CONSUMERS' EVALUATIONS OF ECOLOGICAL PACKAGING – RATIONAL OR EMOTIONAL?

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CONSUMERS' EVALUATIONS OF ECOLOGICAL PACKAGING – RATIONAL AND EMOTIONAL APPROACHES

Abstract

Ecological marketing claims have been criticized for confusing or misleading buyers, leading to calls for more rationality in promoting and evaluating 'green' products. However, emotions are important drivers influencing pro-environmental purchase decisions. This study investigates consumers' emotional and rational evaluations of pro-environmental packaging. A conceptual model incorporates individuals' general environmental concerns, their rational beliefs about environmental effects of product consumption and emotions evoked. Hypotheses are tested with 312 Norwegian consumers who evaluated a beverage container incorporating organic material. Purchase intention was significantly influenced by general environmental concern, but not by rational evaluations of benefits. Rational evaluations had differing effects on positive and negative emotions. Both positive and negative emotions had significant direct effects on purchase intention. This paper contributes to evidence that emotions rather than rational evaluations are key drivers for changing pro-environmental purchase behavior and adds new knowledge about the role of negative emotions evoked by pro-environmental packaging.

Keywords: environmental concern, rational evaluations, emotions, ecological responsible packaging

Highlights

- Study into role of emotions and cognition in evaluation of ecologically responsible packaging
- Hypotheses tested on sample of 312 Norwegian consumers
- Model predicted 61% of variation of purchase intention
- Positive emotions drive pro-environmental purchasing behavior
- Environmental concern directly influences purchase intention
- Effect of rational evaluation of ecologically responsible packaging on purchase intention is mediated by emotions

CONSUMERS' EVALUATIONS OF ECOLOGICAL PACKAGING – ASSESSING RATIONAL AND EMOTIONAL APPROACHES

1. Introduction

There has been an emerging conventional wisdom that current patterns of consumption are unsustainable as growing demand for natural resources faces a finite and diminishing supply. The body of scientific opinion is increasingly recognizing a range of ecological challenges, including climate change, depletion of natural resources, overpopulation and air pollution, among others (Krausmann et al., 2009; Oreskes, 2007; Vlek & Steg, 2007).

While debate continues within scientific communities about the causes and consequences of ecological challenges, this paper addresses consumers' rational and emotional processes of evaluating claims of ecologically responsible consumption. Consumers are regularly confronted with apparently conflicting arguments about the ecological merits of alternative consumption patterns. As an example, there has been contradictory evidence about the ecological benefits of 'one use' plastic carrier bags versus 'long-life' bags, with claims that a 'long-life' bag may in fact be more ecologically harmful because materials needed to extend the life of a bag may eventually take much longer to decompose than a 'one-use' bag made from decomposable materials (Environment Agency, 2011). Most consumers are not able or willing to synthesize the competing claims of scientists and consequently may be most amenable to the argument which is most cogently expressed or which is in accordance with their prior beliefs. This leaves consumers vulnerable to 'greenwashing', where companies seek to make ecological claims for their products based on partial analysis of the underlying science, and in the expectation that a large segment of consumers will not have the ability or desire to critically assess these claims (Betz & Peattie, 2012; Polonsky, Carlson, Grove, & Kangun, 1997). In the context of competing

claims about ecological credentials of products and the propensity for consumers to be guided by 'greenwash', some observers have suggested a need to 'return to rationality' and that consumers' confidence in ecologically sound marketing initiatives can only be improved "through openness and the provision of full information" (Peattie, 2001, p. 198).

This paper contributes to the debate about the role of affective and cognitive processes in informing consumers' decisions to purchase products incorporating ecologically responsible packaging. In the broader context of consumer behavior, critics of rational choice models have argued that individuals do not typically behave in a rational way; and may be guided by more emotive, moral and altruistic principles (Manstead, 2000; Raats, Sparks, & Shepherd, 1995; Sparks & Shepherd, 2002). Additionally consumers are not always able to comprehend connections between their buying decisions and environmental consequences (Thøgersen, 2000), nor are able to distinguish between more or less environmentally responsible alternatives (Bech-Larsen, 1996). We specifically investigate the context of a beverage container made partly from organic material and examine the role of positive and negative emotions in informing consumers' intention to buy a beverage which uses this packaging material. We explore the effects of emotions in the context of cognitive evaluations of the presumed rational, logical benefits of the packaging.

Rational-choice-based models of buyer behavior, such as the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980) and the Theory of Planned Behavior (TPB) (Ajzen, 1991, 2011) have dominated the research agenda in the domain of ecological purchase decisions for some time. However, these models are underpinned by a presumed conscious rationality in decision making, and it has been noted that TRA can only explain volitional behaviors, and is less well suited to explaining non-volitional behaviors which are impulsive or spontaneous (Hale, Householder, & Greene, 2003; Langer, 1989). Furthermore, TPB performs

less efficiently in predicting behaviors which are assumed to have a strong affective or irrational rather than cognitive and logical component (Godin & Kok, 1996).

