal orientation was also a significant predictor with interdependent self-construal notable at a 90% level. This suggests that female respondents who purchase multiple types of sustainable products have a future focus and are potentially more pro-social in their outlook.

With purchase intention as the dependent variable image congruence was a significant predictor of purchase intention for both male and female respondents. For male respondents

independent self-construal was notable at a 90% significance level, for female respondents interdependent self-construal was significant with a large effect size. This indicates that female respondents intend to purchase sustainable goods in response to the needs of the groups around them, but that interdependence is not a significant predictor of their actual behaviour.

# 6.3.2 Further Effects of Interdependent and Independent Self-Construal

Interdependent and Independent self-construal impact product decision-making (e.g., Arnocky et al., 2007; Hamilton & Biehal, 2005). The results from the current research suggest that interdependent self-construal is a significant predictor of purchase intention towards sustainable goods, while independent self-construal is not. This finding is further explored by grouping the data into low and high (below and above the mean) interdependent self-construal and low and high (below and above the mean) independent self-construal.

Individuals with an interdependent self-construal prefer products that minimise losses, lead to safety and security, and maximise outcomes for their group (Hamilton & Biehal, 2005). For low interdependence individuals the model account for 43.6% of the variance and for high independence individuals, the model accounted for 51.5% of the variance in purchase intention. In low and high interdependent self-construal groups, image congruence was a significant predictor of purchase intention. In the low interdependence group, interdependence group, temporal orientation was notable for its significance at a 90% level. For low interdependence respondents, as their interdependence increases, so does their purchase intention, for high interdependence respondent's interdependence was not a significant factor. Whilst this would appear contradictory, it suggests that interdependence does influence purchase intention to a point. Below a certain point interdependence increases purchase intention, above that point however other factors begin to gain importance. Temporal orientation is suggested for further study due to significance at a 90% level. This would indicate that past a certain level of interdependence a more future temporal orientation becomes more important to sustainable behaviours than the groups outcome does.

Individuals with an independent self-construal engage in pro-environmental behaviour when there is an egoistical motive and a desire to maximise their own outcome (Arnocky et al., 2007). That is, consumers with independent self-construal may be more inclined to purchase sustainable goods for how it makes them look and feel, rather than out of concern for the group. For the low independence group the model accounted for 47.6% of the variance in purchase intention, for the high independence group, the model accounted for 49.3% of purchase intention. For both low and high independence respondents, image congruence was a significant predictor of purchase intention. In the low independence group interdependent and independent self-construal were both significant, with small effects. In the high independence group interdependent self-construal was notable at a 90% significance level, but not significant at a 95% level. Independent self-construal is significant only for respondents with low independence, suggesting that like interdependent self-construal, independence is predictive to a point, at that point other factors become more influential. Interdependent self-construal was significant for respondents with low independence, and influential at a 90% significance level for those with high interdependence. This reinforces the finding in Hypothesis 2a that interdependent self-construal is a driver for sustainable goods purchase intention.

# 6.3.3 Further Effects of Demographics

A significant difference was found in the purchase intention between males and females, but no significant difference between younger and older respondents, and nonparents and parents. To better understand the effect that demographic variables had on the conceptual model, further analysis was performed using age, gender, parenthood, and personal income.

6.3.3.1 Age

Extant literature supports the impact of age on purchase intention towards sustainable goods (e.g., Costa Pinto et al., 2011; McCright, 2010). Although confusion exists between whether younger consumers have lower knowledge and more wasteful behaviours than older individuals (Costa Pinto et al., 2011). Or if younger individuals have higher knowledge on climate change, and higher intent to act on it (McCright, 2010). Younger participants, in this study those below the median age range of the study (35 to 39) were expected to have greater environmental awareness than older participant (above the median age range). This study found no significant difference between younger and older participants, suggesting some confusion between the effect of age on purchase intention. To better understand the effect of age, two multiple regressions were performed, the first with younger participants, the second with older participants.

For older participants, image congruence and interdependent self-construal were significant predictors of purchase intention, with independent self-construal a predictor at a 90% significance level. For older participants, the model accounted for 56.7% of the variance in purchase intention.

For younger participants, image congruence and interdependent self-construal were also significant predictors of purchase intention, with temporal orientation a predictor at a 90% significance level. For younger participants, the model accounted for 43.7% of the variance in purchase intention. The biggest differences between the two groups come from examining the items predictive at a 90% significance level, independent self-construal (older group), and temporal orientation (younger group).

Independent self-construal is a factor of interest in understanding the purchase intention of older respondents. Costa Pinto (2011) found that older respondents were found to have less wasteful habits and increased environmental awareness. High levels of independent self-construal would result in a desire to maximise personal outcomes. Therefore, older respondents who may be expected to have increased environmental awareness (Costa Pinto et al., 2011) may be more driven by that knowledge to maximise the outcome of their purchases.

Costa Pinto (2011) points to younger individuals having lower knowledge on environmental issues and more wasteful lifestyles. This suggestion is not incompatible with the present result, whereby younger individuals are impacted by their temporal orientation. Building on Costa Pinto (2011) would suggest that more future focussed individuals would exhibit higher environmental knowledge, with a less wasteful lifestyle. Future focussed individuals would be more likely to support the findings of (McCright, 2010) suggesting that younger individuals have higher knowledge of environmental issues, and thus more inclination towards sustainable goods. A second explanation for the effect of temporal orientation on younger consumers is their current age versus their expected age. If one expects to be alive for another 60 years, they may be more inclined to consider that future time frame than someone who does not. The conceptual model also explains less variance in younger respondents, than older respondents suggesting additional factors are driving younger respondents. This research cannot clearly agree or disagree with the current confusion about the effects of age in the research. Instead looking to constructs of note (between 90% and 95% significance) points to areas worth further exploration. These are an understanding of the effects of independent self-construal in older consumers, and the effects of temporal orientation in younger consumers.

## 6.3.3.2 Gender

In support of extant literature (e.g., Brough et al., 2016; Costa Pinto et al., 2014; Yates et al., 2015) a significant difference was found between the purchase intention towards sustainable goods of male and female respondents. To better understand the effect of these two multiple regressions were performed on the conceptual model: the first with male participants, the second with female participants.

The conceptual model accounted for less variance in male (45.5%) respondents than female (57.5%) respondents. There were also differences in the constructs which were significant predictors of purchase intention. For males, image congruence was significant with a medium effect, and independent self-construal was significant at a 90% level. For females, Image congruent (large effect) and interdependent self-construal (small effect) were significant predictors of purchase intention.

Extant literature highlights different mechanisms for the difference between males and females. Males may see sustainable consumption as overly feminine (e.g., Brough et al., 2016), or females may be more inclined toward sustainable consumption due to social norms of caring and nurturing (Thomas et al., 2018). Outcomes focussed caring and nurturing would appear to be like those focussing on safety and security. Suggesting that females may be seeking to maximise safety and security in the outcome of their purchasing, supporting the findings of Thomas et al., (2018). The difference in significant constructs reinforces this suggestion. Male participants were influenced at a 90% level by independent self-construal, which would suggest self-maximisation of outcomes. Females were significantly influenced by interdependent self-construal, suggesting safety and security in product purchases. These results do not suggest that males are driven to maximise their own outcomes to the detriment of the environment, but they do suggest that females are seeking safety and security in product purchases.

# 6.3.3.3 Effects of Parenthood

Parents are expected to be more inclined to purchase sustainable goods than nonparents (e.g., Costa Pinto et al., 2011; McCright, 2010). A vested interest in their child's future (e.g., Davidson & Freudenburg, 1996; Thomas et al., 2018) and discontinuity of habits after childbirth (e.g., Schäfer et al., 2012; Thomas et al., 2018; Verplanken & Roy, 2016) have both been posited as explanations. A significant difference between the purchase intention of non-parents and parents was expected but was not apparent. To better understand the effect of parenthood two multiple regressions were performed, the first with non-parents, and the second with parents. For non-parents, the conceptual model accounted for 60.0% of the variance in purchase intention, and parents accounted for 44.7% of the variance in purchase intention.

For non-parents, interdependent self-construal, was a significant predictor of purchase intention, with a small effect size. This result suggests that individuals without children are more motivated by shared group motivations concerning sustainable goods purchase intention.

For parents, independent self-construal was a predictor of purchase intention with a small effect size. The difference between parents and non-parents was also notable for

temporal orientation, with temporal orientation predicting purchase intention only for parents, again with a small effect size.

Independent self-construal significantly predicts parents purchase intention towards sustainable goods. Arnocky et al., (2007) found that independent individuals had selffocussed motivations towards pro-environmental behaviours. Interdependent self-construal was not a significant predictor of purchase intention for parents, suggesting that selfish motivations are behind parental behaviour. This would suggest that parents are concerned for the success of their children, rather than the outcomes of the society their children are in. Parents are also driven by temporal orientation, supporting the finding of Thomas et al., (2018) that parents have a vested interest in their child's future. Parent's with a concern about what the future holds for their child would thus be inclined to purchase sustainable goods, to better contribute to this future for their children. Taking the significance of independent selfconstrual and temporal orientation together would suggest that parents are driven by their child's future, supporting Thomas et al., (2018). However, whilst parents might be driven by their child's future it does not lead to higher rates of purchase intention than non-parents.

Webley and Nyhus (2006) found that concerning financial savings behaviour, a father's future orientation was a predictor of a child's temporal orientation at a 90% significance level, while a mother's future orientation was a predictor of a child's temporal orientation at a 99% significance level. For parents, temporal orientation was a significant predictor of purchase intention. This presents an interesting area for future research, to understand if parents who consume sustainable goods, driven by temporal orientation, pass this onto their children. That is, do future focussed parents, behaving in an environmentally sustainable manner, raise children who are future focussed regarding the environment.

A change is apparent when someone becomes a parent, with a clear difference between non-parents and parents. The effect of image congruence, whilst a significant predictor for both groups is more influential with non-parents, demonstrated by a higher  $\beta$ value and a greater effect size (0.502 for non-parents, and 0.298 for parents). Whilst both groups are driven by image congruence, the effect is stronger for non-parents. Non-parents are also driven by societal goals with respect to sustainable goods, whereas parents are driven by self-centred motivations and long-term outcomes.

## 6.3.3.4 Personal Income

Extant literature suggests that socio-economic factors may influence temporal orientation (e.g., Graham, 1981), and behaviour (e.g., Wood, 1998). Sustainable goods have also been identified in reviews and extant literature as carrying an immediate cost, either financial or in efficacy (e.g., Fyfe, 2019; Kaufman, 2014). Therefore, would place a constraint on a consumer's ability and thus intention to purchase sustainable goods. To better understand the effect of personal income on purchase intention towards sustainable goods, two multiple regressions were run using the conceptual model, the first with lower income (below the study mean of \$30,000-\$40,000), and the second with higher income (above the study mean). For lower income participants the conceptual model accounted for 55.9% of the variance in purchase intention, for higher income participants the conceptual model accounted for 45.7% of the variance in purchase intention.

For lower income participants image congruence, and interdependent self-construal were significant predictors of purchase intention, with temporal orientation significant at a 90% level. For higher income participants, image congruence and independent self-construal were significant predictors of purchase intention, with interdependent self-construal significant at a 90% level. Due to the significance of image congruence against all conditions in the study, image congruence will not be discussed in this section.

