The attitude-behaviour relationship of green consumer behaviour: the influence of altruism and egoism

Greenness out of selfishness or selflessness?

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Abstract

As environmental concerns in society are increasing, it would be expected that consumers would behave accordingly. But where consumers' attitudes are generally positive regarding sustainability and green consumption, green behaviour does not always follow, which creates an attitude-behaviour gap. The purpose of this study is to further analyse the attitude-behaviour relationship based on what is currently known about green consumer behaviour and further analysing related concepts. This study extends existing literature by examining the moderating effects of altruism and egoism on the attitude-behaviour relationship. This study conducted an online questionnaire among 157 respondents, and the data is analysed by running multiple linear regressions. The results confirmed two determinants of green attitudes: perceived consumer effectiveness, whereby consumers have to believe their behaviour will make a difference, and environmental knowledge. No relationship is found between subjective norms and green attitudes. For subjective norms, however, a direct effect is found on green behaviour. Additionally, this effect is found to be positively moderated by altruism. Green attitudes also directly influence green behaviour, however no moderating effects for altruism or egoism are found on this relationship. Finally, managerial and theoretical implications are provided and suggestions for future research are made.

Key words

Green consumer behaviour, environmental knowledge, perceived consumer effectiveness, altruism, egoism, green attitudes, subjective norms

Preface

I would like to start this thesis by taking the opportunity to thank the people who have been guiding and supporting me throughout this thesis process. This thesis concludes my master Business Administration Marketing at Radboud University. Before starting the process, I was quite scared for what was to come, but once working on the thesis I found it an interesting and educational experience. First of all, I would like to thank Marcel van Birgelen who helped me during the first steps of the thesis, and Herm Joosten for later guidance during the process. Secondly I would like to thank my friends who joined me during the hours of work in the university library, endless coffee and lunch breaks, and who had to cope with my struggles and complaints. Additionally, I would like to thank my fellow classmates for exchanging ideas and providing feedback to each other during this process. Also I would like to thank everyone who took the time to fill out my questionnaire and thereby helped me graduate. Lastly, I would like to give a special thanks to my parents and my sister who have always supported me during the last six years of studying, and often believed more in me than I did myself.

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Chapter 1: Introduction

1.1 Green consumer behaviour

Due to the increasing importance and awareness of the environment, a lot of research has been done regarding sustainability and green consumer behaviour. There are various sustainability problems that are a threat to the world such as global warming, water pollution, and over population. In the field of marketing and consumer behaviour a lot of researchers have been looking into motivation and attitudes that lead to the purchases of green and pro-environmental products and green behaviour. Most of this research shows that consumer attitudes towards green consumption are positive (Joshi & Rahman, 2015; Barbossa & Pastore, 2015). However; those positive attitudes do not necessarily lead to green behaviour. A research of CBS (2017) showed that only ten percent of food purchases is a sustainable product by Dutch consumers, while 42% of Dutch consumers claim to have the intention to purchase sustainable products (MVO Nederland, 2017).

There is an increasing public advocacy of green consumption as means to minimize environmental damage. Governments and businesses should encourage green consumer behaviour and eliminate the gap between consumption values of green products and consumer choices (Lin & Huang, 2012). In literature much is written about sustainable behaviour of consumers, called green consumer behaviour, pro-environmental behaviour, green purchase behaviour, and many more synonyms. In order to overcome this gap and encourage green consumer behaviour, it is important to find the drivers of green consumption. This research will use *green behaviour* as a term to indicate consumer behaviour that is driven by consumers' environmental concerns and their attempt to decrease their environmental footprints.

1.2 Predicting green behaviour

A theory that has been widely used to predict consumer behaviour is the Theory of Planned Behaviour (TPB), which is a theory that suggests that attitudes, subjective norms and perceived behavioural control are the determinants of intention which in turn leads to behaviour (Ajzen, 1991). As attitudes are generally positive towards green behaviour and actual behaviour does not always occur, there is a so called attitude-behaviour gap. Many studies have been looking into different variables that could affect this gap; most of those studies focus on socio-demographic and situational variables such as level of education and income, but have not found strong influencing factors in this attitude-behaviour relationship (Minieiro, Codini, Bonera, Corvi, & Bertoli, 2014; Barbossa & Pastore, 2015).

With the increasing environmental concern in society, it becomes more important to find out what strong predictors of green purchase behaviour are, and what a green consumer looks like. Where a lot of researchers show most consumers do have positive attitudes regarding green consumption, actual behaviour does not always occur which means there are many variables unexplained within green consumer behaviour (Joshi & Rahman, 2015). There are other important indicators that have to be taken into account into the relationship of green attitudes and green behaviour that will be incorporated. An often researched factor on the attitude-behaviour relationship is environmental knowledge; several studies have found that environmental knowledge has a strong positive influence on green behaviour (Chan & Lau, 2000; Fraj-Andres *et al*, 2007; Smith & Paladino, 2010). This research will take environmental knowledge into account in order to explain the attitude-behaviour relationship as much as possible.

Another variable that often has been linked to positive green attitudes and green behaviour is perceived consumer effectiveness (PCE), and so seem to have some predictive power on the formation of green attitudes (Straughan & Roberts, 1999). PCE is a concept closely related to perceived behaviour control which is incorporated in the traditional TPB model. PCE is about the belief that an individual can make positive impact on the environment.

Additionally, subjective norms are also in some research found to have influence on both green attitudes and green behaviour (Tarkianen & Sundqvist, 2005). Subjective norms are also part of the traditional TPB model, but are often only the pure attitude-behaviour relationship is studied while leaving out subjective norms. As there are indications that subjective norms do have predictive power for green consumer behaviour, the concept is incorporated in this current research.

1.3 Personal values

As demographics turn out to be not the best predictors of green consumer behaviour, other additional predictors need to be found that can help explain green behaviour among consumers. Personal values have important implications for marketing and consumer behaviour research as it reflects the psychological patterns that influence a consumer's values, attitudes and behaviours (Vinson, Scott, & Lamont, 1977). Besides explaining and predicting behaviour, personal values could be effective variables in market segmentation. Therefore, personal values are interesting values to be considered when researching the attitude-behaviour relationship of green consumer behaviour as it will both help predicting consumer behaviour better, and help

identifying segments of green consumers. As many research recently indicates that not socio-demographics should be the main focus, and other research indicates that personal values could help determining green behaviour, this research will take those into account trying to fill the attitude-behaviour gap.

This study looks into the influence of two personal values on the attitude-behaviour gap in the green domain: altruism and egoism. When an individual is driven by egoistic values, this individual is mainly led by values focusing on maximizing individual outcomes, whereas an individual driven by altruistic values has a concern for the welfare of others (de Groot & Steg, 2007). Those values that drive consumer decision making and behaviour raise the question whether consumers engage in green behaviour due to selfish or selfless motives. So a main focus of this research will be to look whether individuals are more likely to engage into green behaviour motivated by egoism or altruism in order to find which value drives a consumer stronger to engage in green behaviours. The proposed research question is: *How do egoism and altruism influence the attitude-behaviour relationship of green purchasing behaviour?*

1.4 Research objectives

The objective of this research is to look further into explaining this attitude-behaviour relationship of green consumer behaviour. Understanding and decreasing the attitude-behaviour relationships of consumers in the green consumption domain has a clear academic, managerial and social objective. This research further contributes to literature and the current knowledge of predicting green consumer behaviour by further studying the attitude-behaviour relationship. Additionally, the study contributes to a deeper understanding of the attitude-behaviour relationship and additional influencing factors on green behaviour. By researching personal values and by showing the importance of those values in green consumer behaviour, this research contributes by providing additional variables that are predictors of green consumer behaviour.

Additionally, this research provides marketing managers with the knowledge how to predict which consumers with favourable attitudes regarding green behaviour will actually engage in green behaviour. By identifying the consumers that will behave green it provides marketers with more effective segmentation of the consumer market. Thereby this research provides marketers with the knowledge how to further increase positive attitudes of consumers through its determinants.

1.5 Research outline

This thesis will proceed by first providing a theoretical framework for the research, including an outline of relevant literature and theories regarding green consumer behaviour and a description of the problem of the attitude-behaviour gap, and ending with a conceptual model and supporting hypotheses. Following, chapter three will discuss the methodology of this research and how the research is conducted. The fourth chapter will contain the data analysis and results. The fifth and final chapter will discuss the results of the research, provide a conclusion, theoretical and managerial implications, and topics for future research.

Chapter 2: Literature review

2.1 Green consumer behaviour

As previously mentioned, much is written about green consumer behaviour. There are many different definitions and perspectives with regard to the research of green consumer behaviour. A lot of research has looked into the new food economy and organic food production (Gilg, Barr, & Ford, 2005), and there is increasing interest in the social and psychological underlying dimensions of green consumer behaviour in order to understand who, where, when and why individuals make green choices.

The base of green consumer behaviour can be derived from Maslow's hierarchy of needs; once self-actualization of an individual has been achieved, there could be an additional layer added to the pyramid whereby social interests become of importance in decision making (Maslow, 1967). As sustainability and environmental issues are important issues in social matters, green behaviour can be part of this new layer in the hierarchy. A research of Brooker (1976) confirms that indeed individuals that are high on the self-actualization dimension engage in more green behaviours. This could raise the question in the field of green behaviour whether people indeed engage in green behaviour due to selflessness and social interest, so altruistic motives, or that it is actually motivated more by egoism and selfishness.

A distinction can be made between different green consumers; some consumers look for different forms of sustainability and have different underlying motives to be green compared to other consumers. A study by Brooks (2009) identified three types of green consumers and ways they integrate this in their behaviour. Environmental activists are consumers who adopt their complete lifestyle in order to be sustainable and healthy, where organic eaters only focus on the health benefits, and economizers engage in green behaviour by purchasing eco-friendly products in order to save money.

Another study describes green consumer behaviour along a spectrum of greenness; ranging from the darkest green consumers as consumers who are willing to pay extra for sustainable products, and the lightest greens as consumers who are solely focused on reducing their energy bills in order to save money for themselves (Banikarim, 2010). Those different types of consumers again raise the question whether consumers decide to behave in a green way out of selfishness or selflessness and how it can better be predicted which consumers will actually engage in green behaviour.

2.2 Theory of Planned Behaviour

A well-established theory in consumer behaviour is Theory of Planned Behaviour (TPB), which is a theory that helps to predict and understand particular behaviours (Ajzen, 1991). The theory suggests that attitudes, subjective norms, and perceived behavioural control lead to intentions, which in turn leads to behaviour. *Attitudes* refer to the degree to which a person has (un)favourable evaluations of the behaviour in question. *Subjective norms* refer to the perceived social pressure to perform a certain behaviour. And the last antecedent, *perceived behavioural control* is the perceived ease to perform the certain behaviour. Those antecedent lead to the *intention* to perform a specific behaviour. As Ajzen (1991) highlights himself, sometimes only attitudes are sufficient to lead to intentions, while in other situations it is not; there are many issues and unexplained relations in the theory left. Generally, the idea is that when positive attitudes are present, intentions and behaviour increase. Once intentions are present, those are considered as a precursor of green behaviour, and therefore are considered as the best predictors of behaviour (Ajzen, 2002).