Incorporating emotions into decision-making models can greatly increase their explanatory powers (Ajzen, 2011; Bagozzi, Gopinath, & Nyer, 1999; Loewenstein & Lerner, 2003; Mellers, Schwartz, & Ritov, 1999). Thus more empirical research is needed to understand how cognitive and affective constructs impact attitudes, behavioral intention and actual behavior (Malhotra, 2005). We focus in this paper on emotions as an unconscious response which is not well explained in rational choice models. Emotions and their influence on behavior have the potential to more fully explain pro-environmental behavior – or its rejection (Carrus, Passafaro, & Bonnes, 2008; Fraj & Martinez, 2006; Meneses, 2010). Damasio (1998) suggested that cognitive and affective variables are significant predictors for engaging in pro-ecological behavior. However, the relationship between emotions and pro-environmental behavior remains under-researched (Harth, Leach, & Kessler, 2013; Hartmann, Ibanez, & Sainz, 2005), partly due to the complexity of measuring emotions (Izard, 2010; Strongman, 1978), and the dominance of the cognitive research agenda. Consequently there remain gaps in the understanding of emotions and their effects on pro-environmental behavior. For example, *'What emotions are evoked by purchasing environmentally responsible products?', 'Are there distinct differences between the effects of negative and positive emotions in influencing purchase of ecologically responsible products?'* Hence, our paper responds to calls by many authors for further research into the effects of emotions on pro-environmental buying behavior (e.g. Harth et al., 2013; Hartmann & Apaolaza-Ibáñez, 2012; Hartmann et al., 2005; Kaiser, Schultz, Berenguer, Corral-Verdugo, & Tankha, 2008; Smith, Haugtvedt, & Petty, 1994; Swim et al., 2009), by empirically exploring the role of rational and emotional approaches to evaluating ecological product claims.

2. Theory development and conceptual model

2.1 Ecological concerns and consumer decision-making

There is now substantial evidence attributing depletion of the earth's finite natural resources to human behavior (Krausmann et al., 2009; Vlek & Steg, 2007). However, faced with complex information about causes and consequences of ecological issues, consumers' attitudes and behavior are likely to be influenced by selective attention and comprehension of communication from media sources and peers (Cox, 2009). An example of divergence between an ecological position held within the mainstream scientific community and an attitude held by the public generally is evident with respect to climate change (Ipsos Mori, 2007). An annual monitoring survey in the UK found that public concerns about climate change fell during the period 2009-2010 despite mainstream scientific opinion holding that the challenges of climate change were increasing and not diminishing (BBC, 2010). Many reasons have been advanced for divergence between scientific opinion and consumers' expressed attitudes, including paying more attention to minority scientific opinions that confirm an individual's own prejudices and beliefs (Szarka, 1991); the effects of an idea, however irrationally underpinned growing virally to the point where it passes a "tipping point" and becomes a mainstream attitude within a community (Gladwell, 2002); and the observation that emotions as well as rationality underpin the evaluation of evidence (Hamilton, 2010).

Governments in many countries have sought to change behavior towards ecological consumption through a process of raising awareness and highlighting the individual and socially recognized benefits of choosing ecologically benign products. Since the late 1980s, many companies have responded by developing "greener" formulations of their products, including packaging that causes less environmental harm than traditional packaging materials, especially plastics (Bech-Larsen, 1996; Thogersen, 1999).

Ecologically responsible packaging has been found to positively influence purchase intentions and brand evaluations (Rokka & Uusitalo, 2008; van Birgelen, Semeijn, & Keicher, 2009). However, explanations of the linkages between attitudes to ecologically responsible products and actual purchase behavior remain incomplete, with the observation that many consumers holding a favorable attitude towards ecologically responsible products remain reluctant to change their behavior (Alwitt & Pitts, 1996). This disjuncture may be explained by an over-emphasis in previous research on cognition rather than affect and the absence of explicit measures of affect within TRA.

2.2 An overview of rational, logical approaches to evaluating ecological product claims

The premise of rational choice is deeply embedded in the systems and configuration of contemporary Western societies, and assumes that humans are individual utility-seekers making deliberate choices between distinct avenues of action, evaluating the benefits of their choices, choosing the option that maximizes advantage to them, and minimizing associated "costs" (Jackson, 2005). Many studies have used models based on cognitive reasoning to show, for example, that although consumers may have positive attitudes toward environmentally responsible products, other product qualities such as performance, durability and convenience dominate a rational decision process (Ottman, 1993; Peattie & Ratnayaka, 1992). The cognitive, rational processing approach has been extended to the evaluation of societal benefits. For example Roberts (1996) concluded that consumers were only motivated to purchase the environmentally responsible alternative if they believed that their behavior has a noticeable positive impact.

In situations where consumers are unable to fully understand the connections between their buying decisions and environmental consequences, or to differentiate between more or less environmentally friendly products, heuristics and habit will become a stronger

determinant of (non) pro-environmental behavior. Furthermore, consumption decisions may be made to satisfy symbolic rather than utilitarian needs, for example by choosing products to create or reinforce a greener self-identity. Accordingly, behavioral choices are not always the result of individual cognitions, but instead a response to perceived evaluations of 'significant others'' judgment of their behavior.