Lower income participants are significantly influenced by interdependent selfconstrual, but not independent self-construal. The influence of interdependent self-construal suggests much higher levels of social co-operation from lower income individuals (Utz, 2004), altruism (Holland et al., 2004; van Baaren et al., 2004), and desire for safety and security a priority in purchases (Hamilton & Biehal, 2005). This is perhaps an unsurprising response to resource constraints, creating support through social networks can help constrained resources go further, while seeking safety and security rather than risk in purchases would ensure maximum value for money. With respect to sustainable goods purchase intention lower income consumers are driven by what is good for groups they identify with, and with the need for safety and security in their purchasing. However, given the long-term benefit that would lead to sustainable goods being a safe and secure choice, it may be more likely that benefitting the group may be the stronger driver. Choosing a product with a group benefit can fulfil an immediate need to demonstrate contribution, thus reinforcing their position in the group.

Lower income participants were also influenced by temporal orientation at a 90% significance level. Extant literature suggests that socio-economic factors may influence temporal orientation in individuals (Graham, 1981). Early literature suggests that low-income individuals are more present focussed, while middle- and high-income earners have a future focus (Davids & Parenti, 1958). Again, this would appear a natural response to scarce resources, it is hard to have a future focus when immediate needs are more pressing. Temporal orientation is notable here as a positive influence, suggesting that for lower income individuals that do have a future focus, this may drive purchase intention to sustainable

goods. In the lower income group temporal orientation did not meet the criteria for significance, and so further research is needed in this area.

Higher income participants are significantly impacted by independent self-construal. Independent individuals are driven by goal maximisation, and their own desires, rather than those around them (Markus & Kitayama, 1991; Ybarra & Trafimow, 1998). This suggests that a congruence to sustainable purchases, or existing desire is component of purchase intention. An additional factor would be needed for purchase intention to occur so that sustainable consumption, or environmental outcomes can become goals to maximise. Interdependent self-construal may be part of this additional reason as whilst it was not a significant predictor of purchase intention in the higher income group it was a factor of interest at a 90% significance level. Therefore, higher income individuals may be cognisant of a societal pressure, and need to act in accordance with this, whilst ultimately being driven by their focus on their own goals and outcomes. That is, their choice of outcome may be driven by those around them, but the drive to maximise this outcome is entirely selfinfluenced.

Unlike lower income participants, higher income participants were not significantly influenced by temporal orientation. Previous literature has identified middle-class consumers as having a future orientation, with greater impulse control (Davids & Parenti, 1958). The present study does not support temporal orientation having a significant impact on purchase intention towards sustainable goods. Therefore, regardless of the temporal orientation of the higher income group, purchase intention is not impacted.

Despite personal income generally increasing with age, an opposite effect was found by splitting the model into lower and higher personal income than when splitting the model into younger and older ages.

## 6.3.4 Model Effect on temporal discounting

Temporal discounting was hypothesised to be a moderating factor in the model, with significant moderation only occurring on the relationship between independent self-construal and purchase intention. To better understand how the conceptual model influences temporal discounting, two multiple regressions were run. The first, used temporal discounting towards an environmental gain (TDG) as a dependent variable; the second, used temporal discounting toward an environmental loss (TDL) as a dependent variable. Only TDG resulted in any significant effects, and so will be the focus of discussion.

Image congruence and interdependent self-construal did not significantly predict TDG. Independent self-construal, and temporal orientation significantly predicted TDG, with the conceptual model explaining 2.5% of the variance in TDG. The level of variance explained suggests that further understanding needed as to what drives temporal discounting towards environmental outcomes.

Independent self-construal had a small effect on temporal discounting. The results suggest that as an individual's level of independence increases, their temporal discounting towards an environmental gain decreases. Therefore, as independent self-construal rises, the discount applied to the future is lessened. This finding is consistent with the understanding in the literature that independent individuals focus on goal attainment and maximising their outcomes (e.g., Markus & Kitayama, 1991; Ybarra & Trafimow, 1998). To focus on goal attainment necessitates a longer-term outlook, and less inclination to discount the future.

Temporal orientation also had a small effect on temporal discounting, the relationship between the two is to be expected. A more future temporal orientation will lead to a reduced discount rate, as the future oriented individual will not discount the future event to the same degree as a more present-oriented individual.

### 6.4 Time Perception

Extant temporal orientation literature frequently references 'Present', 'Near Future' and 'Far Future', while referring to temporal orientation in terms of 'Past', 'Present', and 'Future' (e.g., Eyal et al., 2009; Gupta & Sen, 2013). Gupta and Sen (2013), refer to 6 months as a 'distant future' time, while Eyal et al., (2009) refer to 1 month as a 'future' time. Disparities in the interpretation of time suggests ambiguity within the temporal orientation literature for all descriptors of time except 'Past'. How consumers view the present, and future is essential; not just for practical applications, but also theoretically as a discussion about the future is otherwise ill-defined and ambiguous. Studies on temporal orientation often use the terms present or future orientation without attributing a timeframe to these terms, thus creating ambiguity in the discussion. The creation and results of a sorting exercise provide a preliminary understanding of how survey participants see 'present', 'near future', and 'far future'.

# 6.4.1 Respondent's Perceptions of Time

Participants considered a point between 14 and 30 days the difference between the 'present' and 'near future'. The point between the 'near future' and 'far future' was between six months and one year for 51.57% of participants. Substantially more participants described three years as 'far future' (81.58%). The results of the sorting exercise suggest that references to six months by Gupta and Sen (2013) are on the low side of how consumers perceive the future, with an actual value higher than six months. We suggest that 'present' occurs between 14 and 30 days, that 'near future' occurs between 30 days and one year, and that 'far future' is more than one year.

### 6.4.2 Displayed Value of Time – Effect on Time Perception

To understand if the way a unit of time was described influenced the categorisation of participants two equal lengths of time were each presented in two different ways. Participants were asked to categorise one month and 30 days, and 60 months and five years.

In the 30-day condition, 36.59% of participants considered 30 days to be present, and 60.65% considered it to be near future. In the one-month condition, 30.66% considered it to be present, and 67.40% considered it to be near future. The frequency analysis indicated that a difference between the two lengths of time, however an independent samples *t*-test did not demonstrate significance at a 95% level. The difference is certainly notable though with significance at a 90% level.

In the 60 months condition, 8.52% considered it near future with 89.54% considering it far future, while for 5 years, 3.73% considered it near future, and 95.34% considered it far future. The difference evident from a frequency analysis was supported with a significant independent samples *t*-test.

Whilst at the margin someone could argue that one month and 30 days are not equivalent as some months are a little shorter and others are a little longer, 60 months and 5 years are equal. Therefore, rational participants, considering the lengths of time before them should consider both units of time equal. However, in each case the lower unit of time (days versus months, and months versus years) was rated nearer to the present time. This would suggest consumers view a few months as longer than many days, and a few years as longer than many months.

Respondents appear to be focussing their cognitive processing towards the unit of time, and not the quantity. That is, they are focussing their attention on months, or years, when making a categorisation. Further research is needed in this area, to better understand the

mechanism behind the effect posited in this study, additional lengths of time should be added for categorisation, with similar or identical lengths of time included. For example, would participants consider thirteen months, a more present time frame than one year, because the timeframe was presented in months not years?

The observed effect of respondent's time perception presents a limitation in extant temporal research also as there is a demonstrable difference in how consumers respond to time. Therefore, when analysing current literature attention needs to be paid to the units of measurement used and consider that respondents appear to consider different measurements inconsistently. Thus, it would be expected that this may influence their time horizon and response to temporal measures.

# 6.4.3 High and Low Temporal Orientation – Effect on Time Perception

Individuals with a high (more future) temporal orientation are more likely to consider the consequences of their actions into the future (e.g., Joireman et al., 2008; Joireman et al., 2012; Tangari et al., 2010). As such, those individuals with a higher temporal orientation are likely to have a longer time horizon than individuals with a low (present focus) temporal orientation. Meaning, when asked to categorise time, a participant with high temporal orientation would view the future as being further out in a quantifiable sense, than someone with a lower temporal orientation, and thus shorter time horizon.

Each unit of time categorised was tested with an independent samples *t*-test, comparing low and high temporal orientation individuals. Statistically significant differences between categorisations were found at '1 Month', '6 Weeks', and '1 Year'. In each test, low temporal orientation individuals categorised '1 Month', '6 Weeks', and '1 Year', higher (more future) than high temporal orientation individuals did. The differences at one month and one year are notable as both times represent the delineations categorised by the study sample for 'present' and 'near future', and 'near future' and 'far future' respectively. Categorising how they perceived one year, 37.33% of participants with a present orientation described it as near future, while 58.99% called it far future. Conversely, of those with a high temporal orientation, 52.48% categorised one year as being near future, and 44.55% categorised it as far future — with a significant difference. Therefore, there between low and high temporal orientation individuals there is a different understanding of the terms 'present', 'near future', and 'far future'.

Low temporal orientation individuals had more present time horizon, with high temporal orientation individuals having a more future time horizon. This would suggest a greater intention to purchase sustainable products, with a more future time horizon considered necessary for pro-environmental actions (e.g., Utz, 2004). The more future time horizon also indicates a longer-time frame when considering the future consequences of current behaviour (e.g., Joireman et al., 2008; Joireman et al., 2012; Tangari et al., 2010).

Understanding how present and future focussed individuals perceive time offers insight into how to interpret the results of temporal orientation studies. Understanding where participants draw boundaries provides context to the answers they give. Not only is this important to future research but adds additional context and understanding to extant temporal orientation literature. This context is important to an understanding of sustainability research also. Consuming sustainable goods involves an increased present cost, with a decreased future cost; the opposite holds true also, decreased present costs, have increased future costs (e.g., Tanner & Wölfing Kast, 2003). Therefore, consideration for the future is a necessity to increase consumption of sustainable goods. Where the present research demonstrates nuance in this argument is that the future has different meanings to different people, with system differences in time (e.g., low, and high temporal orientation groups) impacting on an ability to persuade these individuals. This research only demonstrates a small difference in perception, further research with a focus specifically on categorisation of time is needed to create a richer set of data to better understand perceptions of time.

# 6.4.4 Effect of Demographics on Time Perception

This research hypothesised that demographic effects would influence sustainable goods purchase intention. Hypothesis 5b, related to gender was the only supported hypothesis, demonstrating greater purchase intention from females. Therefore, two additional tests were performed on the categorisation of time, with the dataset split into males and female respondents. The first of these was a series of independent samples *t*-tests to understand if there was a gender difference in how time was categorised. The second was four paired samples *t*-tests to understand if there was a difference between male and female categorisation of one month and 30 days, and 60 months and five years.

### 6.4.4.1 Gender Differences in Time Perception

A series of independent samples *t*-tests were performed to compare the categorisation of time between male and female respondents. The only significant difference occurred between male and female categorisations of 60 Months. Male respondents categorised 60 months as closer to 'near future' than female respondents did. However, no significant difference was found at the 5 Year mark, despite these being of equal length.