However, as mentioned before, even though attitudes are generally positive towards green consumption behaviour still lacks behind. This indicates an attitude-behaviour gap. TPB is a rational choice model within the research of behaviour; Turaga, Howarth and Borsuk (2010) suggest that for example incorporating moral and psychological considerations add new dimensions in order to research the gap of green behaviour.

The proposed main research question for this research is: "*How do egoism and altruism influence the attitude-behaviour relationship of green purchasing behaviour?*". In order to research the proposed question, hypotheses and the conceptual model will be derived from state-of-the-art concepts regarding green consumer behaviour. Most green consumption research focuses on the base of TPB with the attitude-behaviour relationship, which proposes that positive attitudes lead to behaviour. Often intention is left out in this research, order to get a real grasp at the attitude-behaviour relationship.

2.3 The attitude-behaviour gap

Theory of Planned behaviour is a theory that is not only limited to consumer behaviour, but is widely used in social sciences. The observed attitude-behaviour gap that emerges out of this theory has been widely researched. The attitude-behaviour gap is described as a situation where consumers express a great deal of positive attitudes towards green behaviours, but their actual behaviours falls short to these due to different reasons. As TPB has strong fundamental support in research (Armitage & Conner, 2001), the previously mentioned attitude-behaviour gap is

also observable in research domains other than consumer behaviour; the gap also occurs in health and sports whereby the gap can be reduced by including emotional variables (Mohiyeddini, Pauli, & Bauer, 2009). In consumer behaviour, there is also some consensus that emotional reactions to environmental degradation could influence the attitude-behaviour gap, and those emotions contribute to the environmental consciousness of a consumer which leads to increase green behaviour (Kollmuss & Agyeman, 2010).

The many studies done on the attitude-behaviour gap clarify the existence of word/deed inconsistencies, so the difference between what an individual says and how an individual actually behaves. Consumers have previously indicated that some variables such as price and perceived availability have an influence on their actual behaviour (Vermeir & Verbeke, 2006; Aschemann-Witzel & Niebuhr Aagaard, 2014), however research showed that those factors are not predictors of green consumer behaviour. There are many factors that may influence the attitude-behaviour relationship, and the following sections will further discuss several of those influencing factors that might influence the relationship between green attitudes and green behaviour and increase the likelihood of green attitudes to follow in actual green behaviour. This research does not solely focus on the attitude-behaviour gap, but looks at the attitude-behaviour relationship with the extension of other related concepts that will be further explained.

2.4 Subjective norms

Where much research focuses on the attitude-behaviour gap of TPB, subjective norms are less studied and are often not included in research regarding this topic (Tarkianen & Sundqvist, 2005). However, subjective norms also have impact on consumer behaviour and choices, and are a standard variable in TPB. They refer to the perceived social pressure to perform a certain behaviour, and are formed by normative beliefs. The basic idea of subjective norms in TPB of Ajzen (1991) is that subjective norms have positive effect on behaviour.

However, there is some inconsistency in research of the effects of subjective norms in the green consumer behaviour domain. Tarkianen and Sundqvist (2005) showed that there is a significant relationship between attitudes and subjective norms, with subjective norms affecting behaviour through attitudes regarding green consumer behaviour. This suggests that a social pressure to behave in a green way would influence green attitude formation of individuals. Additionally, another research in the green tourism domain found that subjective norms do have a positive effect on attitudes and behaviour (Chen & Tung, 2014). Whereas a

research of Whitmarsh and O'Neill (2010) expected subjective norms to be a predictor of atittudes and behaviour regarding carbon offsetting of consumers, but they did not find any significant relationships for subjective norms. As there are still some inconsistencies, the current research will take subjective norms into consideration to further contribute to the knowledge of how it influences the attitude-behaviour relationship, and will be added to the model as both a direct influencer of green attitudes and green behaviour.

2.5 Perceived consumer effectiveness

A factor that often has been incorporated in green consumer behaviour research is perceived consumer effectiveness (PCE). PCE is the belief of an individual that they can have positive influence on environmental problems (Straughan & Roberts, 1999). Some research has been looking at this factor as driver of green behaviour and in most studies PCE has been proven to have influence on attitude formation and green behaviour (Straughan & Roberts, 1999; Berger & Corbin, 1992; Ellen, Wiener, & Cobb-Walgren, 1991).

PCE is closely related to perceived behavioural control, although PCE is more domain specific in a way that an individual believes that its individual efforts will make a difference in the problem (Ellen *et al.*, 1991). Kraft, Rise, Sutton and Røysamb (2005) conducted a research to see how perceived behavioural control works, and showed that there are several underlying dimensions of this factor, such as perceived confidence and perceived control. PCE and perceived behavioural control are seen as closely related concepts, and PCE can be viewed as one of the dimensions of perceived behavioural control in the field of green consumer behaviour. Similar to perceived behavioural control, PCE will affect green attitudes of consumers. The idea is the more a consumer believes that they can make an actual impact on environmental issues, the more they become positive regarding that topic. The study of Straughan and Roberts (1999) found PCE to be the most important drive in the attitude-behaviour relationship, and suggests that consumers must be convinced that their individual actions will have an impact on the environment in order to engage in green behaviour.

Even though PCE has been proven to be of strong importance in green consumer behaviour, there is not a lot research regarding this predictor. As previous research indicates that PCE is a very important factor in green consumer behaviour, PCE will be included in this research to increase the explanation power of predicting green behaviour.

2.6 Situational factors influencing green behaviour

Situational factors are factors that make and describe the numerous situations in which an individual makes decisions, and have been significant variables influencing the attitude-behaviour gap (Joshi & Rahman, 2015). As Johnstone and Peng Tan (2015) show, there generally is a perception that it is 'too hard to be green' among consumers which is created due to a lack of time and money, which together create a barrier in the attitude-behaviour relationship.

In marketing one of the most influential variables is price, and it is also one of the most researched situational variables, as this can provide a barrier for consumers to engage in green consumer behaviour, and it has been consistently proven that price has a negative effect on green behaviour (Vermeir & Verbeke, 2006; Aertsens, Mondelaers, Verbeke, Buysse, & Huylenbroek, 2011; Gleim, Smith, Andrews, & Cronin, 2013). Barbossa and Pastore (2015) also showed that high perceived prices cause that consumers perceive purchasing green products as expensive. Where Barbossa and Pastore showed perceived prices have impact on green behaviour, van Birgelen, Semeijn and Keicher (2009) showed that prices in practice also have influence; consumers are willing to purchase pro-environmental packaged beverages, as long as price and taste remain generally unchanged. However, a more recent research showed that the impact of price on green behaviour is becoming less significant as the trade-off of price and the environment are becoming more clear to consumers (Lin & Huang, 2012). As this current research will not have its main focus on situational factors, they will not be taken into in consideration in the base model. However, as literature shows price is a relatively important variable for green purchase behaviour, it will be included as a control variable in the analysis to make sure no important relationships are neglected. As Lin and Huang (2012) suggested that price becomes increasingly less important due to increasing interest in sustainability, the assumption could be made that increased knowledge makes the effect of price less significant.

Quality is along with price a factor that has enormous impact on all marketing outcomes a business makes. Traditional strategic marketing decision generally need to decide whether to compete on price or quality. Besides higher prices, green products are also perceived to be of less quality than regular products, and consumers see this poorer quality as an obstacle in order to become green (Gleim *et al*., 2013). Those perceptions are often formed due to previous experiences with poor quality green products, and make the consumers reluctant towards repeatedly behaving in a green way. Along with price, this research will take quality into account as a control variable.

Another situational variable that has been researched is the effect of green marketing tools on green behaviour; Rahbar and Wahid (2011) showed that eco-brand and eco-labelling are positively related to green purchase behaviour, which shows that situational factors also can have positive effect on green purchase intentions. However, obvious marketing and labelling of products as sustainable and green could lead to scepticism and negative effects of green-washing (Walker & Wan, 2012). Green-washing occurs when an organisation claims to be green and uses this in its messages, but actually is not that sustainable. Exaggerated packaging and marketing of those 'green' products have negative impact on firm performance and trust.

2.7 Environmental knowledge

An often researched individual factor is environmental knowledge, which represents what an individual knows about the environment and the consequences of their actions on the environment (Pagiaslis & Krontalis, 2014). Research has found positive influence of environmental knowledge on green attitudes and behaviour (Chan & Lau, 2000, Fraj-Andres & Martinez-Salinas, 2008; Smith & Paladino, 2010). Where some research shows environmental knowledge is an antecedent of attitude, Fraj-Andres and Martinez-Salinas (2007) have shown that environmental knowledge is a significant moderator in the relationship between attitudes and green purchase behaviour. As Gleim *et al*. (2013) show with their research, once expertise is created by knowledge, an individual will have increased perceived consumer effectiveness (PCE) due to understanding of the matter, which leads to a better understanding of green products; they accept the trade-off of price and sustainability more, and recognize what are green products.

Where generally demographics have been criticized as determinants of green behaviour, Pagiaslis and Krontalis (2014) show that they are significant determinants of environmental knowledge. An explanation for this is that age is one of the important demographics, and the older an individual gets, the more knowledge they have accumulated. The study also shows that environmental knowledge is an important driver of green attitudes, but also has direct and indirect effect on green behaviour. The study draws attention to the assumption that environmental knowledge may be rendered insignificant when other stronger significant variables are added to the attitude-behaviour relationship such as personal values.

While environmental knowledge generally is seen as having a positive relationship with green attitudes, it can also be seen from a different point of view whereby environmental

knowledge can lead to scepticism. A research by Kahan (2012) showed the interesting finding that when sustainability findings are reported in a factual way, individuals tend to have a sceptical attitude regarding the knowledge. However, this research is focussing on the presentation mode of the knowledge, and not about the actual knowledge. Therefore, as the general principle is that environmental knowledge leads to green attitudes, this study will also take this point of view.

As there are still some inconsistencies about the role of environmental knowledge in the attitude-intention relationship, this factor will be incorporated into this research. Along with personal values, knowledge will be added to the framework as previous research has indicated that environmental knowledge increases the likelihood that an individual with positive attitudes actually intends and shows green behaviour (Chan & Lau, 2000; Fraj-Andres *et al*, 2007; Smith & Paladino, 2010).

2.8 Personal values

Individual influencing factors on green behaviour are the most explored factors in literature, which are for example values, attitudes, believes, knowledge and personality. Where a lot of research in the past has focussed on socio-demographic factors, there has become increasingly more believe that those are not the right indicators to profile green consumers. As Diamantopoulosa, Schlegelmilchb, Sinkovicsd and Bohlen (2003) argue, the lack of power of socio-demographic indicators could be due to the fact that those are in general individual characteristics that only describe an individual as who they are, but not as how this individual would behave. With their research they showed that socio-demographics lack in explaining the drivers of green behaviour. Even though socio-demographics can be considered as individual factors, there is more and more evidence that those variables and situational characteristic variables are not the indicators that should be researched, but that personal norms, values and characteristics could be better determinants.