The Theory of Reasoned Action (TRA) attempted to address some of the criticisms of rational choice explanations by positing that people are rational in systematically using information available to them, and recognizing the importance of social influence on individuals' rationality (Ajzen & Fishbein, 1980). TRA has been used in a wide range of studies of consumer behavior, including attitudes towards consuming genetically modified foods (Sparks, Shepherd, & Frewer, 1995), dieting (Sejwacz, Ajzen, & Fishbein, 1980) and the purchase of environmentally responsible products (Schepers & Wetzels, 2007).

It has been noted that a number of factors limit the ability of TRA to predict behavioral intention on the basis of attitudes, and to predict actual behavior on the basis of behavioral intention. Intentions are not absolute values, but can encompass a range of values from an intention based on a state that is most desired, to one that is pragmatically expected. An individual may have the desire to seek out an ecologically responsible product, but faced with uncertainty about where to obtain the item, may intend merely to do their best to find it. The outcome of a TRA model is influenced by the state of choice facing a consumer, both in the process of forming intentions and in executing behavior (Sheppard & Sherman, 1998). It has also been noted that TRA has often been applied in conditions for which it was never intended, most notably to explain non-volitional behavior, including behaviors that are impulsive, undertaken spontaneously, out of habit, or are the result of cravings (Bentler & Speckart, 1979; Hale et al., 2003).

The Theory of Planned Behavior (TPB) advances TRA by incorporating individuals' perceived control over their own behavior, and the perceived ease or difficulty in performing the behavior (self-efficacy). This extension was made in an attempt to take account of contexts where an individual may have the intention of carrying out a particular behavior, but performance of this is inhibited by the individual's perceived lack of confidence in the control they have over their behavior (Ajzen, 1991). TPB has received strong support in exploring linkages between ecologically informed buying behavior and the perceived effects on the environment (Chamorro, Rubio, & Miranda, 2009; Kalafatis, Pollard, East, & Tsogas, 1999). Nevertheless, TPB has typically only explained 39% of variance in behavioral intention and 27% of actual behavior (Armitage & Conner, 2001). This can partially be explained by the type of attitude being measured, namely general versus situation specific attitudes (Bamberg, 2003; Kaiser, Wölfing, & Fuhrer, 1999). Furthermore, situational factors mediate between attitude and behavioral intention (Carrington, Neville, & Whitwell, 2010; Mainieri, Barnett, Valdero, Unipan, & Oskamp, 1997).

The current study aims to initially validate existing research about the link between individuals' general concern about the ecological environment, their rational evaluation of the benefits of consuming ecologically responsible products and their intention to change buying behavior. The links between these variables have been studied extensively (e.g. Balderjahn, 1988; Hartmann & Apaolaza-Ibáñez, 2012; Kilbourne & Pickett, 2008; Mainieri et al., 1997; Roberts & Bacon, 1997; Schlegelmilch, Bohlen, & Diamantopoulos, 1996; Scholder-Ellen, 1994; Webb, Mohr, & Harris, 2008) and hypotheses one to three seek to validate these specifically in the context of ecologically responsible packaging in Europe.

H1: An individual's concern for environmental issues is positively related to their assessment of the cognitive benefits of ecologically responsible packaging.

H2: Environmental concern significantly influences intention to choose ecologically responsible packaging.

H3: The perceived cognitive benefits of ecologically responsible packaging have a significant influence on purchase intention.

2.3 The role of emotions in evaluating ecological product claims

While TRA and TPB address some criticisms of rational choice, the framing of human-beings as logical, rational decision makers remains problematic because of the failure to consider the more emotive and signifying dimensions of human behavior. Many scholars have advocated that individuals make decisions based on cognitive evaluation of their emotional reactions and that to ignore emotion is to fail to understand human behavior (Forgas, 1995; Nerb & Spada, 2001; Nyer, 1997). Recent research suggests that the incorporation of affect into TPB can greatly enhance the predictive power of the model (Ajzen, 2011; Rivis, Sheeran, & Armitage, 2009). A further stream of research has extended the TRA and TPB by proposing a model of goal-directed behavior, which posits that in addition to other factors such as past behavior, expected positive and negative emotions can act as motivators leading to behavioral desire which affects goal-directed intention and behavior (Bagozzi, Baumgartner, & Pieters, 1998; Bagozzi, Baumgartner, Pieters, & Zeelenberg, 2000; Perugini & Bagozzi, 2001). For example, Zeelenberg (1999) found that anticipated regret can lead to risk-avoiding as well as risk-seeking behaviors. Carrus et al (2008) showed that anticipation of future emotions and past behavior affects individuals' desire to use public transport and engage in household recycling. Thus, with the integration of emotions, a range of possibilities emerge that can inform explanations of pro-environmental behavior.

Emotions are complex and difficult to classify and define. They are essentially physiological responses, involving specific action tendencies that influence individuals'

thoughts and reasons, and, in turn, are influenced by them. Emotions tend to last for a limited time, typically a few minutes to a few hours, and tend to be in response to specific situations. Emotion and affect are sometimes used interchangeably by researchers; however psychologists tend to define affect more broadly as embracing emotions, moods and dispositions. Emotions are generally classified into positive and negative primary and secondary emotions, although there is some contention regarding what constitutes primary emotions. An analysis by Ortony and Turner (1990) indicates some consensus that anger, fear, joy, disgust, sadness and surprise represent primary emotions. Some less widely agreed additions to primary emotions include shame, happiness, guilt and love, which, have been classified by some researchers as secondary or tertiary emotions (e.g. Parrott, 2001). Emotions can vary in intensity, for example from annoyance to anger to rage; ecstasy to joy to serenity (Plutchik, 1980).