# 6.4.4.2 Gender Differences in Time Perception of Equal Lengths of Time

To better understand if males and female respondents categorise equal lengths of time differently, the data set was again split into male and female respondents. For each group, two paired samples *t*-tests were performed, between one month and 30 days, and 60 months and five years. The only statistically significant difference found was in the categorisation
between 60 months and five years in the male group. This finding indicates that female respondents are more consistent in their perceptions of time than male respondents.

An exact underlying mechanism for this effect is not clear from this research or a review of the extant literature; however, an element of socialisation may be apparent in the differences. Gender differences have been demonstrated before in the perception of elapsed time during exercise (Hanson & Buckworth, 2016) with females perceiving time as slower than actual, and men perceiving time as faster. Males also appear to perceive short periods of time more accurately, with socialisation suggested due to long-term gender roles in the workforce as a suggested contributor (Kellaris & Mantel, 1994). The ability to keep track of short increments of time is contradicted by the male tendency to underestimate the length of time when considering months, rather than years.

Furthermore, the underlying mechanism may not be driven by gender, but instead socialisation of masculine and feminine expectations and behaviours. Gender has been described as a spectrum from masculine through to feminine qualities (e.g., Bittner & Goodyear-Grant, 2017; Silva, 2005; Westbrook & Saperstein, 2015). The idea that socialisation of gender roles contributes to estimations and perceptions of time may suggest that a biological male on the feminine end of a gender spectrum may perceive time more consistently than would biological male on the masculine end of the spectrum.

# 6.5 Chapter Summary

The findings of this research were discussed in Chapter 6, offering interpretation and links to extant literature. This research offers a clearer understanding of the impact of image congruence, interdependent and independent self-construal, temporal orientation, temporal discounting, temporal framing, and demographic factor on purchase intention towards a sustainable good. Thirteen hypotheses were tested with four supported. A conceptual model was tested, with image congruence and interdependent self-construal significant predictors of purchase intention. Independent self-construal and temporal orientation were hypothesised to predict purchase intention but did not. Temporal discounting was proposed to moderate the relationships between the constructs and purchase intention. The relationships between interdependent self-construal and purchase intention and independent self-construal and purchase intention and independent self-construal and purchase intention were found to be significantly moderated. Age, gender, and parenthood were expected to influence purchase intention, with three independent samples *t*-tests performed on purchase intention. A significant difference was found between the purchase intention of male and female respondents, with no difference found between younger and older respondents, or between non-parents and parents. A temporal framing manipulation was also used to understand if the framing of a message could influence the overall effectiveness of the model, however no significant support was found.

Further exploration of the model was conducted to understand the effect of the model on behaviour, of self-construal on the model, of demographics on the model, and the model's effect on temporal discounting. Key findings from the further exploration of model effects include:

- Different drivers between behaviour and intention, with interdependence a key driver of intention, but not behaviour.
- There is not a significant difference in intention between younger and older participants, with existing confusion in the literature unable to be resolved.
- Male respondents were driven by independent self-construal, while female respondents were driven by interdependent self-construal.
- Whilst there is no significant difference in intention between parents and nonparents, there are different drivers for each. Non-parents are driven by image congruence and interdependent self-construal, while parents are driven by image congruence, independent self-construal, and temporal orientation.

To better explain inadequate definitions of the terms, 'present', 'near future', and 'far future' (e.g., Eyal et al., 2009; Gupta & Sen, 2013; Joireman et al., 2008; Joireman et al., 2012) a sorting tool was developed and tested. Participants used the sorting tool to categorise units of time (e.g., 1 Month, and 30 Days), into categories of time (present, near future, and far future). A frequency analysis was used to better understand and define boundaries the boundaries of the terms 'present', 'near future', and 'far future'. The boundary of present and near future occurred between 14- and 30-days. The boundary of near future and far future occurred between 6-months and 1-year. At present researchers asking participants to use these terms or attempting to interpret information relating to them do not have a clear and quantifiable definition and thus, the results presented become ambiguous and unclear. Furthermore, this research suggests that individuals may perceive units of time differently depending on their temporal orientation, and the presentation of that unit.

Chapter 7 will summarise research and contributions. Theoretical, academic, and managerial implications will be discussed from this research. Limitations will also be discussed, and a future direction of the research proposed.

### Chapter 7 – Conclusions, limitations, and future research

### 7.1 Introduction

Chapters 1, 2, and 3 proposed research to better understand image congruence, selfconstrual, temporal orientation, temporal discounting, and purchase intention towards sustainable goods. Relevant literature was discussed, and research gaps identified. A conceptual model and hypotheses were developed and discussed in chapter 3. Chapter 4 outlined the methodology used to collect and prepare data for testing. Chapter 5 reported the results from the analysis and outlined the methods and assumptions used to achieve these. Chapter 6 discussed the results and built on existing literature to set out an enhanced understanding of the topic areas. The present chapter concludes the research. Theoretical, methodological, and managerial contributions are outlined and discussed, limitations presented, and directions for future research provided.

#### 7.2 Theoretical contributions

The research conducted in this study contributes several findings to the academic literature. A comprehensive sustainable goods purchase intention model was proposed, validated, and tested. The model provided an enhanced perspective of the relationship between image congruence, interdependent and independent self-construal, and temporal orientation on the purchase of sustainable goods by consumers. The research investigated the types of individuals most influenced in their behaviour by their temporal orientation. A greater understanding was gained concerning how individuals purchase behaviour is influenced depending on the individual's independent or interdependent self-construal. Image congruence and interdependent self-construal were significant, positive predictors of purchase intention. Independent self-construal was not a significant predictor of purchase intention. Temporal discounting was determined to moderate the relationships of interdependent self-construal and independent self-construal with purchase intention. This research set out to address four research questions, to address gaps in the extant literature.

- 1. Does image congruence, self-construal, temporal orientation, and temporal discounting impact consumer purchase intention of sustainable goods?
- 2. Does the presence of temporal framing impact consumer purchase intention of sustainable goods?
- 3. What demographic characteristics impact on purchase intention towards sustainable goods?
- 4. Do different consumers see lengths of time differently?

In addressing these four research questions this research advances our understanding of sustainable goods purchase intention. Each of the constructs tested have a substantial basis in extant literature. However, these constructs have not been brought together into a comprehensive model of purchase intention towards sustainable goods. This research can also point to a difference in purchase intention for male and female participants but does not support the age and parenthood findings of other studies. The results of time perception activity will be discussed and presented in the context of time definitions and operationalisation for an academic and research understanding of time. It is clear closing the attitude-behaviour gap is a complex challenge, with different drivers evident for both attitude and behaviour. What is however evident is that positive environmental outcomes require long-term co-operation and society wide behaviour change.

# 7.2.1 Research Question 1

*Image Congruence:* Image congruence was found to be a significant factor in almost all tests performed, it also consistently demonstrated a large effect size. Image congruence was the most influential of the factors tested regarding purchase intention and purchase behaviour of sustainable goods. This finding was unsurprising given the strong support for image congruence in the extant literature. Image congruence was included in the model due to the established nature of it as a driver of both intention and behaviour. However, moving towards more positive future environmental outcomes requires intention and behaviour that is both co-operative and long-term. Therefore, understanding the extent to which image congruence impacts intention compared to self-construal and temporal orientation is valuable. Despite the co-operative and long-term nature of pro-environmental intentions and behaviours appealing to consumer's self-image is still the most influential strategy.

Self-Construal: Interdependent self-construal significantly predicted purchase intention. Independent self-construal did not significantly predict purchase intention. However, for different groups independent and interdependent self-construal became significant or non-significant. For example, when exploring income, lower income respondent's purchase intention is significantly predicted by interdependent self-construal, while for higher income respondents independent self-construal is a significant predictor of purchase intention. Interdependent individuals are predisposed towards group co-operation, while independent individuals focus on maximising their personal gains and are more inclined to compete for resources. Therefore, addressing the co-operative nature of interdependent individuals appears to be an effective way of enhancing purchase intention. Post-hoc investigation of self-construal also demonstrates demographic differences, with interdependence a significant factor for lower income individuals and independence a significant factor for higher income individuals. This suggests that for academic investigation and policy makers, that investigation be targeted to these groups. For lower income individuals co-operation and a sense of safety and security in products become a motivating factor for intention, in higher income individuals attainment of their own goals and maximisation of their outcomes are motivating factors for intention. Neither interdependence nor independence were significant predictors of actual behaviour, however. This would

suggest that individuals intend to co-operate with others and act in a pro-social manner, but do not actually behave consistently with this.

*Temporal Orientation:* Temporal orientation was not a significant predictor of purchase intention. However, it was a significant predictor of whether respondents purchased more than one type of sustainable product (multibuy). When splitting the conceptual model by gender, temporal orientation significantly predicted multibuy for female respondents, but not male respondents. Therefore, a person's present- or future-orientation does not appear to impact their intention to purchase sustainable goods. However, for female respondents future orientation was a significant predictor of their purchasing behaviour. This suggests temporal orientation is more closely linked to behaviour than intention which is an unexpected finding of this research. Despite not predicting purchase intention the significance as a behavioural predictor suggests a need for further investigation. This study is looking to offer contribution to the gap between intention to purchase sustainable goods and actual behaviour. Temporal orientation has a strong theoretical basis as an intention predictor, and actual support found as a behavioural predictor. This may suggest that individuals with a future temporal orientation are more likely to act with a longer-term focus and consume in a pro-environmental manner.

*Temporal Discounting:* When considering purchasing a sustainable product, discounting the cost of the future benefits of that product, moderates the effects of both interdependent and independent self-construal on purchase intention. Interdependent selfconstrual positively predicted purchase intention, with independent self-construal having no direct effect on purchase intention. Temporal discounting did not show moderation effects on the relationships of image congruence or temporal orientation, on purchase intention. The moderation effect was the same for both interdependent and independent self-construal, with a positive effect. For low, medium, and high temporal discount rates low interdependence and independence result in low purchase intention, with high interdependence and independence resulting in high purchase intention. The effect was most pronounced on the relationship between independent self-construal and purchase intention, with a steep line of best fit for high temporal orientation individuals. This finding suggests that for individuals who are highly independent increased discounting of the future gain will enhance purchase intention, rather than decrease it.

# 7.2.2 Research Question 2

Temporal framing did not directly impact the purchase intention of individuals. There was no difference in purchase intention between those who saw a present-focussed, or saw a future-focussed temporal framing manipulation. However, there were differences in the mechanisms for each group. Furthermore, there was no difference between a match in respondent temporal orientation and temporal framing manipulation. Extant literature suggests an activity such as the one used should be sufficient to influence a respondent, however the word sort activities this study adapted were administered in-person. This suggests a difference between in-person administration of manipulations and online administration.

There is strong theoretical support for the use of temporal framing to impact individual temporal orientation and decision making. However, these successful manipulations were longer and more in-depth than the lighter-touch manipulation used in this study (further recommendations on manipulations are made in Section 7.3). This suggests that temporal framing may have limited practical applications to managers and policy interventions. If a brief advertisement or warning label attempts to alter a participant's temporal frame the experience of this research suggests it would not be cognitively engaging enough to make a meaningful difference.

### 7.2.3 Research Question 3

Demographics have been clearly demonstrated to impact purchase intention towards sustainable goods. Age, gender, parenthood, and personal income were tested, with each demonstrating differing effects on purchase intention.