Fraj-Andres *et al*. (2007) suggest that personal norms and values should be included in the relationship between attitudes and behaviour in future research. This idea of including personal norms as a predictor is supported by an earlier research of Straughan and Roberts (1999), whereby it is already suggested that research in green consumption behaviour should have more focus on personality and values as predictors, instead of focussing on socio-demographics. Personal values are beliefs about personal and social desirability of behaviours (Vermeir & Verbeke, 2006). As values are the central cognitive elements that stimulate

motivation, values have an important role in consumer decision making and predicting behaviour. Including values into the research of green consumer behaviour enables a greater precision and effectiveness in segmentation, and could help to decrease the attitude-behaviour gap (Vinson *et al.*, 1977).

Other advantages of including values in consumer research is that values are considered to be more stable predictors of behaviour than only measuring attitudes. Attitudes are multiple beliefs regarding a specific product or behaviour, whereas values reflect criteria consumer use to make decisions and evaluations (Schwartz, 1992). Additionally, people possess relatively few personal values, which makes values an economically efficient variable for describing and explaining contrasts between consumers (Rokeach, 1973).

2.9 Schwartz' values theory (1992)

A value dimension theory that has been widely used in social research is Schwartz' Value Theory. This theory has been tested with regard to different behaviour domains in over 200 samples in more than 60 countries, so has a strong foundation (Doran, 2009). Schwartz' theory has been abstracted in 10 different value types: universalism, benevolence, conformity, tradition, security, power, achievement, hedonism, stimulation, and self-direction (Schwartz S., 1992). It has been found that universalism is the value that is most strongly influencing consumer choices regarding green behaviour, and that collectivism contrasting individualism also puts more green effort in consumer choices (Grunert, Hieke, & Wills, 2014).

Those personal values will influence consumer behaviour, as they are internalized values and make individuals feel the obligation to live up to those values. Many studies have researched those personal values, but Harland, Staats and Wilke (1999) have been one of the first to research the values in combination with TPB. The research extended TPB with Schwartz' values, and showed that personal values have importance regarding green behaviour. Personal values of an individual create moral considerations that affect the decision to engage in green behaviour (Harland *et al.*, 1999).

2.10 Altruism and egoism

Stern, Dietz, Abel, Guagnano and Kalof (1999) suggest that green behaviour is created by three value orientations: egoism (self-centred), altruism (other-oriented) and a biospheric value orientation (environmental). The value orientations egoism and altruism are closely related to the value orientations of Schwartz (1992), and have been found to be determinants of green

consumer behaviour. Those personal values are more green behaviourism focused and are more general values than the 10 different value types of Schwartz. Several studies have shown that altruism and egoism are fitting variables for consumer behaviour research, but those studies also showed that biospheric values generally do not show a significant distinction from altruistic values (de Groot & Steg, 2007). Following these findings, biospheric values will not be taken into consideration during this research. In a later research regarding the altruism-egoism value dimensions, Stern *et al*. (1999) added two additional dimensions: openness to change and conservatism, which can be used in combination with egoism and altruism.

A research by de Groot and Steg (2007) studied the values altruism and egoism in the pro-environmental domain. They looked at the influence of those variables on personal norms and awareness of consequences of green behaviour. This research showed that egoism was negatively correlated with awareness of consequences, whereas altruism was positively correlated with awareness of consequences. They suggest that a future study should further focus on those values and its influence on environmental behaviour.

Gilg *et al*. (2005) tried to identify different types of environmentalists based on values and lifestyles. Their findings indicate that people who show green behaviour share significantly different values than those who do not involve in green behaviour. In this research they used the value dimensions based on and early research of Stern *et al*. (1993), which are 'altruistic-egoistic' and 'conservative-open to change', and shows that pro-social values are significant drivers of green behaviour. Those pro-social values are related to altruistic motives, which are motives are aimed for looking for the well-being for others (Corral-Verdugo, Mireles-Acosta, Tapia-Fonllem, & Fraijo-Sing, 2011). When an individual is driven by altruistic values, this individual has a strong concern for the welfare of others.

Contrasting those altruistic values is egoism, which is "a motivational state with the ultimate goal of increasing one's own welfare" (Batson, 1992). A research by Magnusson *et al*. (2003) tried to look into personality determinants of green purchase behaviour, and showed that egoistic motives are better predictors for purchase behaviour than altruistic motives regarding organic foods. Which is fairly contrasting with the research of Gilg *et al*. (2005), as they report altruism as one of the most important drivers of green behaviour and segmenting.

It could be argued that egoism and altruism are opposing personal values that an individual cannot both have at the same time. When looking at Schwartz' values theory the personal values are circular, and values that opposing each other are considered to be conflicting. Dimensions opposing each other reflect conflict of those values, and behaviour requires trade-offs between the opposing values. An individual's personal values influence

behaviour the strongest through the direction of motivation (Schwartz, 2010). This would imply that a motivation is always directed by either egoism or altruism, and not both at the same time. However, this does not mean that a specific behaviour cannot be enabled through both egoism and altruism. This is supported by Kraut (2016): *"A single motive cannot be characterized in both ways; but a single act can be undertaken from both motives",* whereby he implies that a single act can both have altruistic and self-interested drivers. As this research will not be looking into the specific motives of individuals to engage into green behaviour but in the act of green consumer behaviour, both egoism and altruism can be seen as an influence.

There are several egoistic motives that could result in green consumer behaviour, and the research of Magnusson *et al*. (2003) had its main focus on functional benefits of green consumption such as health benefits. Complementary to the idea of egoistic motives being determinants of green behaviour, Uusitalo (1990) argues that green behaviour increases when people achieve some private side-benefits along with only environmental social benefits, so this research is viewing egoism as a complementary motive to altruistic motives. As there is clearly some inconsistency in the findings and ideas regarding altruistic and egoistic motives on green behaviour, this research will take those two values into account within the attitude-behaviour relationship and look into whether selfishness or selflessness have an influencing effect on this relationship.

Values are distinguished in a way in what goal or motivation they express, and they refer to desirable goals that motivate action (Schwartz, 2009). Therefore, in this research personal values will not be studied as determinants of an attitude; the idea is followed that personal values are not determinants on how a green attitude is formed in the consumers' mind, but rather it is a factor that determines whether the attitude will result in actual behaviour, depending on whether it helps to reach the desired goal of that individual. In this research the personal values of altruism and egoism will be studied as moderators of the attitude-behaviour relationship.

2.11 Conceptual model and hypotheses

The following section is devoted to the development of the conceptual model and the supporting hypotheses. The conceptual model has been developed by taking into consideration the previously discussed state-of-the-art concepts of what is currently seen as the drivers of green consumer behaviour. Fig. 1 shows the full conceptual model that will be studied in this research. As TPB has been proven to be not sufficient to predict green consumer behaviour

(Joshi & Rahman, 2015), this research will use some concepts of the TPB model and further extend it with related concepts in order to best explain the attitude-behaviour relationship of green consumer behaviour.

The base hypothesis of this model is *H1: green attitudes have positive effect on green behaviour.* This hypothesis is based on the foundational idea of TPB that attitudes lead to behaviour in the green consumer context. Another traditional TPB variable that also has been proven to be a predictor of green consumer attitudes and behaviour are subjective norms. The following hypotheses are also derived from the TPB model; *H2a: subjective norms have positive effect on green attitudes* and *H2b: subjective norms have positive effect on green behaviour.*

Additionally, environmental knowledge and perceived consumer effectiveness (PCE) have been added to the conceptual model as those variables have generally been proven to be strong determinants of green attitudes of consumers. The following hypotheses have been formulated to test those relationships; *H3: environmental knowledge has positive effect on green attitudes* and *H4: PCE has positive effect on green attitudes.*

Finally, the personal values have been added to the model, as there is an indication those can have influence on the attitude-behaviour relationship. Expected is that altruism and egoism positively moderate the effect of both green attitudes and subjective norms on green behaviour. The following section will describe the formulated hypotheses for the expected moderating effect of egoism and altruism.

H5a: Egoism positively moderates the effect of green attitudes on green behaviour. This hypothesis is based on the study of Magnusson *et al.* (2003), as they showed that egoistic motives drive to green behaviours. The idea of the hypothesis is that green behaviour creates benefits for an individual him/herself, such as e.g. health- and environment benefits, and therefore people with high egoistic values engage in green behaviour out of underlying selfish motives.

H5b: Altruism positively moderates the effect of green attitudes on green behaviour. As Gilg *et al.* (2005) showed with their research that altruism can be considered as one of the main driving values of green consumer behaviour, this research takes the idea that altruism increases the chance that an individual with green attitudes engages in green behaviour, as they are strongly driven by altruistic values whereby they behave in order to contribute to the welfare of others.

The last hypotheses are regarding the subjective norm-green behaviour relationship. It is hypothesized that *altruism (H6a) and egoism (H6b) positively moderate the effect of*

subjective norms on green behaviour. This is based on the idea that people who score high on egoism will have egoistic values as driver to be green: other people will view them as better, so this would be a selfish driver. For people with high altruistic values subjective norms will also increase green behaviour after green attitudes, as they will feel the need to contribute to the welfare of others.

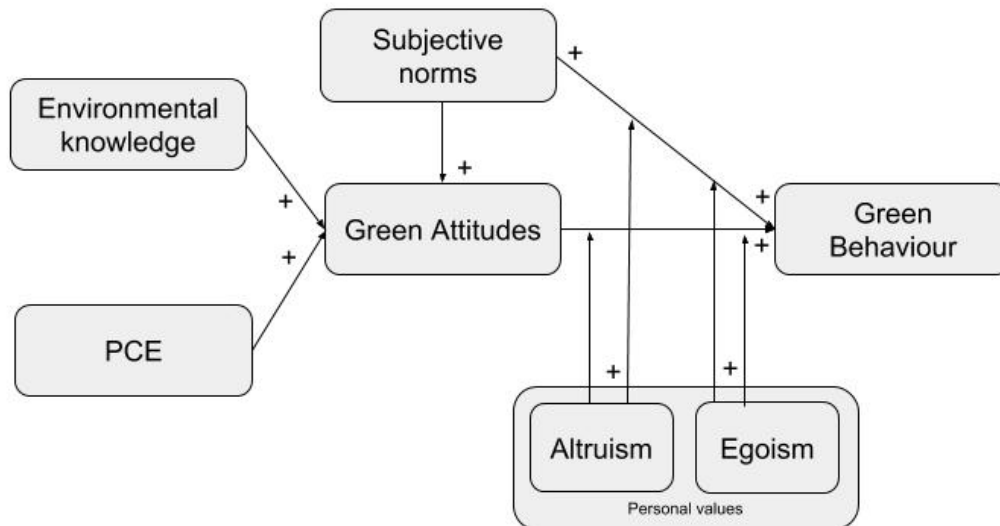Fig. 1 represents the full conceptual model and the hypothesized relationships that have been tested in this research.