From basic emotions, scholars have developed synthetic models of emotions. Oatley et al. (2006, p. 29) proffer a synthesized view of emotions as "multi-component responses to challenges or opportunities that are important to the individual's goals, particularly social ones." Inherent within this viewpoint is a consensus that emotions are complex, multi-faceted, reactive, appraising, motivating and social. The social dimension of emotions reflects the centrality of 'the self' and an individual's standing in a network of social relationships (Illouz, 2009), mirroring Lutz and White's (1986) definition of emotions as a "primary idiom for defining and negotiating social relations of the self in a moral order" (cited in Oatley et al., 2006, p. 28). This definition also embraces emotions as a trigger of goal-directed behavior, or 'states of readiness' by which individuals engage or not with their environment (Frijda & Mesquita, 1994). There is salience here with Plutchik's (1980) assertion that emotions form part of our survival evolutionary history and that emotions may coerce individuals to act in diverse and inconsistent ways in different situations. Furthermore, Illouz (2009) argues that

emotions trigger limited reflexive thinking. This facilitates the coexistence of contradictory emotional states, for example *fear with anger*, *anxiety with hedonism*, and *happiness with worry*, without threat to the individual's psychological wellbeing. An understanding of emotions can help to explain apparent irrationality and inconsistency in consumers' attitude to ecologically responsible products.

Emotion can also be appraising, with recognition that appraisal generates emotional responses (Arnold, 1970; Lazarus, 1974, 1991; Nyer, 1997). Appraisal concerns the assessment of the merit of a stimulus, in a context of whether it is 'good' or 'bad' for the individual (in terms of their existing attitudes, beliefs, values and identity). Thus individuals' feelings of positive and negative emotions are influenced by their subjective cognitive evaluations based on their experiences and goals (Lazarus, 1991). Finally emotion as reaction can be viewed phenomenologically, whereby previous experiences inform future emotional responses to the challenges and opportunities presented in individuals' goal-seeking behavior (Husserl 1913 cited in Strongman, 1978).

The preceding discussion indicates that emotions are a potent variable in helping to explain pro-environmental behavior or its rejection. The eudaimonic attributes of emotions (values, goals and beliefs about the world) enable researchers to appreciate the individual's viewpoint on salient issues that are good and bad for their wellbeing and survival (Lazarus, 1974; Nussbaum, 2001), and thus the appraisals and choices they make. For example the emotions of anger, fear, disgust and joy may inform consumption choices made in a context of contrasting viewpoints of climate change, diminishing resources, and inequality set against an agenda of economic growth and materialism.

The limited research linking emotions and pro-environmental behavior has largely revolved around three main areas: (1) moral emotions, (2) emotional affinity with nature and (3) ecological fear (Kals & Maes, 2002). Moral emotions may reflect either an acceptance or

rejection of ecological norms and responsibilities: for example, indignation about inadequate pollution control and environmental commitment from politicians (acceptance) and anger over too much pollution control and its imposed restrictions (rejection) (Kals & Maes, 2002). An emotional affinity with nature is regarded as the most powerful emotion within the human-nature relationship (Hartmann & Apaolaza-Ibáñez, 2008, 2009; Kals, Schumacher, & Montada, 1999) and has been found to be a predictor of pro-environmental behavior (e.g. Finger, 1994). Previous studies on ecological fear, in isolation, have found fear to be a weaker explanation of pro-environmental behavior, compared with moral emotion and affinity (Kals & Maes, 2002). However its effect is magnified when combined with risk. Fear and associated emotions revolving around risk help to explain pro-environmental behavior. With respect to judgments of climate change risk, Böhm (2003) found that worry emerged as the most intense emotional reaction to environmental risks (Sunblad, Biel, & Garling, 2007). However, some environmental problems cause such strong emotional distress, that they trigger defense mechanisms, resulting in non-environmental behavior. These defenses include denial of the evidence, apathy via a sense of powerlessness, delegation to others (rejecting personal accountability), and rational distancing (blocking emotions to cope) (Kollmuss & Agyeman, 2002). These defense mechanisms may explain how negative emotions, such as fear, anxiety, guilt and powerlessness, can inhibit pro-environmental behavior.

Thus emotions are complex constructs and it has been suggested from studies in other fields of consumer behavior that negative and positive emotions may be structurally distinct constructs rather than bipolar extremes of a single construct (Bagozzi, Wong, & Yi, 1999; Chaudhuri, 1998; Phillips & Baumgartner, 2002). The literature presents inconclusive findings with regard to the role of positive and negative emotions on pro-environmental evaluations. For example,. while positive emotions such as emotional affinity towards nature and love of nature are significant predictors of ecological behavior (Finger, 1994; Kals et al.,

1999; Langeheine & Lehman, 1986), Carrus et al (2008) found that only negative anticipated emotions had a significant influence on the desire to use public transport and engage in household recycling. The presence of positive emotions can lead to a more optimistic cognitive assessment than would occur with negative emotions (Nerb & Spada, 2001). Other studies also demonstrate that negative emotions, such as fear, guilt and regret have a significant effect on pro-environmental behavior (Ferguson & Branscombe, 2010; Harth et al., 2013; Kaiser, 2006; Kals, 1996). Once initiated, these emotions facilitate individuals' differing emotional investment in environmental issues as they respond to environmental problems – with evidence suggesting that the stronger the emotion, the greater the likelihood of committing to pro-environmental behavior (Kollmuss & Agyeman, 2002). The majority of these studies conceptualize that negative emotions are evoked by not engaging in pro-environmental behavior.