*Age:* There was no significant difference between the purchase intention of older and younger respondents. However, the mechanisms driving this intention differed between the groups. Both groups were significantly influenced by image congruence and interdependent self-construal suggesting that self-image and their surrounding groups influence purchasing. However, there were differences at a 90% level, with older individuals influenced by independent self-construal, suggesting a desire to maximise personal outcomes. Younger individuals were influenced by temporal orientation, suggesting the future was of greater concern to them. This suggests that the age effect may be explained by expected lifespan. For younger individuals, there is more time ahead of them and a greater need to consider that time, for older individuals, less time in front of them is likely to lead to personal maximisation of outcomes.

*Gender:* There was a significant difference between genders concerning purchase intention, with female respondents having a higher intention to purchase than male respondents. With the conceptual model split by gender, interdependent self-construal was a significant predictor for female respondents, with independent self-construal influential for male respondents. This suggests that female respondents intend to purchase products ensuring safety and security of outcomes, for males self-maximising outcomes appears more influential. However, when self-reporting behaviour interdependent self-construal was not a significant predictor for female respondents, suggesting that social desirability may be a *Parenthood:* An exploration of the effects of parenthood and age on purchase intention towards sustainable goods revealed that for non-parents, interdependent selfconstrual and image congruence are significant predictors of purchase intention. While for parents, temporal orientation, independent self-construal, and image congruence were significant predictors of purchase intention. This suggests that for parents there is an intention to purchase sustainable goods, but this is driven by a selfish desire to see long-term success for their child, rather than a socially oriented desire to see societal improvement.

*Personal Income:* For low- and high-income respondents there was a difference in drivers for purchase intention. Lower income respondents are driven by interdependent self-construal while higher income respondents are driven by individual self-construal. This would suggest that for lower income respondents their community and network are more important to their intentions. For higher income participants their own goals and outcomes are more important to their intentions.

# 7.2.4 Research Question 4

This research includes several temporal components, temporal orientation, temporal discounting, and a temporal framing manipulation. Individual temporal orientation has an established contribution to sustainable goods purchase intention in extant literature. However, extant literature does not clearly define commonly used terms in temporal research, such as 'present', 'near future' and 'far future'. Therefore, to improve the context and understanding extant literature, and the findings of the present study, an activity was created and tested to create a preliminary definition of these commonly used terms.

Whilst appearing self-explanatory at first 'present', 'near future' and 'far future' become ambiguous under scrutiny. Respondents to this study define the point at which 'present' becomes 'near future' occurs between 14 and 30 days, the point at which 'near future' becomes 'far future' occurs between 6 months and 1 year. With anything over 1 year considered clearly 'far future'.

This research also begins to further explore these findings. Consumers asked to rate two times of similar length, 30 days and one month, and five years and 60 months. Despite each pair representing equal lengths of time, categorisation of these were inconsistent. Male respondents did not consider five years and 60 months to be equal lengths of time. This understanding is necessary when understanding extant temporal literature as these commonly used terms are rarely defined, creating ambiguity in interpretation.

### 7.3 Methodological contributions

This research created a sorting exercise to create an understanding of how participants allocate units of time to verbal descriptors of that time. The results provide a greater understanding of how participants interpret the terms 'present', 'near-future', 'far-future'. The use of this sorting exercise and the results found also offer a starting point for further refinement of the measurement tool, and the items measured.

Temporal discounting studies are typically performed either in a lab setting or using controlled surveys which only allow for certain combinations of answers to be given. This study used a standard Qualtrics survey, without any influence on the answers of participants (except forced response). This demonstrates that for the purposes of temporal discounting research a high level of unusable responses will result from current measures. Many participants did not understand or chose not to engage correctly with the temporal discounting activities. This lack of engagement was despite the participants being rewarded for participation, and likely to have above average experience in answering online surveys. For incentivised and experienced survey takers to find the structure of these activities challenging suggests a limitation of the activity.

Whilst the temporal discounting activity works well in a lab with an invigilator to help, or a customised website that only allows for specific combinations of answers, for general survey distribution further refinement is needed to achieve higher rates of useable responses. The number of responses where a temporal discounting rate could not be calculated suggest that researchers have a choice when designing temporal discounting studies. That choice is between unfettered responses, as is the case with this study, and placing restrictions on how participants can respond to activities. Both solutions are open to criticism; unfettered responses lead to a high number of deletions; while restrictions on responses may be seen as constructing data, or unduly influencing the respondent. This study recommends a middle-ground approach going forward. For distribution through an online survey a prompt should be given to respondents who do not fill out the activity in a useable way. If the respondent chooses to ignore the prompt and continue, then the response may be later considered for deletion or imputation. To supplement the reminder, an example could be given of a 'correctly' filled out activity; this risks respondent's consciously or subconsciously mimicking the example pattern. The risk of bias created by the example pattern could be offset by randomising the order of responses. However, this would require a higher level of technological competency or access to more advanced software than an average survey requires thus creating a limitation on who can study this construct.

A more advanced alternative also exists as used by Hardisty (2013); respondents only see one pair at a time, with selection triggering the display of the next pair. This way the order of the pairs can be randomised, and the amounts changed between participants to narrow down a respondent's temporal orientation more accurately. This method was not used in the study due to the requirement of a custom created platform for distribution, and the finding by Hardisty (2013) that there was not a compelling advantage present. However, this finding was when compared to a more controlled version of the temporal discounting activity, where participants were unable to answer 'incorrectly'.

This research applied adapted commonly used word activities for use as primes of both temporal orientation and self-construal. No significant difference in purchase intention was found between the groups suggesting that these activities did prime participants in the manner extant literature would suggest. However, a more subtle priming effect may have occurred as there were differences apparent between groups in the conceptual model. A word sort was adapted to reduce the cognitive load on participants as is best practice for online surveys. However, this may have reduced the salience of the prime for consumers, compared to longer narrative approach. Further refinement of primes for use in online surveys is needed to better understand what does and does not work, while reducing the cognitive load of respondents. In adapting the primes for use in a long survey, with time constraints for completion (20 minutes was the contracted time allowance from Qualtrics), the primes were kept concise with short word lists and no scenario given. The primes these were adapted from longer activities which required participants to read a scenario carefully, to circle words matching the instruction given. The lack of priming effect in the present study, despite temporal frame and self-construal being able to be primed (e.g., Orbell et al., 2004; Utz, 2004) suggests the primes did not have sufficient cognitive engagement. Therefore, a tension exists in priming temporal frame and self-construal in online research; a concise and readily understandable activity is needed, but a high level of cognitive engagement is also needed. Further refinement is needed to determine an optimal length scenario, with results of this research suggesting a scenario is needed rather than a word list. It is suggested that this scenario start as a paragraph, a length Orbell et al., (2004) used to successfully prime temporal framing, with Utz et al., (2004) using approximately two paragraphs. Orbell et al's, (2004) study recruited participants in person rather than online, with participants perhaps

influenced to respond more carefully and with more attention by the presence of a researcher. The present study also attempted to keep the reading age of the survey as low as possible, and the text accessible to a broad audience. However, more complex language in the priming scenario may create extra cognitive load and encourage increased attention. Therefore, it is suggested that future research uses a paragraph-based scenario for priming self-construal and temporal orientation. This paragraph should contain accessible language but may be more cognitively taxing than the rest of the survey to encourage attention. Multiple approaches to the content of this paragraph have shown success; sentences describing a situation (Orbell et al., 2004); scrambled sentences which need to be unscramble (Utz, 2004); or used outside of temporal framing and self-construal research, the use of pronoun (or other grammatical function) circling, or misspelled word circling (e.g., Haberstroh et al., 2002).

## 7.4 Managerial contributions

The model tested in this research suggested useful information for managers and practitioners. For those seeking to target a general population to improve sustainable goods purchasing, appealing to individual image congruence would be the most impactful method. Highlighting the values behind companies and products, as well as how a product is more sustainable help consumers understand the product they are viewing and thus make a judgement on if this is congruent with their self-image and values. Secondly, appealing to interdependent self-construal by reinforcing values of the group and the importance of sustainable goods to the groups long-term future. Using messaging and imagery that reinforces the value of a product to the friends and family of a target consumer. Finally, highlighting messages in the context of time may offer additional persuasive effects to participants, particularly to individuals where a match between the message offered occurs with their temporal orientation. It is evident that for most practical purposes altering a participant's temporal orientation (through temporal framing), or self-construal (through emphasis on themselves or the community) is unlikely to be effective.

Further understanding as to the types of people influenced by this model offers additional value to practitioners, as understanding the target market of a product is essential when designing advertising and selecting media choices. Given the challenge of influencing temporal framing and self-construal, it would make more sense for marketers to use demographics as segmenting factors in marketing strategies. Segmenting into different demographic groups allows message appeals tailored by the model constructs. For example, if targeting messaging at higher income individuals, then independent goal attainment is more influential than reinforcing the goals of society or a group. Alternatively, if targeting parents, a focus on the future and individual goal attainment offers a more persuasive effect than to non-parents.

Understanding how different types of individuals perceive time has exciting implications when designing consumer messaging. For example, when asked to define 'present', 'near future', and 'far future' more participants rated one month as 'near future' than 30 days, which had a higher proportion of individuals describing it as 'present'. This understanding also helps with 60 months and five years with more participants considering 60 months to be 'near future' than five years. Understanding these boundaries is vital to the design of messages, depending on the desired outcome of the message sender. For example, if a firm wants outcomes to seem more immediate to participants, the 30 days, or 60 months description, is more useful.

Conversely, if a firm wants to highlight a length of time and communicate how far away an event is, for example, finance payments, describing the length of time as five years is more strongly associated with 'far future'. Furthermore, the perceived differences between 60 months and five years are apparent in male respondents, but not female respondents; suggesting that this difference may exist in other perceptions of time also.

From a policy perspective creating certainty for consumers and businesses would be a substantial contribution to closing the divide between attitude and behaviour. One of the largest issues facing consumers is uncertainty about the outcomes of their actions, and complexity of available choices. Whilst interdependent consumers are willing and able to co-operate, independent consumers must be internally driven. Policy can add incentives to the market, making all choices more environmentally friendly and not relying on the need for co-operation.

For consumers, they may learn from this research too. The rise in productivity and 'self-help' blogs, podcasts, TV shows, and courses suggest that consumers are interested in how to optimise their own outcomes. The findings of this research can help individuals understand what motivations will influence their behaviour. For example, if non-parents want to consume more sustainable goods, but are struggling to make it stick, they can motivate themselves by focussing on society. Conversely, parents can focus on their own goals, and what is best for their children.

## 7.5 Limitations

Data was collected using a survey distributed to an online panel to gather data from a representative sample. However, panel data provides challenges and potential issues, including the inclusion of professional survey takers. Therefore, some participants may conduct surveys in the manner most efficient to them, and not fully comprehend or reflect on the questions asked. A degree of self-selection bias is also apparent, with participants only choosing to partake in or complete surveys they deem interesting. Survey panel participants, while a fair representation of the New Zealand population who may consume products in

stores are biased to those willing and able to participate in surveys regularly — thus limiting the panel to individuals with regular computer and internet access excluding groups without such access. Participants must also have voluntarily agreed to become part of the survey panel, rather than being reached by more organic means such as snowball sampling.