Figure 1: Conceptual framework

Chapter 3: Methodology

This research is a quantitative study with the purpose to investigate how egoism and altruism influence the attitude-behaviour relationship of green purchasing behaviour. The following chapter describes the methodology and research design used during this research.

3.1 Research design

This study aims to examine the attitude-behaviour relationship of green consumer behaviour to increase the explanatory power of when a consumer will actually behave in a green way. In order to research the attitude-behaviour relationship of green consumer behaviour and include the relevant hypothesized relationships, a quantitative research has been conducted. A quantitative method has been used as it provides the ability to perform an explanatory research to explain the attitude-behaviour gap and usually is appropriate for this kind of research (Field, 2013). A questionnaire in the form of an online survey has been conducted in order to test the proposed hypotheses, and provides a snapshot of the reality regarding this topic.

3.2 Data collection method and operationalization

The survey was conducted in the form of an online questionnaire composed by items from existing literature, whereby 5-point Likert scales ('completely disagree' – 'completely agree') were used. Each variable consisted out of multiple items, to ensure the reliability of the factor. The full item list can be found in Appendix A, and the operationalisation table in Table 1. All constructs that were used during this study have been shown to be valid and reliable in previous research.

The questionnaire was Dutch so only Dutch speaking people could participate, which has avoided a possible influence of culture on the results, and also to avoid differences due to language interpretations. All items are from existing English literature, and were translated into Dutch by using a back-translation method. The Dutch questions were translated back to English by someone who speaks fluently Dutch and English, and then this was compared to the original questions to check whether the language in the questionnaire was accurate. A back-translation method enables the validation that there are no language inconsistencies or mistakes (Su & Parham, 2002). The full questionnaire can be found in Appendix B.

The items regarding green attitudes, behaviour and knowledge are all broad green topics. It has been chosen to not focus on one specific domain or behaviour, but to capture the broad concept of 'green behaviour' during this study. As mentioned in the introduction this

study sees green behaviour as a term to indicate consumer behaviour that is driven by consumers' environmental concerns and their attempt to decrease their environmental footprints. So measuring the broad concept fits best.

For the questionnaire it has been chosen to not use all the items for all variables, as it would make the questionnaire too long for participants. The variable 'green attitudes' originally had 20 item statements, of which many were similar but just slightly differently phrased. In order to avoid annoyance among participants the items were reduced to 10 statements, and decision for removal of items was based on the factor analysis that was conducted in the original article.

Table 1: Operationalisation of the variables

Variable	Definition	Items
Green attitudes (Bohlen et al., 1993)	Attitudes towards key environmental issues	10 5-point Likert statements
Subjective norms (Han, Li-Tzang, & Sheu, 2010)	The perceived social pressure to perform or not to perform a behaviour	3 5-point Likert statements
Green behaviour (Gilg et al., 2005)	Consumer behaviour that is driven by consumers' environmental concerns and their attempt to decrease their environmental footprints	9 statements with 5-point Likert scales "I always – I never"
Environmental knowledge (Bohlen et al., 1993)	Level of general knowledge about environmental issues, and knowledge about specific environmental problems	5-point itemized category scale of a statement and a list with 11 problems "I have no knowledge at all – I have a lot of knowledge"
Personal values (Gilg et al., 2005)	Altruism: motives are aimed for looking for the well-being for others Egoism: a motivational state with the ultimate goal of increasing one's own welfare	2x5 personal values composing altruism and egoism with 5-point Likert scales
Perceived consumer effectiveness (Straughan & Roberts, 1999)	The belief that an individual can positively influence environmental problems	4 statements with 5-point Likert scales

3.2.1 Attitudes

Attitudes regarding green behaviour were measured based on a research of Bohlen *et al*. (1993) who conducted a factor analysis in order to create factors to measure ecological concern. There

are 18 statements towards key environmental issues that together form the attitude, which asks '1: strongly disagree' – '5: strongly agree' to 10 Likert statements.

3.2.2 Green behaviour

As this research is not an experiment and is not able to track actual behaviour, this variable was measured by asking respondents their self-reported behaviour regarding green purchases. A factor analysis by Gilg *et al*. (2005) showed items that represent green consumer items that represent purchase decisions: buy organic, buy fair trade, buy recycled writing (toilet) paper, buy locally produced foods, buy from local store, use own bag when shopping and less packaging.

3.2.3 Subjective norms

In TPB subjective norms are the second determinants of behaviour (Ajzen, 1991), and are defined as "the perceived social pressure to perform or not to perform a behaviour" (p.188). This research used an item scale based on a research of Han *et al*. (2010) to measure subjective norms, however the items are slightly adapted for this research as it concerns a different product/service category.

3.2.4 Environmental knowledge

The measured knowledge in this research is perceived knowledge, as actual knowledge of the participants was not tested with the questionnaire. With an exploratory factor analysis Bohlen *et al*. (1993) indicate 11 items that form environmental knowledge, which was used during this research. It provides a list with 11 environmental problems with 5-point itemized category scales ('1: know nothing about' – '5: know a great deal about'). This item list is from the same study as the attitude variable items, where they have been used in combination as well.

3.2.5 Perceived consumer effectiveness

Perceived consumer effectiveness has been proven as one of the best predictors of green consumer behaviour, and Straughan and Roberts (1999) created four statements that capture this factor that were used in this research. The four statements are measured with a 5-point Likert scale.

3.2.6 Personal values – egoism, altruism

Gilg *et al*. (2005) have identified factors in order to determine altruism and egoism based on a five-point scale ('1: very unimportant' – '5: very important'). The items included for altruism are: loyalty, a world at peace, equality, social justice, and helpfulness. The items constructing egoism are: wealth, social power and influence. The item scale of egoism has been supplemented with ambitious and authority, as de Groot and Steg (2007) added those two and found a high Cronbach Alpha for this factor including those additional items, and now both egoism and altruism have five items. This item scale on egoism and altruism has been used in several studies regarding this topic (Gilg *et al*., 2005; de Groot & Steg, 2007), and therefor it is decided that it will be an appropriate scale to use.

3.3 Pre-test

The final developed version of the online questionnaire was pretested among seven respondents in order to filter out final imperfections and obscurities. The seven respondents completed the questionnaire and were asked to provide their thoughts out loud during completion while the researcher was sitting next to them. This method was conducted to test the questionnaire on possible improvements and adjustments, and to test whether respondents think the questionnaire is too long. No major comments or obscurities were provided by the respondents, except some small comments regarding sentence structures and language. A few minor adjustments have been applied to the final questionnaire.

3.4 Sampling design

As this research is looking into consumer behaviour, the unit of analysis are consumers. As the focus of this research is on green behaviour and every adult can engage in this behaviour, everyone above 18 years in the Dutch population could be included during this research. The age limit of 18 years is chosen as children make less deliberate decisions, or do not even make decisions for themselves.

As sampling method convenience sampling is used, as the researcher did not have the resources to perform a random sampling method. The questionnaire was distributed online through social media and messaging services such as email and WhatsApp. The researcher posted the online questionnaire on several social media channels, and distributed it through email and other messaging services as well. Additionally, several acquaintances distributed the

online questionnaire on social media as well, and sent the questionnaire to their whole department at work. By distributing it on different channels and through different people the researched tried to obtain a diverse respondent set as possible.

In total, 157 participants have completed the online questionnaire (N=157). Among those respondents there is no missing data as participants were obliged to answer each question, so no missing value analysis is necessary. Of the participants 52 (33%) were male and 105 (66%) were female. The sample was relatively young, the age distribution was as follows: 18-25 years 67%, 26-35 years 10%, 36-45 years 5%, and 46-65 years 19%. Regarding education, 6% finished high school, 10% obtained a middle-level vocational education, 59% a bachelor degree and 25% a master degree or higher.

3.5 Data analysis strategy

The collected quantitative data of the survey has been analysed in the program SPSS. For all the variables previously validated scales have been used from existing literature. Each individual variable was entered in a factor analysis to ensure there are no other underlying dimensions, and once the reliability of the scales was tested, the items were compounded in the desired variables and then the variables have been tested on normality. All factors had high Cronbach Alpha values in the previous studies, but to ensure scale reliability this has been retested during the analysis.

Once the factors were checked on reliability and normality, the hypotheses were tested through multiple regression analysis. Multiple linear regression analysis is an appropriate method for several reasons; all variables are of metric scale so linear relationships can be found, regression analysis helps to understand how the dependent variables change when the independent variables are varied, and it helps to better predict the dependent variables. Before conducting the regression analyses the assumptions of linearity, normality, collinearity and homoscedasticity were tested. First a regression analysis for green attitudes is employed, and then another regression analysis for green behaviour. The moderator variables were tested by performing a moderation regression by first creating mean centred variables in order to reduce multicollinearity, and then creating the desired interaction effects and adding those to the model to see whether those are significant.

3.6 Ethics

This research does not contain major ethical issues; no sensitive personal information was asked during the research. There was only a slight risk that consumers would provide socially desired answers as it is regarding a social topic, but in order to avoid this multiple items were asked in different ways regarding that topic without implying any answer would be wrong. Furthermore, to ensure participant information, anonymity and confidentiality were ensured and the researcher has treated the data and information with confidentiality. The participants had full transparency why they were participating in the research and if desired they would be able to receive results of the research. The participants were able to withdraw at any time if desired.

Chapter 4: Results

This chapter will provide details of the analyses and the collected results. First, the data has been tested by a factor and reliability analysis. Then a first insight in the data is provided by Pearson's Correlations, and then the model and the proposed hypotheses have been tested by multiple linear regression analyses and a moderation regression analysis. The chapter finishes by other additional findings found in the data.

4.1 Factor and reliability analysis

In order to confirm that the variables used are composed of the dimensions which this research wants to measure, all variables have been entered in a factor analysis to ensure that there are no other underlying dimensions. The analyses have been performed with a principal axis factoring method and oblique rotation as all analyses had correlations above .30. Almost all variables showed the expected factors with no additional extracted factors, and met the criteria of a higher value than 0.5 on the Kaiser-Meyer-Olkin Test for sampling adequacy, and significant Bartlett's Test of Sphericity, as shown in Table 2.

Table 2: Summary of KMO, Bartlett's Test and Cronbach's Alpha for all factors

Factor	KMO Measure of Sample Adequacy	Bartlett's Test of Sphericity significance	Cronbach's Alpha for reliability
Green attitudes	.778	.000	.715
Green behaviour	.740	.000	.785
Environmental knowledge	.893	.000	.914
Perceived consumer effectiveness	.657	.000	.717
Subjective norms	.689	.000	.774
Altruism	.737	.000	.718
Egoism	.737	.000	.696

The only factor analysis that showed an additional underlying dimension is for the factor 'green behaviour', which can be divided in the factors 'green purchasing behaviour' and 'green recycling behaviour'. The item scale used was from a previous research of Gilg *et al.* (2005), but when checking this factor, a strong division of dimensions was shown, as shown in Appendix C. This research will further use the items of green purchasing behaviour as green

behaviour as it contains the most items of the original scale. In Section 4.6 green recycling behaviour will be briefly further discussed.