An aspect of negative emotions in environmentally informed consumption decisions that has not been extensively researched is the possibility of negative emotions being evoked by the environmentally friendly alternative. In other words, emotions such as fear and worry are not evoked by a product which is acknowledged to be environmentally harmful, but by the seemingly benign alternative. The development of pro-environmental products and sustainable technologies promise consumers greater benefits and thus evoke positive emotions, such as optimism. However, at the same time innovations such as wind farms, hydrogen vehicles, hybrid cars, carbon storage can also evoke negative emotions such as anxiety, fear and worry due to possible dangers and uncertainties linked to their adoption (Chaudhuri, Aboulnasr, & Ligas, 2010; Midden & Huijts, 2009; Montijn-Dorgelo & Midden, 2008; Peters & Slovic, 2008). The role of emotions experienced in response to new "green" technologies which may be perceived as being risky has not attracted a lot of attention in the literature (Sherry-Brennan, Devine-Wright, & Devine-Wright, 2010). There has been some

evidence, for example, that consumers may feel strong negative emotions about the use of wind generated electricity, despite it being perceived as a cleaner and ecologically more sustainable form of electricity generation compared with traditional fossil fuel sources (Cass & Walker, 2009). Sherry-Brennan et al (2010) found in their exploratory study on public attitudes towards hydrogen energy that negative emotions mainly resulted from the commonly perceived risks of explosion and flammability. However, the generation of positive emotions largely outweighed the effects related to these risks. Similarly, new innovations and technologies related to food products, such as genetically modified food, and associated packaging, for example packaging using organic or edible materials, plastic bottles with chemicals such as BPA, have been shown to evoke negative emotions and consequently scare consumers into rejecting adoption of these due to high uncertainty, severe perceived risk and only marginal benefits (Grunert, 2002; Laros & Steenkamp, 2004).

Uncertainty is evoked due to consumers' lack of understanding of the attribute-to-benefit linkages in innovations (Hoeffler, 2003). Finuncane et al (2000) found that worry and fear have a negative effect on benefit perception while at the same time increasing risk perception. As a consequence, consumers will focus on perceived risk which then lowers their intention to buy (Chaudhuri et al., 2010). Studies in the field of social psychology have found that negative emotions, such as fear and anxiety evoked at the time of decision-making are key influencers when assessing potential risk of new products and forming perceptions of innovations (e.g. Finucane et al., 2000; Lerner & Keltner, 2000; Loewenstein & Lerner, 2003). It has been suggested that emotions can act as an important heuristic or shortcut when evaluating risks versus benefits, especially in situations where knowledge levels are low and consumers tend to rely on them when making decisions (Lee, Scheufele, & Lewenstein, 2005).

We seek to extend knowledge linking positive and negative emotions to environmentally informed consumption decisions by focusing on the emotions evoked by the 'good' alternative. While previous studies have sought to assess the positive emotions evoked by environmentally products, few studies have investigated possible negative emotions that they evoke. Thus we specify the following hypotheses:

H4a/b: The positive/negative emotions evoked by ecologically responsible packaging have a positive/negative influence on purchase intention.

What is the relationship between emotion and cognition? Building on studies of emotion as appraisal, there is substantial evidence indicating that emotions influence cognition (Forgas, 1995; Nerb & Spada, 2001) and that emotion can act as a mediator between cognitive appraisal and behavior (Nyer, 1997; Vining & Ebreo, 2002). Keltner et al. (1993) and Lerner & Keltner (2000) argue that the effects of negative emotions are more specific than general pessimism, with anger and sadness resulting in different human cognitive judgments. Emotions can therefore trigger cognition. However, this relationship is not uni-directional, since cognitive thinking can also activate emotions (Nerb & Spada, 2001; Nyer, 1997).

What, then, of the relationship between pro-environmental behavior, emotions and cognition? According to Damasio (1998) greater insights into the interplay of emotion and cognition are crucial to understand consumers' concern for the environment. Elaborating on our previous discussion of emotions and cognition, cognition is needed to activate emotions, principally via environmental knowledge and awareness (Kollmuss & Agyeman, 2002). As Preuss (1991) argues, a lack of knowledge about environmental issues, their causes and consequences, is likely to result in non-emotional involvement; hence the importance of cognition. This is in line with the cognitive appraisal theory (Lazarus 1991) that an individual's cognitive evaluation of a situation is needed to evoke emotions. Thus hypotheses

5 and 6 examine the influence of cognition on positive and negative emotions. The conceptual framework is shown in Figure 1.

H5a/b: An individual's concern for environmental issues has a positive/negative influence on the positive/negative emotions evoked by ecologically responsible packaging.