This research relies on self-report data, rather than behavioural observations. Selfreport data relies on participants to accurately comprehend and reflect on their thoughts and perceptions to answer the survey items. However, this reflection may be altered by the participants' view of themselves and may be influenced by their own biases. Behavioural observation would allow for better assessment of behaviour towards sustainable consumption but would consequently have resulted in a smaller sample size. A methodology involving behavioural observation is encouraged to enhance the present findings further and to understand the causes of variance in consumer purchase intention further.

Some common method variance was apparent in the study, however not at concerning levels with the majority of items not displaying substantial variance. Therefore, common method bias is unlikely to have negatively impacted the results of the study, with a significant amount of variance required to negatively bias data (Fuller et al., 2016).

Despite best efforts to formulate the survey instrument in the most neutral way possible, there is a risk of social desirability bias – with participants biased towards proenvironmental answering, as this may be a more socially desirable response. Adding a social desirability scale would offer further diagnostic possibility on the effect that social desirability had on the data collected. However, the length of the survey instrument and the cognitive load placed on participants by the temporal discounting measurements led to a decision that the addition of further diagnostic scales would adversely impact responses. This research, while highlighting the value of a nuanced view of gender, did not set out to address the complexities of gender in research as such collection of gender data was as a binary variable with participants asked to respond with their self-identification. A more nuanced approach using feminine and masculine attitudes may have better reflected the study respondents.

# 7.5.1 Self-Construal Construct Validity

The results found that when using structural equation modelling on conceptual model that the self-construal sub-scales did not provide model fit, alongside divergent and convergent validity issues. This issue is reflected in the self-construal literature and is confirmed here (e.g., D'Amico & Scrima, 2016; Hardin et al., 2004; Kam et al., 2012).

While the lack of structural equation modelling may be considered a limitation of the data analysis, a robust multiple regression was conducted. Gudykunst (2003) cites the APA task force on statistical inference, highlighting "that researchers should choose the 'minimally sufficient analysis' (Wilkinson & Task Force on Statistical Inference, 1999)". This statement is made in the context of determining the usefulness and efficacy of a construct using correlation analysis. However, the statement offers justification to the adequacy of multiple regression to further understand the nature of interdependent and independent self-construal.

While it is not the scope of this research to refute the self-construal construct, the challenges faced in applying this construct to the sustainable purchasing literature offers additional data and discussion to the broader debate surrounding self-construal validity.

### 7.6 Directions for future research

The tested model and hypotheses sought to understand purchase intention towards sustainable goods further. However, consumers may experience similar trade-offs in other domains, such as buying high quality versus low-quality products. Testing the model in additional domains where a trade-off exists would increase an understanding of temporal orientation, self-construal, and image congruence.

The 24-item self-construal scale proposed by Singelis (1994), and further updated to 30-items by Singelis et al., (1999), has been the centre of discussion and debate as to its validity and efficacy (e.g., D'Amico & Scrima, 2016; Gudykunst & Lee, 2003; Hardin et al., 2004; Kim & Narayan S., 2003; Levine, Bresnahan, Park, Lapinski, Tai Sik, et al., 2003; Levine, Bresnahan, Park, Lapinski, Wittenbaum, et al., 2003). A 10-item short version of the scale has been proposed (D'Amico & Scrima, 2016) as offering greater validity. However, this research found that convergent validity scores in AMOS v25 were unacceptably low for use, and further refinement was needed. The inability to successfully use this scale in structural equation modelling, suggests a need to further refine and test the measurement of self-construal. Further understanding of interdependent self-construal is needed. There is a lack of clarity in sustainable goods research if interdependent individuals are co-operative with an in-group, immediately around them, or with society more broadly.

A further understanding is needed on the effects of income. No difference between higher and lower income participants towards purchase intention was found in this research. However, differing mechanisms of purchase intention were identified. Lower income respondents were found to be influenced by interdependent self-construal. With lower income respondents representing a large spending population, understanding their motivations offers a valuable contribution to a policy and managerial audience.

This research treated gender as a binary option, future research is encouraged to build upon the components of the model tested; incorporating differing views of gender to offer greater insight. To further enhance the insights generated in this research and to offer an additional contribution, gender should be measured by degree of masculinity and degree of femininity in attitudes. Research suggests that pro-environmental behaviour is associated with females (e.g., Arnocky et al., 2014). However, whilst this research did support the view that female respondents have greater intention to purchase sustainable goods than male respondents, differing motivations were identified. The reality of this distinction may be more nuanced with pro-environmental behaviour associated with femininity and less so with masculinity – thus not directly related to biological sex or identified gender. Testing for the effects of feminine and masculine attitudes better reflects the lived experiences of many individuals and may better account for the 'why?' and 'how?' even within cisgender individuals. A more robust understanding is also needed of how the unit of time (e.g., months or years) impacts on perceptions of time. Male respondents in this study considered 60 months to be more present than five years, despite these lengths of time being equivalent. Further understanding of this effect is necessary to better inform theoretical research into temporal horizons.

This research established an understanding of what three commonly used terms in the temporal orientation literature 'present', 'near future', and 'far future', mean to participants. Additional research should be conducted with the specific objective of further defining these terms. Additional stages of data collection designed with more robust testing could further help define these terms. Further refinement of the measurement tool and comparison with other forms of measurement would offer a clear set of definitions and thus remove ambiguity from the terms.

## 7.7 Concluding thoughts

While it is apparent that individual responsibility and behaviour is vital to a more environmentally sustainable future, there is a growing discussion that systemic changes matter more. The decisions made by policymakers and large corporations can have a more immediate and far-reaching effect on sustainable goods purchase than individual consumer decisions. However, with greater consumer understanding of environmental issues marketers have an opportunity to become an instrumental and positive force shifting consumers towards increasing the purchase of sustainable goods. While society, generally, considers purchasing sustainable goods as a positive development, consumer behaviour does not reflect this view. Therefore, companies and marketers marketing sustainable products need to better understand the consumers' perspective and use the right messages, targeted to the right people, to sell these products for the betterment of the planet.

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# Appendices

# **Appendix 1: Survey instrument**

Appendix 1 contains the survey instrument participants completed through the Qualtrics online survey platform. The survey instrument includes all the items completed by participants, as well as survey flow showing which questions were answered and how participants were split into conditions.

ш Ш	IbeddedData opp = Qual2015_220916_FullprojectFINAL ridValue will be set from Panel or URL. RISNValue will be set from Panel or URL. Q_TotalDurationValue will be set from Panel or URL.	
	Re-field = Yes	
Bra	anch: New Branch If If Quota Overall(200) Has Been Met	
	EmbeddedData gc = 3 term = Overall	
	EndSurvey: Advanced	
Sta	indard: Survey Introduction (5 Questions)	
Bra	anch: New Branch If If What is your current age? Under 18 Is Selected	
	EmbeddedData gc = 2 term = Age	
	EndSurvey: Advanced	
Blo	ock: Pre Manipulation (4 Questions)	

BlockRandomizer: 1 - Evenly Present Elements
Standard: TD Gain 1a (2 Questions) Standard: TD Gain 1b (2 Questions)
BlockRandomizer: 1 - Evenly Present Elements
Standard: TD Loss 1a (2 Questions) Standard: TD Loss 1b (2 Questions)
Standard: Sustainability Definition and Attention Check (2 Questions)
Branch: New Branch If If If Just to check you understood the term 'sustainable product' please tick the boxes that relate to Are responsible for significant deforestation Is Selected Or Just to check you understood the term 'sustainable product' please tick the boxes that relate to Use non-renewable resources Is Selected
EmbeddedData gc = 2 term = Attention_CheckQ5.2
EndSurvey: Advanced
Standard: Pre Manipulation 2 (7 Questions) Standard: Priming Activity (2 Questions) Standard: TD Gain Scenario 2 (2 Questions) Standard: SvO Prime (2 Questions) Standard: SvO (5 Questions) Standard: Sustainable Product Preferences (1 Question) Standard: Time Preferences (1 Question)

St St	andard: Demographic Questions (16 Questions) andard: Conclusions (2 Questions)
ā	anch: New Branch If If Q_TotalDuration Is Less Than 313
	EmbeddedData gc = 4 term = Speeder
	EndSurvey: Advanced
ā	anch: New Branch If If Quota Overall(200) Has Been Met
	EmbeddedData gc = 3
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# Q1.1 Welcome,

University of Wellington (VUW). This study is being undertaken to better understand the motivations of consumers in their purchase decisions. Thank you for choosing to take part in this research. My name is Rene Versteegh and I am a PhD student in Marketing at Victoria

The survey should take around 20 minutes to complete.

This survey is voluntary and the information anonymous. No respondent is identifiable in this survey. Ethics approval has been granted for this research from the VUW Human Ethics Committee, reference: 22565 The information you provide is collected and stored in a secure website and all responses are anonymous. All of the material related to survey responses will be viewed only by the researcher and the research supervisor. All printed information will be kept in a locked file with access researcher. Data collected in this survey will be destroyed after 5 years. It is possible that summary results from this survey may appear in restricted to the researcher and research supervisor. All electronic data will be kept in a password protected file accessible only by the academic or professional journals and may also be presented at academic or professional conferences.

If you have any concerns, questions, or require any further information please feel to contact

René Versteegh PhD Student rene.versteegh@vuw.ac.nz

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Primary supervisorjames.richard@vuw.ac.nz

Michelle Renton Secondary Supervisor michelle.renton@vuw.ac.nz If you have any concerns about the ethical conduct of the research you may contact the Victoria University HEC Convener: Associate Professor Susan Corbett. Email susan.corbett@vuw.ac.nz or telephone +64-4-463 5480.

Page Break

Q82 The next three questions are important in order to obtain a representative view of New Zealand, your participation in this survey would be appreciated.

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What is your current age?	) Under 18 (1)	18 to 19 (2)	20 to 24 (3)	25 to 29 (4)	30 to 34 (5)	35 to 39 (6)	40 to 44 (7)	45 to 49 (8)	50 to 54 (9)	55 to 59 (10)	60 to 64 (11)	65 to 69 (12)	70 and over (13)	o: End of Block If Q1.2 = Under 18
Q1.2 Wha	0 L	0	0 20	0 25	0 30	0 35	0 40	0 45	0 50	0 55	09 00	0 65	02 ()	Skip To: El

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Q1.3 What gender do you identify as?

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O Female (2)

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# Q1.4 What is your personal annual income?

▼ - (1) ... \$200,001 or more (21)

End of Block: Survey Introduction

Start of Block: Pre Manipulation

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Q2.1 For each of the statements shown, please indicate whether or not the statement is characteristic of you.