To assess the internal reliability of the variables of the factors, Cronbach's Alpha was used, with as critical value .60 for a reliable construct (Field, 2013). All factors had appropriate reliability values, shown in Table 2. One adjustment to a factor has been made, since when item PCE_2 would be deleted Cronbach's Alpha would increase of α=.654 to α=.717, and the item had a very low communality of .095, so it has been decided to remove this item from the PCE factor.

4.2 Correlations

The Pearson product-moment correlation matrix provides a first overview of the structure of the relationships among the variables in Table 3. Correlation analysis was used to give a first insight and assess the relationship between the predictor variables of green attitudes and green behaviour. As shown in Table 3, attitude is positively correlated with behaviour, knowledge, subjective norms and perceived consumer effectiveness with an alpha of .01. Additionally, behaviour positively correlates with attitude, knowledge, subjective norms and perceived consumer effectiveness with an alpha of .01, and positively correlates with altruism with an alpha of .05.

Interestingly, there is a negative significant correlation between egoism and behaviour (r=-.179, p=.025), where a positive moderating effect has been hypothesized. This effect will be further analysed later in a moderation regression analysis. Another significant negative correlation that has been found is between altruism and egoism (r=-.168, p=.035).

Table 3: Correlation matrix of all variables

	Attitude	Behaviour	Knowledge	Subj. norms	PCE	Altruism	Egoism
Attitude	1	.329**	.256**	.214**	.470**	.154	-.051
Behaviour	.329**	1	.368**	.368**	.339**	.191*	-.179*
Knowledge	.256**	.368**	1	.211*	.137	-.064	.076
Subjective norms	.214**	.368**	.211**	1	.239**	.080	-.026
PCE	.470**	.339**	.137	.239**	1	.283**	-.105
Altruism	.154	.191*	-.064	.080	.283**	1	-.168*
Egoism	-.051	-.179*	.076	-.026	-.105	-.168*	1

*Note: **. Correlation is significant at α=.01, *. Correlation is significant at α=.05 (both 2-tailed), N=157*

4.3 Regression analysis to predict green attitudes

To further investigate the relationships shown with the correlation analysis above, regression methods are used to learn more about the relationship between the independent and dependent variables. To test the research hypotheses, simple and multiple regression analyses were conducted to analyse the proposed relationships. Three separate multiple regression analyses were conducted, as attitude serves as both a dependent and independent variable in the conceptual model; as dependent variable of environmental knowledge, subjective norms and PCE, and as an independent variable of green behaviour together with subjective norms.
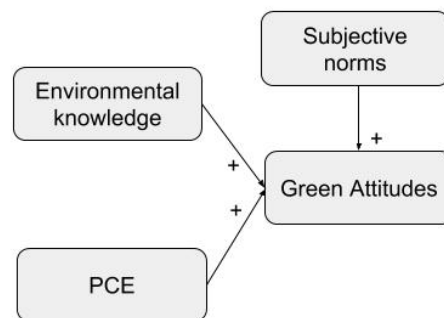

Figure 2: Conceptual model for first regression analysis

The first multiple regression analysis conducted is with PCE, environmental knowledge and subjective norms as independent variables and green attitudes as dependent variable, Fig. 2 represents this part of the conceptual model. Before interpreting the results, the assumptions for linear regression had to be checked. To check linearity and homoscedasticity of the data a scatterplot of the values of residuals against values of the outcome predicted was created, which can be found in Appendix D. There is no systematic relationship between the errors in the model and what the model predicts, so it can be assumed that both linearity and homoscedasticity hold true (Field, 2013). Additionally, polynomials were added to the model and those were not significant so a linear relationship fits best with the model. The normality of the data is checked with a histogram and the P-P Plot shown in Appendix D, and this assumption is met. The last assumption met is the assumption of multicollinearity, with all tolerance values above .20, and VIF scores under 10 as shown in Table 4.

A multiple linear regression was calculated to predict green attitudes based on environmental knowledge, perceived consumer effectiveness and subjective norms. A significant regression equation was found ($F(3,153) = 18.201$, $p<.000$), with an R^2 of .263. So 26.3% of variance in green attitudes is explained by the independent variables. Perceived

consumer effectiveness (p<.000) and environmental knowledge (p=.012) were significant predictors of green attitudes with α=.05, whereas subjective norms are not a significant predictor of green attitudes (p=.313). So where there was a significant correlation between green attitudes and subjective norms in the correlation analysis, this effect disappears when adding more variables to the relationship, and therefore *H2a* is not supported.

Table 4: Coefficients table

	Unstandardized coefficients		Standardized coefficient	T	Sig.	Collinearity statistics	
	B	Std. Error	Beta			Tolerance	VIF
Constant	2.333	.226		10.318	.000		
Subjective norms	.046	.045	.074	1.012	.313	.911	1.098
Knowledge	.119	.047	.182	2.551	.012	.948	1.055
PCE	.271	.046	.427	5.953	.000	.935	1.069

Note: Dependent variable is green attitudes

To further analyse the results of the multiple regression analysis and the relationship of the independent and the dependent variables, the coefficients of the variables give more insight as shown in Table 4. Both environmental knowledge (B=.119) and perceived consumer effectiveness (B=.271) have a positive effect on green attitudes. Therefore, *H3* and *H4* are supported. Perceived consumer effectiveness is the most important predictor variable in this model with the highest beta value (β=.427).

4.4 Regression analysis to predict green behaviour

The second regression analysis conducted is to predict green behaviour based on green attitudes and subjective norms, represented by Fig. 3. Before using the multiple linear regression analysis, the assumptions had to be met again. A scatterplot was created again to check the assumption of linearity and homoscedasticity, where the dots are randomly and evenly dispersed so those assumptions are met. The scatterplot can be found in Appendix D. To check the assumption of normality a histogram and P-P Plot were created and show the normality of the data, which also can be found in Appendix D. The last assumption met is the assumption of multicollinearity, which is based on the VIF score and the tolerance statistic below in Table 5.
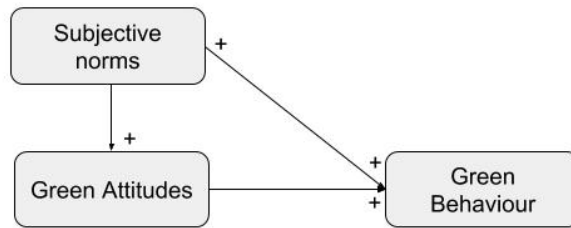
Figure 3: Conceptual model for second regression analysis

A multiple linear regression was calculated to predict green behaviour based on green attitudes and subjective norms. A significant regression equation was found ($F(2,154) = 19.414$, $p<.000$), with an R^2 of .201. So 20.1% of variance in green behaviour is explained by the independent variables. Green attitudes ($p=.003$) and subjective norms ($p<.000$) were significant predictors of green behaviour with $\alpha=.05$. The coefficients table below, in Table 5, enables to further analyse the relationship of the dependent and independent variables. Both green attitudes (B=.389) and subjective norms (B=.288) have positive effect on green behaviour, and therefore *H1* and *H2a* are supported. Subjective norms have relatively the most importance as predictor variable of green behaviour in the model with the highest beta value ($\beta=.312$).

Table 5: Coefficients table

	Unstandardized coefficients		Standardized coefficient	T	Sig.	Collinearity statistics	
	B	**Std. Error**	**Beta**			**Tolerance**	**VIF**
Constant	.655	.436		1.501	.135		
Attitudes	.389	.109	.262	3.558	.000	.954	1.048
Subjective norms	.288	.068	.312	4.084	.000	.954	1.048

Note: Dependent variable is green behaviour

4.5 Moderation analysis of altruism and egoism

To further analyse the proposed hypotheses, a moderation regression has been conducted to study the moderating effects of egoism and altruism. Fig 4. provides the model with the moderator variables included for this regression analysis. Including the moderating effects provide an alternative model of the model in Section 4.4, where green behaviour is predicted based on green attitudes and subjective norms.
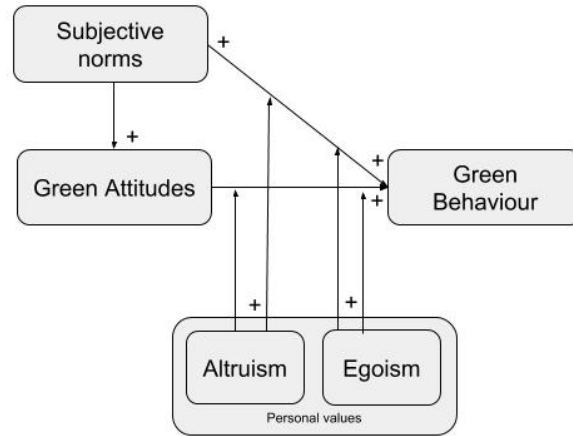
Figure 4: Conceptual model for moderation regression

In order to study the moderating effects of the variables, the variables have first been mean centred in order to avoid multicollinearity, and then an interaction variable was created for each effect by multiplying the independent variables with the dependent variable. Again, the assumptions were met. In Appendix D the scatterplot, P-P plot and histogram can be found whereby the assumptions of normality, linearity and homoscedasticity are provided. The last assumption met is the assumption of multicollinearity, which is based on the VIF score and the tolerance statistic, shown in Table 7.

Table 6: Model summary

				Change statistics				
Model	**R**	**R^2**	**Adjusted R^2**	**R^2 change**	**F change**	**Df1**	**Df2**	**Sig. F Change**
1.	.449[a]	.201	.191	.201	19.414	2	154	.000
2.	.543[b]	.294	.256	.093	3.256	6	148	.005

A. Predictors: subjective norms, attitudes, B. Predictors: subjective norms, attitudes, altruism, egoism, attitude*altruism,
attitude*egoism, subjective norms*altruism, subjective norms*egoism
Note: dependent variable is green behaviour

A multiple linear regression was calculated to predict green behaviour based on green attitudes and subjective norms, while being moderated by altruism and egoism. The regression has calculated two models; the first model is equal to the previous section with green behaviour as dependent variable and green attitudes and subjective norms as independent variables, and then an alternative model was calculated with altruism and egoism and the interaction effects added to see whether there was a change in the predictive power of the model and a significant

influence of the moderating variables. Above in Table 6 the corresponding model summary is provided for the analysis.

A significant regression equation was found for both models ($(F(2,154) = 19.414$, $p<.000$) and ($(F(8,148) = 7.722$, $p<.000$), with a significant change in the R^2 of .201 to .294 ($p=.005$) when the moderating variables were included in the model. Accordingly, 9.3% of variance in green behaviour is additionally explained by adding the moderating variables altruism and egoism to the model. The coefficients table below, Table 7, provides more insight to further analyse the effects when altruism and egoism are added to the model.