H6a/b: The perceived cognitive benefits of ecologically responsible packaging have a positive/negative influence on the positive/negative emotions evoked by this type of packaging.

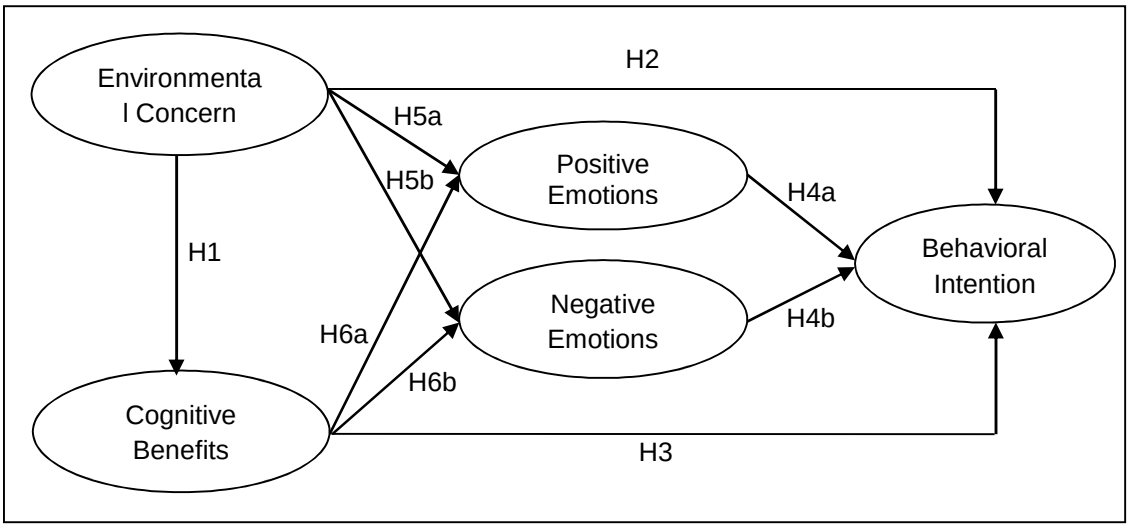


Figure 1: Conceptual Model

3. Method

3.1 Research Context – Bottled water market Norway

The hypotheses were tested in the context of Norwegian consumers of bottled water. Competition in the bottled water market has been fierce, with new bottle design, taste and brand improvements frequently introduced in efforts to gain competitive advantages. Norwegians have become more concerned about the environment. In 2007, over half of the population believed global environmental threats posed a very serious problem and 76% agreed that environmental protection was more important than economic growth, up from

63% in 1996 (Listhaug & Jakobsen, 2007). Recycling rates are high (about 90%), partly attributable to a refund system for beverage containers (Norsk Resirk, 2010). In Norway, a bottle comprising 15% plant-derived material was introduced in May 2010 by the BonAqua brand, but with little publicity focusing on its ecological benefits. In our study, no company or brand associations were made.

3.2 Sample and data collection

To qualify for inclusion in the sample, respondents were required to be aged 18-40, live in Norway, and to consume and purchase bottled water. Semi-structured interviews were employed for eliciting information to gain a deeper understanding of the topic before constructing the questionnaire. This involved six participants from the target population with a diverse range of males and females, students and professionals to achieve some diversity of insight. An interview guide was constructed around the key themes of environmental concern and pro-environmental behavior; attitudes towards ecologically responsible packaging with a specific focus on the perceived benefits of packaging made from plant-based material and the nature of the emotions elicited when consuming pro-environmental products. Each interview lasted around 45 minutes, was recorded and transcribed. The aim of these interviews was to refine, supplement and interpret the literature bases for questionnaire items in the specific context of a plant based bottle. 'Worry' and 'nervous' emerged as negative emotions evoked by the uncertainty and risk associated with this new type of beverage packaging, which many participants were not familiar with. As a result of this apparent lack of knowledge of the packaging material, the questionnaire subsequently included some background information about the plant bottle concept. In order to test the questionnaire and to get insights into the reliability of the scales, a pilot study with 155 respondents from the target population was carried out in late 2010. On the basis of the results, the final questionnaire was developed.

Data for the main study were collected during January 2011 using an online questionnaire, a method shown to be an efficient and effective tool for the target group of study (Luo, 2009; Wilson & Laskey, 2003). A modified snowball approach was employed, whereby contacts of the researchers and their contacts were invited through a social network website to take part in the study. There is almost universal access to the Internet in Norway, with 88% of 16-44 year olds using the Internet every day for an average of 112 minutes in 2009. In an average day 70% of Internet users aged 16-24 and 45% of those aged 25-44 visited a social networking site (Statistics Norway, 2009). According to TNS Gallup, 69% of Norwegians over 12 years old use Facebook and 80% of 12-29 year olds use it daily for entertainment, information gathering and social purposes (Fossbakken, 2011). For this study, messages via social networking sites and e-mails were sent to 366 invitees. Based on a small random sample of these initial contacts, it was estimated that each of these forwarded the survey invitation to an average of 3.6 friends, thus estimating that 1,300 people received an invitation to participate in the study. From this, 463 responses were received, of which 436 qualified to take part in the survey (i.e. were between 18 and 40 years old, lived in Norway, consumed and purchased bottled water) and 312 fully completed the questionnaire and were thus usable for inclusion in the analysis, representing a response rate of 24%.