Extremely uncharacteristic of me (1)	der ings ee in ure, / to rce day day sur.	in a lar lar to ve res for sars.	
Uncharacteristic of me (2)	0	0	
Slightly uncharacteristic of me (3)	0	$\bigcirc$	
Neither uncharacteristic nor characteristic of me (4)	0	$\bigcirc$	,
Slightly characteristic of me (5)	0	$\bigcirc$	
Characteristic of me (6)	0	$\bigcirc$	
Extremely characteristic of me (7)	0	$\bigcirc$	



Extremely characteristic of me (7)	0	$\bigcirc$
Characteristic of me (6)	0	$\bigcirc$
Slightly characteristic of me (5)	0	$\bigcirc$
Neither uncharacteristic nor characteristic of me (4)	0	$\bigcirc$
Slightly uncharacteristic of me (3)	0	$\bigcirc$
Uncharacteristic of me (2)	0	$\bigcirc$
Extremely uncharacteristic of me (1)	0	$\bigcirc$
	I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes. (6)	I think it is important to take warnings about negative outcomes seriously even if the negative outcome will not occur for many years. (7)



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I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time. (10)	

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Q2.3 For each of the statements shown, please indicate whether or not the statement is characteristic of you.

tic Extremely characteristi of me (7)	0	$\bigcirc$	$\bigcirc$
Characteris of me (6)	0	$\bigcirc$	$\bigcirc$
Slightly characteristic of me (5)	0	$\bigcirc$	$\bigcirc$
Neither uncharacteristic nor characteristic of me (4)	0	$\bigcirc$	$\bigcirc$
Slightly uncharacteristic of me (3)	0	$\bigcirc$	$\bigcirc$
Uncharacteristic of me (2)	0	$\bigcirc$	$\bigcirc$
Extremely uncharacteristic of me (1)	0	$\bigcirc$	0
	I only act to satisfy immediate concerns, figuring that I will take care of future problems that may occur at a later date. (11)	Since my day to day work has specific outcomes, it is more important to me than behaviour that has distant outcomes. (12)	When I make a decision, I think about how it might affect me in the future. (13)

My behaviour is generally influenced by future consequences. (14)	age Break
$\bigcirc$	

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	
Unnecessary	$\bigcirc$	Necessary						
Not functional	$\bigcirc$	Functional						
Unhelpful	$\bigcirc$	Helpful						
Impractical	$\bigcirc$	Practical						
Ineffective	$\bigcirc$	Effective						
Not fun	$\bigcirc$	Fun						
Dull	$\bigcirc$	Exciting						
Not delightful	$\bigcirc$	Delightful						
Not thrilling	$\bigcirc$	Thrilling						
Unenjoyable	$\bigcirc$	Enjoyable						

Q2.4 Now consider your personal shopping habits, please indicate how you feel about shopping trips in general and indicate your feelings on each of the ten scales below.

End of Block: Pre Manipulation

Start of Block: TD Gain 1a

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Q3.1 Imagine you just won a lottery worth \$250, which will be paid to you immediately or in one year. The lottery commission is giving you the option of receiving a different amount if paid in one year.

There are 10 pairs, please choose an option from the left column or the right column for

### each pair.

	1 (1)	2 (2)	
Win \$250 immediately.	0	0	Win \$350 one year from now.
Win \$250 immediately.	0	$\bigcirc$	Win \$330 one year from now.
Win \$250 immediately.	$\bigcirc$	$\bigcirc$	Win \$310 one year from now.
Win \$250 immediately.	0	$\bigcirc$	Win \$290 one year from now.
Win \$250 immediately.	0	$\bigcirc$	Win \$270 one year from now.
Win \$250 immediately.	0	$\bigcirc$	Win \$250 one year from now.
Win \$250 immediately.	0	$\bigcirc$	Win \$230 one year from now.
immediately.	0	$\bigcirc$	from now.

### Q3.2

Thinking about the lotto win.

Please click on the slider bar below and drag the slider to a point where you believe the two options are of equal value.

Win \$250 immediately.

Win \$(select number below) one year from now.

230 250 270 290 310 330 350 370 390



End of Block: TD Gain 1a

Start of Block: TD Gain 1b

 $X \rightarrow$ 

Q3.3 Imagine you just won a lottery worth \$250, which will be paid to you immediately or in one year. The lottery commission is giving you the option of receiving a different amount if paid in one year.

	1 (1)	2 (2)	
Win \$250 immediately.	0	0	Win \$250 plus an additional \$100 one year from now.
Win \$250 immediately.	0	0	Win \$250 plus an additional \$80 one year from now.
Win \$250 immediately.	$\bigcirc$	0	Win \$250 plus an additional \$60 one year from now.
Win \$250 immediately.	$\bigcirc$	0	Win \$250 plus an additional \$40 one year from now.
Win \$250 immediately.	$\bigcirc$	0	Win \$250 plus an additional \$20 one year from now.
Win \$250 immediately.	$\bigcirc$	$\bigcirc$	Win \$250 one year from now.
Win \$250 immediately.	$\bigcirc$	$\bigcirc$	Win \$250 minus \$20 one year from now.

There are 10 pairs, please choose an option from the left column or the right column for each pair.

# Q3.4

Thinking about the lotto win.

Please click on the slider bar below and drag the slider to a point where you believe the two options are of equal value.

Win \$250 immediately.

Win \$250 plus (or minus) an additional (select number below) one year from now.

 $-20 \quad 0 \quad 20 \quad 40 \quad 60 \quad 80 \quad 100 \quad 120 \quad 140$ 

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End of Block: TD Gain 1b

Start of Block: TD Loss 1a



Imagine you just received a speeding ticket worth \$250, which you must pay immediately or in one year. Your local police are giving you the option of paying a different amount if paid in one year.

There are 10 pairs, please choose your one option or the other for each pair.

	1 (1)	2 (2)	
Pay \$250 immediately.	0	0	Pay \$350 one year from now.
Pay \$250 immediately.	$\bigcirc$	$\bigcirc$	Pay \$330 one year from now.
Pay \$250 immediately.	$\bigcirc$	$\bigcirc$	Pay \$310 one year from now.
Pay \$250 immediately.	$\bigcirc$	$\bigcirc$	Pay \$290 one year from now.
Pay \$250 immediately.	$\bigcirc$	$\bigcirc$	Pay \$270 one year from now.
Pay \$250 immediately.	$\bigcirc$	$\bigcirc$	Pay \$250 one year from now.
Pay \$250 immediately.	$\bigcirc$	$\bigcirc$	Pay \$230 one year from now.

# Q4.2

Thinking about the speeding ticket.

Please click on the slider bar below and drag the slider to a point where you believe the two options are of equal value.

Pay \$250 immediately.

Pay \$(select number below) one year from now.



### Q4.3

Imagine you just received a speeding ticket worth \$250, which you must pay immediately or in one year. Your local police are giving you the option of paying a different amount if paid in one year.

There are 10 pairs, please choose your one option or the other for each pair.

	1 (1)	2 (2)	
Pay \$250 immediately.	0	0	Pay \$250 plus an additional \$100 one year from now.
Pay \$250 immediately.	0	$\bigcirc$	Pay \$250 plus an additional \$80 one year from now.
Pay \$250 immediately.	0	0	Pay \$250 plus an additional \$60 one year from now.
Pay \$250 immediately.	0	0	Pay \$250 plus an additional \$40 one year from now.
Pay \$250 immediately.	0	0	Pay \$250 plus an additional \$20 one year from now.
Pay \$250 immediately.	0	$\bigcirc$	Pay \$250 one year from now.
Pay \$250 immediately.	0	$\bigcirc$	Pay \$250 minus \$20 one year from now.

# Q4.4

Thinking about the speeding ticket.

Please click on the slider bar below and drag the slider to a point where you believe the two options are of equal value.

Pay \$250 immediately.

Pay \$250 plus (or minus) an additional (select number below) one year from now.



End of Block: TD Loss 1b

Start of Block: Sustainability Definition and Attention Check

Q5.1 The term 'sustainable products' is used throughout this survey; sustainable products may be considered to have at least one or more of the following features:

Are packaged in recyled packaging Have recyclable packaging Are safe for the environment Are good for society Are made from sustainably sourced materials

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Q5.2 Just to check you understood the term 'sustainable product' please tick the boxes that relate to the earlier definition

	Are packaged in recycled packaging (1)
	Are responsible for significant deforestation (2)
	Have recyclable packaging (3)
	Are good for the environment (4)
	Are good for society (5)
	Are made from sustainably sourced materials (6)
	Use non-renewable resources (7)
Skip To: End o	f Block If Q5.2 = Are responsible for significant deforestation
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End of Block: Sustainability Definition and Attention Check

Start of Block: Pre Manipulation 2

Q6.1 Please think about sustainable products and respond to each statement. Read each statement as if it referred to you. Beside each statement please select the option that best matches your agreement or disagreement.
	Strongly Disagre e (1)	Disagre e (2)	Somewha t Disagree (3)	Neither Agree nor Disagre e (4)	Somewha t Agree (5)	Agre e (6)	Strongl y Agree (7)
Sustainable products reflect who I am. (1)	0	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$
l feel a personal connection to sustainable	0	$\bigcirc$	$\bigcirc$	$\bigcirc$	0	$\bigcirc$	$\bigcirc$
products. (2)							
sustainable products to communicat e who I am to other people. (3)	0	0	$\bigcirc$	0	$\bigcirc$	$\bigcirc$	$\bigcirc$
I think sustainable products help me become the type of person I want to be. (4)	0	0	$\bigcirc$	0	0	0	0
I consider sustainable products to be "me" (it reflects who I consider myself to be or the way that I want to present myself to others). (5)	0	0	$\bigcirc$	0	0	0	0
Sustainable products suit me well. (6)	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$
l currently buy sustainable products. (7)	0	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$

I actively search for sustainable products in order to buy them. (8)	0	0	0	0	0	0	0	
l purchase more than one type of sustainable product. (9)	0	0	$\bigcirc$	$\bigcirc$	0	0	0	
X→								

Q6.2 Please think about your behaviour and respond to each statement. Read each statement as if it referred to you. Beside each statement please select the option that best matches your agreement or disagreement.

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
l enjoy being unique and different from others in many respects. (1)	0	0	0	0	0	0	0
I can talk openly with a person who I meet for the first time, even when this person is much older than I am. (2)	0	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	0	0
Even when I strongly disagree with group members, I avoid an argument. (3)	0	$\bigcirc$	$\bigcirc$	$\bigcirc$	0	0	0
I have respect for the authority figures with whom I interact. (18)	0	$\bigcirc$	0	$\bigcirc$	0	$\bigcirc$	0

I do my own thing, regardless of what others think. (19)	0	$\bigcirc$	$\bigcirc$	$\bigcirc$	0	0	0	
Page Break								

Q6.3 Please think about your behaviour and respond to each statement. Read each statement as if it referred to you. Beside each statement please select the option that best matches your agreement or disagreement.