Table 7: Coefficients table

	Unstandardized coefficients		Standardized coefficient	T	Sig.	Collinearity statistics	
	B	**Std. Error**	**Beta**			**Tolerance**	**VIF**
Constant	.655	.436		1.501	.135		
Attitudes	.389	.109	.262	3.558	.000	.954	1.048
Subjective norms	.288	.068	.312	4.084	.000	.954	1.048
Altruism	.196	.095	.153	2.054	.042	.863	1.159
Egoism	-.161	.076	-.151	-2.128	.035	.947	1.056
Attitude*altruism	-.236	.222	-.080	-1.062	.290	.845	1.183
Attitude*egoism	.169	.188	.068	.899	.370	.831	1.204
Subnorm*altruism	.481	.156	.222	3.078	.002	.920	1.087
Subnorm*egoism	-.066	.125	-.039	-.531	.596	.893	1.119

Note: Dependent variable is green behaviour

Green attitudes and subjective norms are still significant predictors of green behaviour with the additional predicting variables in the model, so *H1* and *H2a* are still supported. As the coefficient table shows, only one significant interaction effect has been found; there seems to be a positive moderating effect of altruism on the relationship of subjective norms and green behaviour ($p=.002$, B=.481), in support of *H5a.* This result implies that the impact of subjective norms on green behaviour is stronger for consumers with high altruistic values. *H5b* is not supported as there is not found a significant effect of altruism moderating the effect of green attitudes on green behaviour. For egoism there are no significant moderating effects found, so *H6a* and *H6b* are both not supported. Table 8 provides a full overview of the hypotheses and whether they are supported or not supported.

However not all moderating effects were found to be significant, there seems to be direct effects of altruism and egoism on green behaviour; egoism seems to have a significant

negative direct effect on green behaviour (p=.035, B=-.161). Additionally, for altruism a direct positive effect has been found on green behaviour (p=.042, B=.196).

Table 8: Summary of the hypotheses

	Hypothesis	Conclusion
H1	Green attitudes have positive effect on green behaviour	Supported
H2a	Subjective norms have positive effect on green attitudes	Not supported
H2b	Subjective norms have positive effect on green behaviour	Supported
H3	Environmental knowledge has positive effect on green attitudes	Supported
H4	PCE has positive effect on green attitudes	Supported
H5a	Egoism positively moderates the effect of green attitudes on green behaviour	Not supported
H5b	Altruism positively moderates the effect of green attitudes on green behaviour	Not supported
H6a	Altruism positively moderates the effect of subjective norms on green behaviour	Supported
H6b	Egoism positively moderates the effect of subjective norms on green behaviour	Not supported

4.6 Additional analyses

As mentioned in Section 4.1, the factor analysis of green behaviour showed an additional dimension of 'recycling behaviour'. As this was an interesting finding, a multiple linear regression with recycling behaviour as dependent variable was conducted to see whether it would provide additional interesting results. This model is barely significant ($F(8,148)=2.004$, p=.050) with an R^2 of .098, and is much weaker than when green purchasing behaviour is the dependent variable. Also the only significant predictors left are subjective norms (p=.036, B=.288) and the interaction effect of subjective norms and altruism (p=.021, B=.751).

Additional to the hypotheses testing several analyses were done to test the relationship between demographic variables and the researched variables, to make sure there are no important differences between different categories. An independent sample t-test was performed to see whether there were differences between male and female, and some significant differences were found between male and female participants; female participants generally score higher on altruism (p<.000, mean difference of .39), male score higher on egoism (p=.044, mean difference of .19). However, when the data was split in groups of male and female, no different significant effects were found for the hypotheses; only the R^2 of the model slightly increases for female and slightly decreases for male compared to when running the model with both male and female at once.

Another additional findings after conducting an ANOVA analysis, was the difference between the age categories and the level of subjective norms reported by different age groups ($F(3,153)=3.223$, $p=.024$). On average, people between 18-25 score higher than people of 26-35 on subjective norms, and people of 46-65 score higher than people of 26-35 as well. And also a significant difference has been found for the level of egoism between different age categories ($F(3,153)=3.203$, $p=.025$). Based on Games-Howell's multiple comparisons' post-hoc test, people of 18-25 generally score higher on egoism than people of 46-65 with an average difference of .36.

Furthermore, there were no significant differences found for differences in the level of education and other variables. Also no significant effects were found for consumers who perceive quality or price as more important than consumers who perceive it as less important on green behaviour.

Chapter 5: Discussion and conclusion

This thesis has as aim to get a better understanding of the attitude-behaviour relationship in the green consumer behaviour domain, and to increase the ability to predict green consumer behaviour. In order to do so a conceptual model was developed based on the state-of-the-art literature, and hypotheses were created and tested. The following section will discuss and interpret the outcomes of the analyses. This will result in answering the main research question of this thesis: *"How do egoism and altruism influence the attitude-behaviour relationship of green purchasing behaviour?"*. Accordingly, conclusions will be drawn and then managerial and theoretical implications are provided, followed by the limitations and future research recommendations.

5.1 Discussion

The base of this thesis is to research the attitude-behaviour relationship of green behaviour and the gap that is often found to be present. This research shows that there is a positive relationship between green attitudes and green behaviour, which is in support of H1. Therefore, it could be argued that there is no attitude behaviour gap; green behaviour can be predicted by attitudes to some extent. However, the regression analysis that predicts green behaviour based on green attitudes and subjective norms shows that there is still a lot of variance unexplained, and that subjective norms are even a stronger predictor of green behaviour than green attitudes. This implies that attitudes are predictors, but there is a gap that still has to be filled by other factors such as subjective norms to provide better predictive power for green consumer behaviour.

Another objective of the present study also is to see how green attitudes can be predicted. Based on previous research it was hypothesized that environmental knowledge, perceived consumer effectiveness and subjective norms would directly influence green attitudes. Consistent with the literature, both environmental knowledge and PCE are confirmed to be positively influencing green attitudes; especially PCE seems to have strong influence on the formation of green attitudes. So in order to have green attitudes, it is important that consumers actually believe that their behaviour will have some influence on the environment and is effective, otherwise consumers will be less likely to be positive about green matters. Raising awareness about knowledge and consumer effectiveness is therefore an important topic regarding green consumerism; when this is not present green attitudes will not appear, which in turn will lead to less green behaviour. The lack of perceived control could possibly even lead

to the opposite effect of scepticism among consumers, as they can believe that green actions are useless and nonsense.

As mentioned in the literature review PCE is a closely related concept to perceived behavioural control of the traditional TPB model (Kraft *et al*., 2005). Interesting to see is that this factor is often not taken into account, while this study showed that PCE does have important influence on green attitudes. The influence of PCE could possibly be explained by that green consumer behaviour is different than regular consumer behaviour; if a consumer is craving for chocolate and purchases chocolate, the consumer can directly experience that the product satisfied his/her need. A motivation to behave green has a greater goal than directly satisfying a need: the purpose is to improve the environment. When consuming a green product, the consumer does not directly experience how his/her consumption or purchase contributed to this goal. This could be why PCE is an important factor: the consumer needs to believe that his/her green behaviour eventually contributes to the goal they are trying to satisfy. Adding the related dimensions of the concept of perceived behavioural control could possibly further help to increase the predictive power of green behaviour.

The positive influence of environmental knowledge on green attitudes can be explained by when people know the effects of pollution and other environmental matters, people will start to see the importance of behaving green. The more knowledge a consumer gathers about environmental problems, the more they will get positive green attitudes as they see the urge and problems around that topic.

Where in traditional TPB research subjective norms are a determinant of attitudes, this research did not find a direct effect of subjective norms on attitudes. This means that consumers' attitudes regarding green matters do not change due to norms of their peers. However, a direct effect of subjective norms on green behaviour is found; so regardless a consumer's attitude is positive or not, subjective norms can influence a consumer to behave in a green way. This implies that green behaviour is sensitive to social pressure. So not necessarily a positive attitude is the determinant of behaviour, but consumers also behave green if they believe that it is desired by other individuals.

The main contribution of this study is the addition of egoism and altruism as moderators in the attitude-behaviour relationship. This study has found a positive moderating effect of altruism on the relationship of subjective norms on green behaviour. The influence of subjective norms on green behaviour is stronger for people who score high on altruistic values in life. Both altruism and subjective norms are concepts that have an orientation on the other; altruism is about the well-being of others and subjective norms about social pressure and

desires of others. It can therefore be interpreted that people who have a strong focus on the well-being of the other, find it even more important that they comply to what other people think they should do, which in this case results in increased green behaviour.

By contrast, no moderating effect is found for altruism on the relationship of green attitudes on green behaviour. Furthermore, for egoism no moderating effects are found for either subjective norms or attitudes on green behaviour. This implies that the direct attitude-behaviour relationship is not influenced at all by egoism and altruism; personal values do not increase or decrease the likelihood that green attitudes will be followed by green behaviour.

It was hypothesized that both egoism and altruism would have positive moderating effects. A possible explanation for no moderating effects of egoism is that the self-benefits, which are important for people with egoistic values, are not high enough to engage in green behaviour. A high score on egoism does not increase the influence of green attitudes or subjective norms on green behaviour. No moderating effects are found for egoism, but for both personal values there seems to be a direct effect on green behaviour. The effect of egoism is opposite from the hypothesized effect; it has a negative influence on green behaviour. The negative direct effect of egoism on behaviour could be explained by the more egoistic an individual is, the less an individual will be willing to invest (time, money, effort) in the green behaviour. So the self-benefits are not offsetting the efforts they have to invest in the behaviour.

Altruism however does have a positive influence both as a moderator for subjective norms and as a direct effect on green behaviour. The direct positive effect of altruism would imply that the other-benefit of engaging in the behaviour is enough to behave green for those individuals. This finding indicates that egoism and altruism have contradicting effects on green consumer behaviour. The correlation analysis likewise shows a negative correlation between altruism and egoism; the higher an individual score on altruism, the lower he/she will score on egoism. This finding is supporting the value theory of Schwartz (1992) where he proposes that the values self-enhancement and self-transcendene, which are related to altruism and egoism, are opposing contradicting values.

Where the research of Gilg *et al*. (2005) found a general scale for green behaviour, this research found two underlying dimensions; green purchasing behaviour and green recycling behaviour. Capturing the whole broad concept of 'green behaviour' is possibly very hard, as there will always be underlying dimensions of the concept such as e.g. purchasing, recycling or traveling behaviour. This research used the purchasing dimension as green consumer behaviour variable. Brief analysis was done with the recycling dimension, which showed less strong and significant results. This implies that recycling behaviour and green purchasing

behaviour have different drivers and mechanisms that drive consumers to behave that way. Future research could focus on the different dimensions of green consumer behaviour, and establishing what the different drivers for different dimensions is to give a broader overview how to drive consumers to behave green at all aspects.