The sample was examined for potential effects of non-response error and no significant differences between the answers of early respondents and late respondents (the last 25% of respondents) were found with regards to the key constructs used in this study. 53% of the respondents were female and 47% were male. This is close to the gender split nationally which is around 50% in the 20 to 39 year age category (Statistics Norway, 2010). The mean age of the sample was 26.3 years. Half of the respondents were in full-time employment (50.3%), 6.8% were in part-time employment, 41.1% were students and 1.7% were unemployed. This is in line with the national average of the 20-24 year olds where 46.3% were in full-time

employment, 41.8% were studying and 8.3% in part-time employment in 2010 (Statistics Norway, 2011).

3.3 Measurement items

To test the hypotheses, previously validated and reliable multi-item measurement scales were employed. These were refined and made relevant to the Norwegian context on the basis of exploratory qualitative research. Environmental concern was operationalized with responses to five items adapted from Minton and Rose (1997) and Antil and Bennett (1979). All of these items relate to general attitudes towards the environment. The cognitive benefits scale included six items and was based on the literature review and the exploratory research findings, and included items, such as "The plastic bottle partly made with plant-based material will benefit the planet to a great deal", "... helps to avoid global warming", "...helps to reduce environmental problems". The above scales used five-point Likert-scales anchored by 'strongly disagree' and 'strongly agree'.

Emotions were measured using items adopted from Izard's (1977) Differential Emotions Scale (DES) and Richin's (1997) Consumption Emotions Set (CES). On the basis of the semi-structured interviews and the pilot test a pool of emotion items relevant for the context of consuming pro-environmental products was generated. The multi-item unidimensional approach to measure of emotions has performed best in previous research and the categorization into two discrete emotions dimensions - positive and negative has received considerable support in the literature (Bagozzi, Wong, et al., 1999; Chaudhuri, 1998; Phillips & Baumgartner, 2002). Five items were thus included for positive emotions (i.e. happy, enthusiastic, optimistic, proud, content). For negative emotions, two items (nervous and worried) were included as these were most prominent in the exploratory research and form part of the unidimensional measure of fear (Laros & Steenkamp, 2004). The order in which the

emotion items were presented in the questionnaire was randomized for each respondent. Respondents were asked to indicate the degree of emotions evoked by drinking from a plastic bottle made partly with plant-based material. Consistent with previous studies, these were measured on a five-point scale ranging from 'not at all' to 'very much' (e.g., Bagozzi, Gopinath, et al., 1999; Laros & Steenkamp, 2005; Richins, 1997).

Purchase intention was operationalized using two indicators – likelihood of purchasing bottled water in a plant-based plastic bottle, and likelihood of switching to a brand which is using a plant-based plastic bottle. The relevant items were adapted from Zeithaml et al. (1996) and anchored by 'very unlikely' and 'very likely'. A two-item measure was adopted in this study as the use of single-item measures is typically not recommended, due to well-known psychometric limitations (Bergkvist & Rossiter, 2007; Churchill, 1979). The measurement scales are displayed in Appendix A.

4. Results

4.1 Measurement model

The proposed hypotheses were tested employing structural equation modeling (SEM) using AMOS 19.0.1. SEM not only tests hypothesized causal relationships between multiple latent constructs simultaneously but also allows for both latent and observed variables to be analyzed at the same time (Joreskog & Sorbom, 1979). In addition, SEM takes a confirmatory rather than an exploratory approach and provides measurement errors of the observed variables thus ensuring a more rigorous analysis and increasing the reliability of the results (Baumgartner & Homburg, 1996). In a first step, confirmatory factor analysis (CFA) with maximum likelihood estimation was employed to examine scale validity and reliability. The goodness-of-fit statistics of the CFA demonstrate that the hypothesized measurement model fits the data well (χ^2=262.16, df=134, $p \leq .001$). The chi-squared value divided by the

degrees of freedom ratio was 1.96 and thus within the recommended range of 1 to 3 (c.f. Carmines & McIver, 1981). The comparative fit index (CFI=.95) and the Tucker-Lewis index (TLI=.94) were all above .9 and the root mean squared error of approximation (RMSEA=.055) was well below .08 (c.f. Bentler & Bonett, 1980; Steiger, 1989). Appendix A presents the standardized loadings, alpha coefficients, construct reliabilities and average variance extracted for all constructs.

Reliability of the multi-item constructs have been tested using construct reliabilities (CR) which are computed from the squared sum of factor loadings for each construct and the sum of error variance terms (Hair, Black, Babin, & Anderson, 2007). As shown in table 1, most constructs exhibited CR values higher than .7 thus confirming adequate reliability (Bagozzi & Yi, 1988). Two exceptions were the 'purchase intention' and 'negative emotion' constructs with construct reliabilities slightly below .7. However, this was expected as both of these constructs were measured by only two items. As other indicators of construct validity were good, CR values between .6 and .7 indicate commonly acceptable level of reliability (Hair et el, 2007).