	Strongl y disagre e (1)	Disagre e (2)	Somewha t disagree (3)	Neither agree nor disagre e (4)	Somewha t agree (5)	Agre e (6)	Strongl y agree (7)
l respect people who are modest about themselves. (1)	0	0	0	0	0	0	0
I feel it is important for me to act as an independent person. (2)	0	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	0	$\bigcirc$
I will sacrifice my self- interest for the benefit of the group I am in. (3)	0	0	0	0	$\bigcirc$	0	0
I'd rather say "No" directly, than risk being misunderstoo d. (18)	0	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	0	0
Having a lively imagination is important to me. (19)	0	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	0	0

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	Strongly disagre e (1)	Disagre e (2)	Somewha t disagree (3)	Neither agree nor disagre e (4)	Somewha t agree (5)	Agre e (6)	Strongl y agree (7)
I should take into consideratio n my parents' advice when making education or career plans. (1)	0	0	0	0	0	0	0
l feel my fate is intertwined with the fate of those around me. (2)	0	0	$\bigcirc$	0	$\bigcirc$	0	0
l prefer to be direct and forthright when dealing with people I've just met. (3)	0	0	$\bigcirc$	0	$\bigcirc$	0	0
I feel good when I cooperate with others. (18)	0	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	0	0
l am comfortable being singled out for praise or rewards. (19)	0	0	$\bigcirc$	0	$\bigcirc$	0	0

Q6.4 Please think about your behaviour and respond to each statement. Read each statement as if it referred to you. Beside each statement please select the option that best matches your agreement or disagreement.

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# Q6.5 Please think about your behaviour and respond to each statement. Read each statement as if it referred to you. Beside each statement please select the option that best matches your agreement or disagreement.

	Strongl y disagre e (1)	Disagre e (2)	Somewh at disagree (3)	Neither agree nor disagre e (4)	Somewh at agree (5)	Agre e (6)	Strongl y agree (7)
If my brother or sister (or very close friend) fails, I feel responsible. (1)	0	0	0	0	0	0	0
I often have the feeling that my relationships with others are more important than my own accomplishment s. (2)	0	$\bigcirc$	$\bigcirc$	0	0	0	0
Speaking up during a meeting (or class) is not a problem for me. (3)	0	$\bigcirc$	$\bigcirc$	0	0	$\bigcirc$	0
l would offer my seat in a bus to my boss (or my professor). (18)	0	0	$\bigcirc$	$\bigcirc$	0	$\bigcirc$	$\bigcirc$
I act the same way no matter who I am with. (19)	0	$\bigcirc$	$\bigcirc$	$\bigcirc$	0	$\bigcirc$	0

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	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
My happiness depends on the happiness of those around me. (1)	0	0	$\bigcirc$	0	0	0	0
l value being in good health above everything. (2)	0	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	0	0
I will stay in a group if they need me, even when I am not happy with the group. (3)	0	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	0	$\bigcirc$
I try to do what is best for me, regardless of how that might affect others. (18)	0	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	0	$\bigcirc$
Being able to take care of myself is a primary concern for me. (19)	0	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$

Q6.6 Please think about your behaviour and respond to each statement. Read each statement as if it referred to you. Beside each statement please select the option that best matches your agreement or disagreement.

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Q6.7 Please think about your behaviour and respond to each statement. Read each statement as if it referred to you. Beside each statement please select the option that best matches your agreement or disagreement.

	Strongly disagre e (1)	Disagre e (2)	Somewha t disagree (3)	Neither agree nor disagre e (4)	Somewha t agree (5)	Agre e (6)	Strongl y agree (7)
It is important to me to respect decisions made by the group. (1)	0	0	0	0	0	0	0
My personal identity, independen t of others, is very important to me. (2)	0	$\bigcirc$	0	0	$\bigcirc$	0	0
It is important for me to maintain harmony within my group. (3)	0	$\bigcirc$	$\bigcirc$	0	$\bigcirc$	0	0
I act the same way at home that I do at work (or school). (18)	0	$\bigcirc$	$\bigcirc$	0	$\bigcirc$	0	0
l usually go along with what others want to do, even when I would rather do something different. (19)	0	0	$\bigcirc$	0	0	0	0

End of Block: Pre Manipulation 2

**Start of Block: Priming Activity** 

Q7.1 Please carefully read the list below. This list contains misspelled words. Please identify the misspelled words and type the correct spellings into the spaces provided.

Purchasing	Footure	Distant	Consuming	Tmorrrw	
GoodsYaer	Damage				

Please enter one misspelled word per box.

O Word 1 (1)	-
O Word 2 (2)	-
O Word 3 (3)	-

Q7.2 Please carefully read the list below. This list contains misspelled words. Please **identify the misspelled words** and **type the correct spellings into the spaces provided**. Purchasing

Twoday Near Consuming Immmmediatly Goods Prsssent Damage

Please enter one misspelled word per box.

O Word 1 (1)	
O Word 2 (2)	
O Word 3 (3)	
End of Block: Priming Activity	
Start of Block: TD Gain Scenario 2	

Q8.1 Considering the following hypothetical scenario. Please carefully read the information below and think about how you would respond if asked to make this choice for real. This scenario looks at people receiving a subsidy to install solar panels at home. Please do not let any opinions on local councils, or the way this proposal may work influence your decision making. The only thing that matters is the choice you would make.

Imagine that the local council is planning to trial a subsidy to encourage people to add solar panels to their household. Getting people to add solar panels to their house is important as it provides a clean source of local energy. The council has secured funding of \$500 per person for this project if it is done immediately, but if they wait an additional year, they may be able to offer a different amount of funding. You are being asked to make a series of choices, between receiving a subsidy immediately or receiving a different amount one year from now.

The two options are:

1) Receiving a \$500 subsidy immediately

2) Receiving a different sized subsidy, one year from now.

There are 7 pairs, please choose either an option from the left column, or the right column for each pair of choices

	1 (1)	2 (2)	
Receive \$500 immediately	0	0	Receive \$750 one year from now
Receive \$500 immediately	$\bigcirc$	$\bigcirc$	Receive \$700 one year from now
Receive \$500 immediately	0	$\bigcirc$	Receive \$650 one year from now
Receive \$500 immediately	0	$\bigcirc$	Receive \$600 one year from now
Receive \$500 immediately	$\bigcirc$	$\bigcirc$	Receive \$550 one year from now
Receive \$500 immediately	$\bigcirc$	$\bigcirc$	Receive \$500 one year from now
Receive \$500 immediately	0	$\bigcirc$	Receive \$450 one year from now
	1		

Q8.2 Please fill in the number that you believe makes the following two options equally attractive:

Please click on the slider bar below and drag the slider to a point where you believe the two options are of equal value.

1) Receive \$500 immediately.

2) Receive \$(insert number below) one year from now.

		450	500	550	600	650	700	750	800	850
	\$ ()		-						_	
End of Block: TD Gain Scenario 2										
Start of Block: TD Loss Scenario 2										
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#### Q9.1

Considering the following hypothetical scenario. Please carefully read the information below and think about how you would respond if asked to make this choice for real. This scenario looks at people paying a cost to install solar panels. Please do not let any opinions on local councils, or the way this proposal may work influence your decision making. The only thing that matters is the choice you would make.

Imagine that the local council is planning a one-off fee to fund these solar panels. Getting these solar panels installed will provide another source of clean energy. The council will be funding this project from the one off fee. They know that the cost of the project if it is done immediately is \$500 per person. If the council delays the project by a year it will cost a different amount. You are being asked to make a series of choices, between paying your contribution to the project immediately, or delaying your payment and paying a different amount one year from now.

The two options are:

- 1) Paying a \$500 fee immediately
- 2) Paying a different sized fee, one year from now.

There are 7 pairs, please choose either an option from the left column, or the right column for each pair of choices

	1 (1)	2 (2)	
Pay \$500 immediately.	0	0	Pay \$750 one year from now.
Pay \$500 immediately.	0	$\bigcirc$	Pay \$700 one year from now.
Pay \$500 immediately.	$\bigcirc$	$\bigcirc$	Pay \$650 one year from now.
Pay \$500 immediately.	0	$\bigcirc$	Pay \$600 one year from now.
Pay \$500 immediately.	0	$\bigcirc$	Pay \$550 one year from now.
Pay \$500 immediately.	0	$\bigcirc$	Pay \$500 one year from now.
Pay \$500 immediately.	0	$\bigcirc$	Pay \$450 one year from now.

Q9.2 Please fill in the amount of money that you believe makes the following two options equally attractive:

Please click on the slider bar below and drag the slider to a point where you believe the two options are of equal value.

1) Pay \$500 Immediately

2) Pay \$(insert number below) one year from now.

		450	500	550	600	650	700	750	800	850
	\$ ()		=						-	
End of Block: TD Loss Scenario 2										

Start of Block: SvO Prime

Q10.1 We want to better understand how you view yourself.

Please **click and drag at least 3** of the options you consider **most like yourself** into the box.



Q10.2 We want to better understand how you view your community.

Please click and drag at least 3 of the options you consider most like your community into the box.



End of Block: SvO Prime

Start of Block: SvO

Q11.1 Moving on to something more specific. The following hypothetical scenario is designed to investigate decision making processes when similar options are compared.

The following scenario and questions concern a local council environmental initiative.

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Imagine that your local council is trialling a program to reduce the dumping of rubbish in the landfill. To achieve this, the council has decided to offer ratepayers the choice of 12 or 24 rubbish bags for the year.

If a ratepayer chooses 12 rubbish bags, they will receive credits (1 credit = \$1), that they can choose to donate towards a council run charitable trust focussing on environmental issues, or apply to their rates bill. These credits will be granted in 12 equal amounts at the end of each month and as such will be equal in all senses, except who will benefit from the credit.

Alternatively, a ratepayer may choose 24 rubbish bags, if so they will incur a cost in credits (1 credit = \$1), they can choose to have these credits deducted from the council's contribution to the charitable trust (so that the trust receives less money), or pay for these on their rates bill (so that a higher rates bill is received). These credits will be transferred in 12 equal amounts at the end of each month and as such will be equal in all senses, except who will bear the cost.

We are not interested in your opinion of local councils, the mechanics of the proposal, or the motivations of the council in proposing this plan.

We are interested in the preference of people who will be personally affected.

Please assume you will be living in the same house one year from now, even if you are planning on moving.

Please choose the number of bags you would like to receive.

○ 12 Bags (4)

24 Bags (5)

Display This Question: If Q11.1 = 12 Bags

Q11.2 Please consider the available options when **12 bags** are opted for.

There are 7 pairs, please choose either an option from the left column, or the right column for each pair of choices.

	1 (1)	2 (2)	
84 credits towards your rates bill.	0	0	84 credits towards the charitable trust.
72 credits towards your rates bill.	$\bigcirc$	$\bigcirc$	72 credits towards the charitable trust.
60 credits towards your rates bill.	$\bigcirc$	$\bigcirc$	60 credits towards the charitable trust.
48 credits towards your rates bill.	$\bigcirc$	$\bigcirc$	48 credits towards the charitable trust.
36 credits towards your rates bill.	$\bigcirc$	$\bigcirc$	36 credits towards the charitable trust.
24 credits towards your rates bill.	$\bigcirc$	$\bigcirc$	24 credits towards the charitable trust.
12 credits towards your rates bill.	$\bigcirc$	$\bigcirc$	12 credits towards the charitable trust.
			'

Display This Question: If Q11.1 = 12 Bags

### Q11.3

Thinking about the proposed credit to your rates bill, or towards the charitable trust. Please use the slider to indicate the number of points that would lead you to choose a **decrease** in your rates bill, instead of a **contribution** to the charitable trust:

Please click on the slider bar below and drag the slider to a point where you believe you would change your decision from one choice to another.





Q11.4 Please consider the available options when **24 bags** are opted for.

There are 7 pairs, please choose either an option from the left column, or the right column for each pair of choices.