5.2 Conclusion

This research first established that perceived consumer effectiveness and environmental knowledge have positive effect on green attitudes of consumers. By increasing consumers' knowledge about environmental problems consumers will show more favourable attitudes regarding environmental statements. Increasing consumer perceived effectiveness further increases consumers' green attitudes; making consumers aware of the impact they can make by behaving green will help to further form green attitudes among consumers. Where generally research assumes that subjective norms are also a predictor of attitudes, this research disconfirmed this relationship regarding green attitudes.

This research also looked into how to better explain green consumer behaviour, as previous research often shows a gap between positive green attitudes and actual green behaviour. It is confirmed that attitudes are not the only predictor of behaviour, as subjective norms were shown to be an additional direct predictor of green behaviour. This research added altruism and egoism as moderators to the relationships, with expectation to further increase the predictive power of green behaviour. The results show that only the personal value altruism has a moderating effect on the relationship of subjective norms on green behaviour. Based on the findings of this research the main research question: *"How do egoism and altruism influence the attitude-behaviour relationship of green purchasing behaviour?"* can be answered by that egoism does not have any moderating influence, and altruism only has a positively moderating effect on the relationship of subjective norms on green behaviour.

This research provides a further extension of predicting green consumer behaviour by showing how subjective norms as an additional direct predictor and altruism as a moderator can help to further decrease the gap of explaining green behaviour. Additionally, it provides two factors (environmental knowledge and PCE) that can be used to increase positive green attitudes of consumers. In conclusion, this research can confirm previous research and further extends theory by further improving the attitude-behaviour relationship in green consumer behaviour.

5.3 Theoretical and managerial implications

This thesis provides several contributions to the literature and managerial decisions regarding green consumer behaviour. A theoretical implication that can be derived from this research is that this study supports that PCE and environmental knowledge should be incorporated in green research in order to make better predictions of green consumer attitudes. Furthermore, previous research did not pay a lot of attention to personal values and its influence on green behaviour. This research shows that altruism has a moderating effect on the relationship of subjective norms on green behaviour. Additionally, it seems that egoism and altruism both have an additional direct effect on green behaviour. A last contribution of this research is that this research demonstrates that subjective norms do not influence green attitudes, but do have an important direct influence on green behaviour. All the findings add knowledge to research into the attitude-behaviour relationship in green consumer behaviour as it demonstrates influencing factors that increase the explanatory power of green behaviour.

There are also several managerial implications that this research provides. A main conclusion of this research is that managers can increase consumers' green attitudes by increasing their perceived consumer effectiveness and environmental knowledge. As green attitudes do lead to green behaviour in some extent, it is currently a method for marketing managers to increase green consumer behaviour. Perceived consumer effectiveness and environmental knowledge are factors that influence the attitudes of consumers that can be directly influenced by marketers through e.g. commercials, by for example emphasizing the impact an individual can make by their green purchase.

Another implication for managers is that in marketing they should be focusing on creating and influencing subjective norms, as those seem to have influence on actual green behaviour of consumers. By creating a social pressure in the communications and make consumers believe it really is desired of others to behave green, consumers will be more likely to actually engage in this green behaviour according to this study. This research also provides a means to further segment which consumers might be more influenced by those campaigns, as it shows that altruism has a moderating effect. During the marketing campaigns marketers should create the campaigns around values that appeal to people who score high on altruism, to further increase the likelihood that consumers will engage in green behaviour.

5.4 Limitations and future research

There are several limitations and suggestions that could be further improved and explored in future research. A limitation of this research is that actual green behaviour and environmental knowledge are not measured as those factors were based on self-reported behaviour and knowledge of participants. Actual behaviour and knowledge may deviate of what participants indicate themselves. Maybe knowledge would be a stronger determinant of green attitudes if real knowledge would be measured; only the people who know the real impacts of environmental issues will then score high on knowledge and maybe the relationship will strengthen. The same could account for green behaviour, the relationships could change if real behaviour would be measured instead of self-reported behaviour. Future research should measure real knowledge and behaviour through e.g. knowledge test and an additional observation method or experiment to test real behaviour to further validate the findings of this research.

Another limitation is that, as previously mentioned, it is very hard to measure the broad concept of green consumer behaviour as it exists out of multiple dimensions. As this research focussed on the purchase dimension of green behaviour, future research should further explore other dimensions and its relationships and predictors.

Furthermore, to analyse the full conceptual model and its relationships a path analysis could have been conducted. Instead, this research conducted separate multiple regression analyses with green attitudes once as dependent variable and once as independent variable. It is possible that relationships and strengths slightly differ when the full model is analysed using PLS path modelling. A future study could use this data analysing method to further analyse the relationships.

This research showed PCE to be a strong determinant of green attitudes, and as mentioned earlier in the literature review PCE can be seen as a form of perceived behavioural control. In future studies researchers could further explore the role of PCE as a direct effect on behaviour as well, as perceived behavioural control in the traditional TPB model as it could increase the explanatory power of green consumer behaviour. Additionally, the other dimensions besides PCE of perceived behavioural control could be further explored and researched in the domain of green consumer behaviour.

With regard of the personal values only one moderating effects was found. However, the direct effects of both egoism and altruism that seem to exist on green behaviour should be further studied in future research. This could further contribute to the knowledge about the

influence of personal values on green behaviour. Other personal values could also be taken into account in those studies, to see whether other relationships exist as well.

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Appendix A: Questionnaire items

Green attitudes (Bohlen et al., 1993)

1. The increasing destruction of the environment is a serious problem
2. Strict global measures must be taken immediately to halt environmental decline
3. A substantial amount of money should be devoted to environmental protection
4. The benefits of protecting the environment do not justify the expenses involved
5. The importance of the environment is frequently exaggerated
6. The benefits of overcoming environmental deterioration are not sufficient to warrant the expense involved
7. Issues relating to the environment are very important
8. If all of us, individually, made a contribution to environment protection, it would have a significant effect
9. Each of us, as an individual, can make a contribution to environmental protection
10. Firms should not always put profitability before environment protection

Green behaviour (Gilg et al., 2005)

1. I purchase high efficiency light bulbs
2. I purchase organic products
3. I buy fair trade products
4. I buy recycled toilet paper
5. I buy locally produced foods
6. I use my own bag when shopping
7. I buy products with less packaging
8. Recycle glass
9. Recycle newspapers

Subjective norms (Han et al., 2010)

1. Most people who are important to me think I should engage in sustainable behaviour
2. Most people who are important to me would want me to engage in green behaviour
3. People whose opinion I value would prefer that I would make sustainable decisions

Environmental knowledge (Bohlen et al., 1993)

Knowledge about specific environmental problems (7-point Likert scale, 1 = "know nothing about", 7 = "know a great deal about"):

- General knowledge about environmental problems
- Acid rain
- Sea/river pollution
- Air pollution from power stations
- Global warming
- Ozone layer depletion
- Pollution of drinking water
- Pollution from pesticides
- Destruction of rain forests
- Building on unspoilt areas
- Radiation from storage of nuclear waste
- World population explosion

Personal values (Gilg et al., 2005; de Groot & Steg, 2008)

How important is each of the following values to you?

Altruism:

1. Loyalty: devotion, faithfulness
2. A world at peace: free of war and conflict
3. Equality: equal opportunity for all
4. Social justice: correcting injustice, care for the weak
5. Helpful: working for the welfare of others

Egoism:

1. Wealth: material possession, money
2. Social power: control over others, dominance
3. Influential: having impact on other people and events
4. Ambitious: hard-working, aspiring
5. Authority: the right to lead or command

Importance of price and quality (Tarkianen & Sundqvist, 2005)

1. The price of a product is very important to me
2. The quality of a product is very important to me

Appendix B: Full questionnaire

Beste meneer/mevrouw,

Heel erg bedankt voor uw tijd en bereidheid om deel te nemen aan dit onderzoek. Dit onderzoek is onderdeel van mijn master Business Administration aan de Radboud Universiteit Nijmegen. Het onderwerp is groen consumentengedrag, en de vragenlijst zal zo'n 10 minuten duren.

Dit onderzoek bestaat uit verschillende vragen over uw houding tegenover het milieu en groen gedrag. Lees elke stelling goed en geef hierbij aan in hoeverre u het er mee eens bent. Het gaat om uw mening, er zijn geen goede of foute antwoorden op de vragen.

De antwoorden zullen anoniem verwerkt worden en u kunt te allen tijde het invullen van de vragenlijst onderbreken.

Nogmaals bedankt voor het meewerken aan mijn onderzoek!

Vriendelijke groet,
Eline Schuuring

Kunt u aangeven bij de volgende stellingen in hoeverre u het er mee eens of oneens bent? (1 = helemaal mee oneens, 5 = helemaal mee eens)

1. Wij kunnen allemaal, als individu, een bijdrage leveren aan milieubescherming
2. We moeten een aanzienlijk groot bedrag uitgeven aan het behoud van het milieu
3. Er moeten onmiddellijk strikte internationale maatregelen worden genomen om milieuvervuiling tegen te gaan
4. Het belang van het milieu wordt vaak overdreven
5. De voordelen van milieubescherming wegen niet op tegen de kosten die ervoor gemaakt moeten worden
6. De overheid moet zijn verantwoordelijkheid nemen voor het milieu
7. De toenemende vernieling van het milieu is een serieus probleem
8. Als wij allemaal, individueel, een bijdrage leveren aan het milieu zou het een significant effect hebben

9. Het milieu is één van de belangrijkste onderwerpen voor de samenleving op dit moment

10. Bedrijven moeten winst altijd boven het milieu plaatsen

Hoe vaak komen de volgende acties voor in uw leven? (1 = nooit, 5 = altijd)

1. Ik koop biologische producten
2. Ik koop fair trade producten
3. Ik koop gerecycled toiletpapier
4. Ik koop lokale producten
5. Ik gebruik mijn eigen tas wanneer ik ga winkelen
6. Ik koop producten waar zo min mogelijk verpakking omheen zit
7. Ik koop duurzame lampen
8. Ik recycle glas
9. Ik recycle papier

In hoeverre bent u het eens met de volgende stellingen? (1= helemaal mee oneens, 5 = helemaal mee eens)

1. De meeste mensen die belangrijk voor mij zijn vinden dat ik betrokken moet zijn bij duurzaamheid
2. De meeste mensen die belangrijk voor mij zijn leven op een duurzame manier
3. De mensen wiens mening ik belangrijk vind zouden het liefst zien dat ik duurzame beslissingen neem

In hoeverre heeft u algemene kennis over het milieu? (1 = ik weet er heel weinig van, 5 = ik weet er heel veel van)

Het milieu en de vervuiling hiervan bestaan uit meerdere aspecten. In hoeverre heeft u kennis over de volgende specifieke milieuproblemen? (1 = ik weet er heel weinig van, 5 = ik weet er heel veel van)

1. Zure regen
2. Vervuiling van de wateren (zee, rivieren, meren)
3. Luchtvervuiling door energiecentrales
4. Opwarming van de aarde
5. Verdwijning van de Ozonlaag