	1 (1)	2 (2)	
84 credits added to your rates bill.	0	0	84 credits deducted from contributions to the charitable trust.
72 credits added to your rates bill.	$\bigcirc$	$\bigcirc$	72 credits deducted from contributions to the charitable trust.
60 credits added to your rates bill.	$\bigcirc$	$\bigcirc$	60 credits deducted from contributions to the charitable trust.
48 credits added to your rates bill.	0	0	48 credits deducted from contributions to the charitable trust.
36 credits added to your rates bill.	0	0	36 credits deducted from contributions to the charitable trust.
24 credits added to your rates bill.	$\bigcirc$	0	24 credits deducted from contributions to the charitable trust.
12 credits added to your rates bill.	0	0	12 credits deducted from contributions to the charitable trust.

Display This Question: If Q11.1 = 24 Bags

### Q11.5

Thinking about the proposed credit to your rates bill, or towards the charitable trust.

Please use the slider to indicate the number of points that would lead you to choose an **increase** in your rates bill, instead of a **deduction** from the charitable trust:

Please click on the slider bar below and drag the slider to a point where you believe you

would change your decision from one choice to another.

		0	12	24	36	48	60	72	84	96	108	120
	Credits ()			_	_	_		_	_	_		
End of Block: SvO												
Start of Block: Sustainable Pro	duct Prefer	enc	es									
Page Break												

# X→

Q12.1 Now we want to better understand your view of sustainable products. Thinking about your future intentions, please rate your agreement to the following statements about sustainable products.

	Strongly Disagre e (1)	Disagre e (2)	Somewha t Disagree (3)	Neither Agree nor Disagre e (4)	Somewha t Agree (5)	Agre e (6)	Strongl y Agree (7)
l intend to buy sustainabl e products in the near future (1)	0	0	0	0	0	0	0
I will actively search for sustainabl e products in order to buy them (2)	0	0	$\bigcirc$	$\bigcirc$	$\bigcirc$	0	0
l intend to buy different types of sustainabl e products than I do now (3)	0	0	$\bigcirc$	$\bigcirc$	$\bigcirc$	0	0
I will purchase sustainabl e products within the next six months (4)	0	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	0	0
Page Break							

Start of Block: Time Preferences

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Q13.1 We want to better understand your perception of time, thinking about how you view time, please rate how you perceive the following lengths of time. Please click and drag each time period into the box that best represents your view.

Present	Near Future	Far Future
1 Day. (1)	1 Day. (1)	1 Day. (1)
1 Week. (2)	1 Week. (2)	1 Week. (2)
14 Days (11)	14 Days (11)	14 Days (11)
30 Days (12)	30 Days (12)	30 Days (12)
90 Days (14)	90 Days (14)	90 Days (14)
36 Months (17)	36 Months (17)	36 Months (17)
60 Months (19)	60 Months (19)	60 Months (19)
5 Years (20)	5 Years (20)	5 Years (20)
6 Weeks. (3)	6 Weeks. (3)	6 Weeks. (3)
1 Month. (4)	1 Month. (4)	1 Month. (4)
6 Months. (5)	6 Months. (5)	6 Months. (5)
1 Year. (6)	1 Year. (6)	1 Year. (6)

End of Block: Time Preferences

Start of Block: Demographic Questions



Q14.1 What is your current marital status?

In a relationship (1)
Divorced (2)
De facto Relationship (3)
Married (4)
Separated (5)
Single (6)
Widowed (7)

Q14.2 What is your highest level of education?

 $\bigcirc$  High school (1)

O Diploma (2)

 $\bigcirc$  Some university (3)

 $\bigcirc$  Undergraduate degree (4)

 $\bigcirc$  Some postgraduate (5)

 $\bigcirc$  Postgraduate degree (6)

O Professional degree (MBA etc.) (7)

Page Break —



Q14.3 Including yourself, how many people are in your household?

	One (1)
	○ Two (2)
	O Three (3)
	○ Four (4)
	$\bigcirc$ Five or more (5)
Dis	splay This Question:
	If Q14.3 != One

Q14.4 Select the appropriate boxes to show all the people who live in the same household as you

My legal husband or wife or civil union partner (1)
My partner or de facto, boyfriend or girlfriend (3)
My mother and/or father (5)
My son(s) and/or daughter(s) (6)
My brother(s) and/or sister(s) (7)
My flatmate(s) (8)

\_\_\_\_\_

01(6)						
O 2 (2)						
O 3 (3)						
O 4 (4)						
O 5+ (5)	)					
Display This Q If Q14.5 =	uestion: 1					
Q14.6 What is	s the age ran	ge of your ch	ild?			
	0-3 (1)	4-7 (2)	8-11 (3)	12-15 (4)	16-19 (5)	20+ (6)
Child 1 (1)	$\bigcirc$	$\bigcirc$	0	$\bigcirc$	0	0
Display This O	····					
If Q14.5 =	2					
044714	a	<i>.</i> .				

Q14.5 How many children do you have? (Either living at home or elsewhere)

O 0 (1)

	00(1)	17(2)	011(0)	12 10 (1)	10 10 (0)	20 (0)
Child 1 (1)	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$
Child 2 (2)	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$
Display This Q	uestion:					
lf Q14.5 =	3					

Q14.8 What is the age range of your children?									
	00(1)	17(2)	011(0)	12 10 (1)	10 10 (0)	201 (0)			
Child 1 (1)	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$			
Child 2 (2)	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$			
Child 3 (3)	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$			
Display This Q	uestion:								
lf Q14.5 =	If Q14.5 = 4								
	o the ego re-	an of your of	ildron 2						
Q14.9 What Is	s me age ran	ge of your ch	liluren?						

	0-3 (1)	4-7 (2)	8-11 (3)	12-15 (4)	16-19 (5)	20+ (6)		
Child 1 (1)	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$		
Child 2 (2)	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$		
Child 3 (3)	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$		
Child 4 (4)	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$		
Display This Q	Display This Question:							

	0-3 (1)	4-7 (2)	8-11 (3)	12-15 (4)	16-19 (5)	20+ (6)
Child 1 (1)	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$
Child 2 (2)	0	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$
Child 3 (3)	$\bigcirc$	$\bigcirc$	0	$\bigcirc$	$\bigcirc$	$\bigcirc$
Child 4 (4)	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$
Display This Q If Q14.5 =	uestion: 5+					

Q14.11 What is the age range of your remaining children? (Please select multiple options as appropriate).

	0-3 (1)	4-7 (2)	8-11 (3)	12-15 (4)	16-19 (5)	20+ (6)
Child 5+ (1)						
Page Break						

## Q14.10 What is the age range of your children?

\_\_\_\_\_

Q14.12 Which of the following best represent how you receive income? (Please select multiple options as appropriate).

	Wages, salary, commissions, bonuses etc, paid by my employer. (1)
	Self-employment, or business I own or work in. (2)
	Interest, dividends, rent, other investments. (3)
	Superannuation (including veteran's pension). (4)
other gov	Benefit (including unemployment, sickness, domestic purposes, invalid's, ernment). (5)
	Student allowance. (6)
x	
Q14.13 What	is your household income?
▼ - (1) \$20	00,001 or more (21)
Page Break	

Q14.14 What best describes your current place of residence?

	O Auckland (1)
	O Wellington (2)
	O Christchurch (3)
	◯ Small city (4)
	C Large town (5)
	◯ Small town (6)
	O Rural (7)
	Other (8)
_	
X→	

#### Q14.15 In which country were you born?

▼ Afghanistan (1) ... Zimbabwe (1357)

Q14.16 What religion would you classify yourself as?

O No religion	(1)
---------------	-----

O Christian (2)

- O Sikh (3)
- O Hindu (4)
- O Muslim (5)
- $\bigcirc$  Islam (6)
- O Buddhist (7)
- Other (8)\_\_\_\_\_

End of Block: Demographic Questions

**Start of Block: Conclusions** 

Q15.1 Thank you for your participation in this survey.

Q15.2 If you have any feedback about the survey, or improvements to suggest, please feel free to comment below.

End of Block: Conclusions

#### **Appendix 2: Additional Data Analysis**

To determine the effect of data deletions on the conceptual model additional analysis was performed with no data deletions. With no deletions image congruence, interdependent self-construal, independent self-construal, and temporal orientation were all significant predictors of purchase intention towards a sustainable good. However, temporal discounting was not able to be calculated without deletions of the data and so the moderation effect was not able to be tested for (Hypothesis 4a-4d). Therefore, this alternative analysis addresses the results of Hypothesis 1, Hypothesis 2a, Hypothesis 2b, and Hypothesis 3.

Hypothesis	Independent Variable	R <sup>2</sup>	β	р	VIF
H1	Image Congruence		.527	<.001	1.379
H2a	Interdependent Self- Construal	.706	.181	<.001	1.696
H2b	Independent Self-Construal		.098	.003	1.683
H3	Temporal Orientation		.049	.003	1 026

Results of Hypotheses 1, 2a, 2b, 3, 4a, 4b, 4c, and 4d with no deletions

*Note:* Table shows the results of a multiple regression analysis with five antecedent constructs. The dependent variable of this analysis is purchase intention.

Hypothesis 5a, Hypothesis 5b, Hypothesis 5c, Hypothesis 6a, and Hypothesis 6b were also tested no deletions in the dataset. Due to incomplete data in responses, the useable dataset calculated by SPSS was 770 for each independent samples *t*-test.

			Sig Z	Ivicali
Hypothesis	Grouping Variable	n	Tail	Difference
H5a	Median Age	770	0.492	-0.064
H5b	Gender	770	<.001	-0.333
H5c	Parenthood	770	0.934	0.008
H6a	Temporal Manipulation Condition	770	0.955	0.005
H6b	Temporal Manipulation Condition Match	770	0.442	0.071

Sig 2

Maan

*Results of Hypotheses 5a, 5b, 5c, 6a, and 6b with no deletions* 

*Note:* Table summarises the key findings of five independent samples *t*-tests. Purchase intention was the dependent variable for all three tests.

To understand if age, gender, and parenthood had an impact on the conceptual model as covarying factors, a version of the conceptual model was tested including these three demographic factors.

Hypothesis	Independent Variable	R <sup>2</sup>	β	р	VIF
H1	Image Congruence		0.62	<.001	1.265
H2a	Interdependent Self-Construal		0.133	<.001	1.23
H2b	Independent Self-Construal		0.051	.158	1.293
H3	Temporal Orientation		0.046	.173	1.104
	Temporal Discounting Gain		0.011	.734	1.075
H4a	IC x TDG Interaction	0 527	0.038	.292	1.299
H4b	INT-SC x TDG Interaction	0.527	-0.08	.044	1.551
H4c	IND-SC x TDG Interaction		0.098	.013	1.513
H4d	TO x TDG Interaction		-0.011	.744	1.102
H5a	Median Age		-0.066	.068	1.27
H5b	Gender		0.058	.081	1.075
H5c	Parenthood		0.01	.779	1.23

Results of Hypotheses 1, 2a, 2b, 3, 4a, 4b, 4c, and 4d including demographic covariates

*Note:* Table shows the results of a multiple regression analysis with five antecedent constructs and four interactions effects, and three demographic variables