6. Vervuiling van drinkwater

7. Vervuiling van pesticides (verdelgingsmiddelen)

8. Verwoesting van bossen

9. Bebouwen van natuurgebieden

10. Radiatie/straling door opslag van nucleair afval

11. Overbevolking

In hoeverre bent u het eens met de volgende stellingen? (1 = helemaal mee oneens, 5 = helemaal mee eens)

1. Het is nutteloos om als individu iets te doen tegen milieuvervuiling

2. Wanneer ik een product koop neem ik de impact op het milieu en andere consumenten in overweging

3. Aangezien niet ieder individu effect kan hebben op milieuvervuiling, maakt het niet uit wat ik doe

4. Ieder individu kan een positief effect hebben op de samenleving door het kopen van verantwoordelijke producten

De volgende vragen gaan niet over het milieu, maar over wat u over het algemeen belangrijk vindt in het leven. Hoe belangrijk is elk van de volgende waarden voor u? (1 = heel erg onbelangrijk, 5 = heel erg belangrijk)

1. Loyaliteit: toewijding, trouw zijn

2. Een vredige wereld: een vrije wereld van oorlogen en conflicten

3. Gelijkheid: een eerlijke kans voor iedereen

4. Sociale rechtvaardigheid: het corrigeren van onrecht, zwakkeren helpen

5. Behulpzaamheid: bijdragen aan het welzijn van anderen

1. Rijkdom: geld en materiele eigendommen

2. Sociale macht: controle hebben over andere, dominantie

3. Invloed: een impact hebben op andere mensen en gebeurtenissen

4. Ambitie: hard werken, doelen hebben

5. Autoriteit: het recht om te leiden of mensen aan te sturen

Hoe belangrijk zijn de volgende aspecten van een product voor u? (1 = heel erg onbelangrijk, 5 = heel erg belangrijk)

De prijs van een product/service

De kwaliteit van een product/service

Wat is uw geslacht? (Man/vrouw)

Wat is uw leeftijd? (18-25, 26-35, 36-45, 46-65, >65)

Wat is uw hoogst genoten opleiding? (Geen, middelbare school, mbo, HBO/WO, WO master, doctoraat)

Appendix C: Factor analysis

Pattern Matrix[a]

	Factor	
	1	2
Behav_1 Ik koop biologische producten	.836	
Behav_2 Ik koop fairtrade producten	.820	
Behav_6 Ik koop producten waar zo min mogelijk verpakking omheen zit	.532	
Behav_4 ik koop lokale producten	.381	
Behav_7 Ik koop duurzame lampen	.378	
Behav_3 Ik koop gerecycled toiletpapier	.352	
Behav_5 Ik gebruik mijn eigen tas wanneer ik ga winkelen		
Behav_9 Ik recycle papier		−.871
Behav_8 Ik recycle glas		−.752

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.
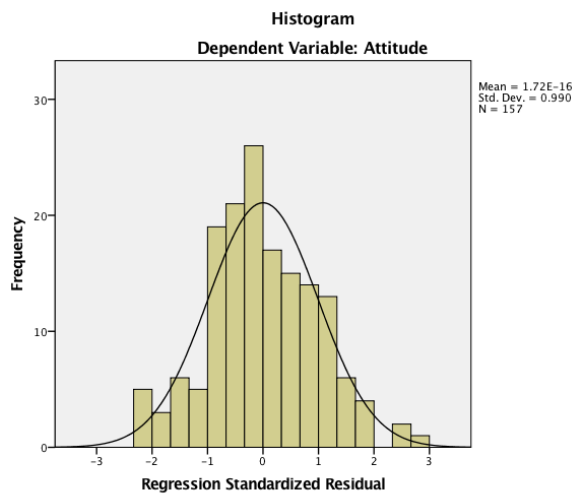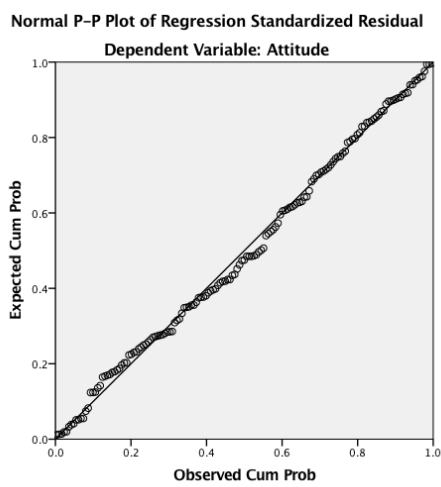

Scree Plot
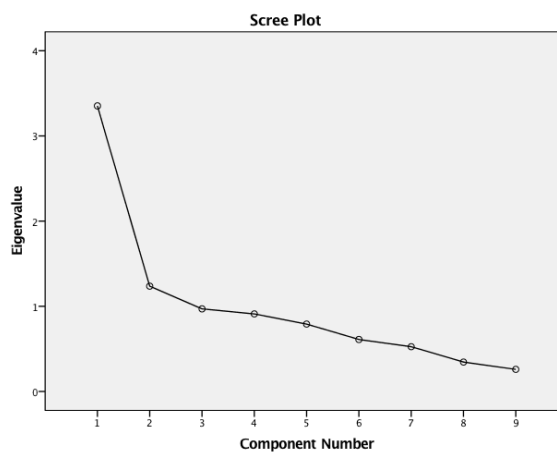
Appendix D: Assumptions for the regression analyses

Regression analyses for predicting green attitudes
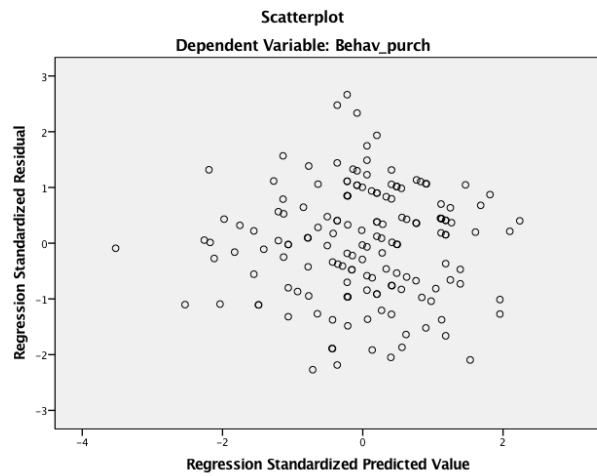
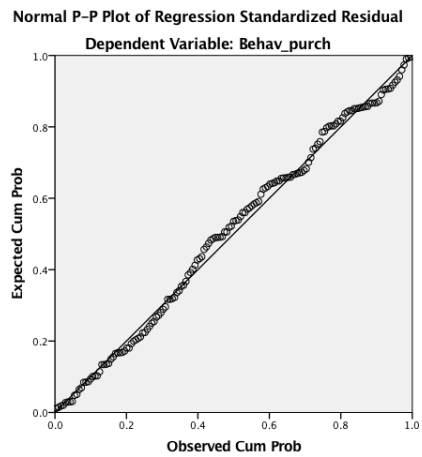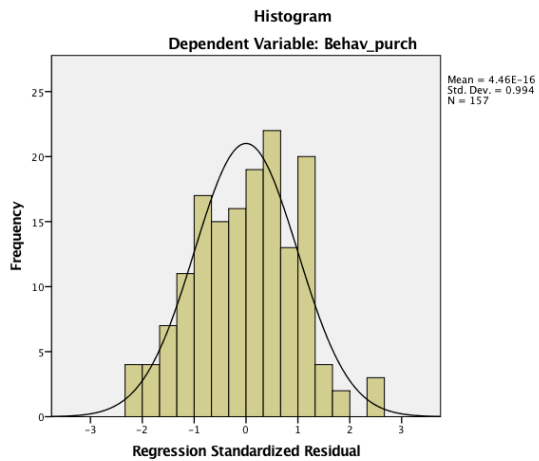Linearity and homoscedasticity:
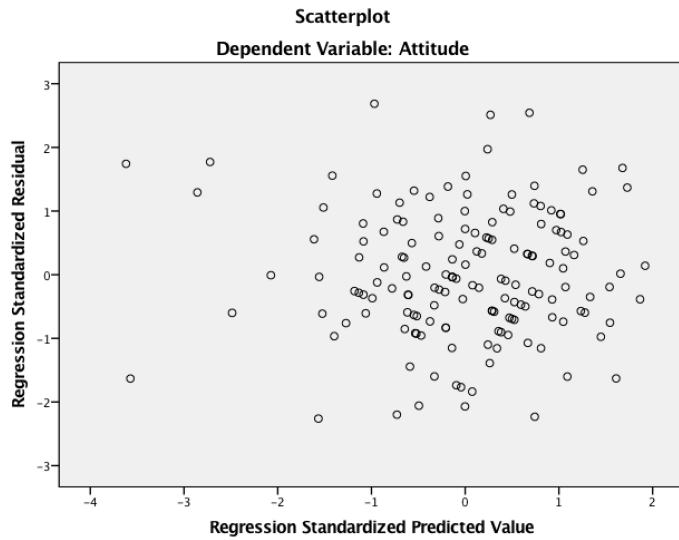
Normality:

Regression analysis for predicting green behaviour:

Linearity and homoscedasticity:

Scatterplot
Dependent Variable: Behav_purch

Normality:

Histogram
Dependent Variable: Behav_purch

Mean = 4.46E-16
Std. Dev. = 0.994
N = 157

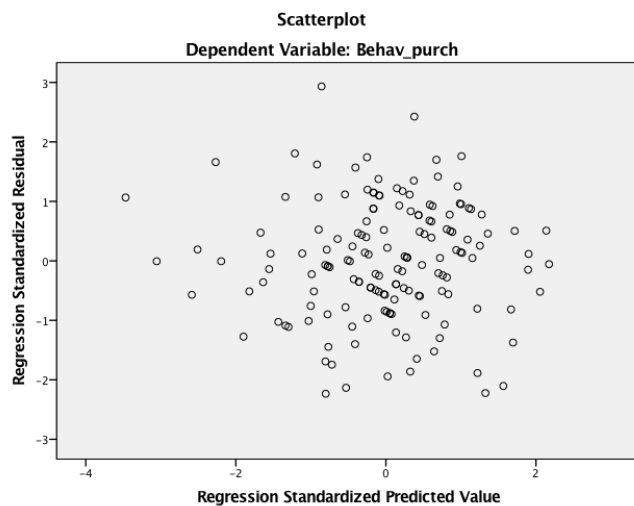**Normal P-P Plot of Regression Standardized Residual**
Dependent Variable: Behav_purch

Regression analysis with the interaction terms:

Linearity and homoscedasticity:

Scatterplot
Dependent Variable: Behav_purch

Normality:

Normal P–P Plot of Regression Standardized Residual

Dependent Variable: Behav_purch

Histogram

Dependent Variable: Behav_purch

Mean = 1.32E−15
Std. Dev. = 0.974
N = 157