Convergent validity was supported as the estimated standardized factor loadings for all indicators were significant ($p<.001$) and above .5 with the majority exceeding .7 (Anderson & Gerbing, 1988). However, one item from the environmental concern construct ('Much more fuss is being made about air and water pollution than is really justified.') was deleted due to low loading estimates (below .5) (Bollen, 1989). Finally, the square root of the average variance extracted from a construct exceeded the corresponding inter-construct correlation estimates, thus confirming discriminant validity (Fornell & Larcker, 1981). Table 1 reports the correlation matrix for the constructs, as well as their reliabilities and the square roots of the average variance extracted.

Measurement parameter estimates	CR	(1)	(2)	(3)	(4)	(5)
(1) Environmental Concern	.80	.74				
(2) Positive Emotions	.83	.55	.81			
(3) Negative Emotions	.67	-.18	-.08	.87		
(4) Cognitive Benefits	.86	.53	.50	-.24	.71	
(5) Purchase Intention	.67	.64	.64	-.38	.51	.69

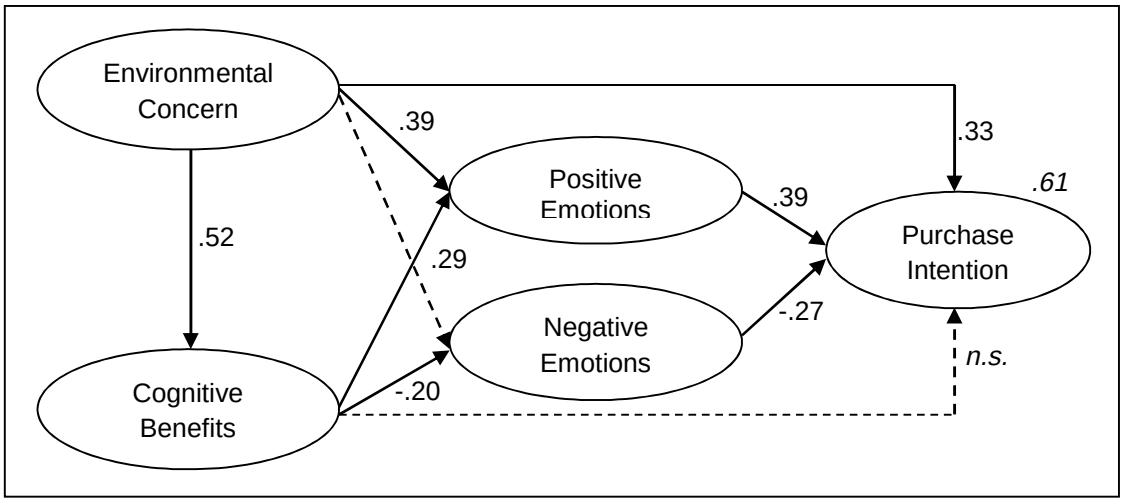
Note: *Values in the diagonal represent the square root of the average variance extracted, CR denotes construct reliability*

Table 1: Correlations of latent constructs

4.2 Structural model

Structural equation modeling with maximum likelihood estimation was employed to test the hypothetical relationships among latent variables. The results are displayed in figure 2. An inspection of the goodness of fit indicators demonstrated an acceptable fit for the structural model (χ^2=263.8, df =135; p=.00, χ^2/df=1.95, CFI=.95, TLI=.94, RMSEA=.06). The proposed model explains 61% of variance in purchase intention to adopt environmentally responsible packaging which is higher than typical values found in studies based on TPB (Armitage & Conner, 1999).

H1 which proposed a positive relationship between environmental concern and the assessment of the ecological benefits of the packaging was supported (β=.52, p<.001). This demonstrates that a higher concern for the environment in general will also lead to a more favorable assessment of the cognitive benefits associated with ecologically responsible packaging, thus confirming the results from past studies (Chamorro et al., 2009).



Dotted line denotes non-significant relationship

Figure 2: Standardized path estimates

Respondents' concern for the environment (a rational evaluation) had a significant positive effect on purchase intention (β=.33, p<.001), thus confirming *H2*. However, *H3* was rejected as cognitive benefits associated with the packaging had no significant effect on subsequent purchase intention. The results show that the emotions evoked by the ecologically responsible packaging had a strong significant effect on purchase intention, for both positive and negative emotions (β=.39, p<.001 and β=-.27, p<.001), thus supporting *H4a* and *H4b*. The findings confirm other studies that affective and cognitive variables are significant predictors for engaging in pro-ecological behavior (Carrus et al., 2008; Damasio, 1998; Fraj & Martinez, 2006; Meneses, 2010). Furthermore, the effect of positive emotions on purchase intention is larger than that of negative emotions, thus suggesting that in the case of ecologically responsible packaging, negative and positive emotions have structurally different effects on intention to purchase. This was expected as positive emotions are likely to dominate in consumers' evaluation in this context, for example pride and optimism leading to an inner peace of mind. The findings are in line with suggestions by Sherry-Brennan et al (2010) who found that in the context of public attitudes towards hydrogen energy the generation of positive emotions largely outweighed the negative emotions related to

perceived risks. The difference in effects is consistent with previous suggestions that positive and negative emotions are separate constructs, rather than being part of a single bipolar construct (Bagozzi, Wong, et al., 1999; Chaudhuri, 1998; Phillips & Baumgartner, 2002).

Environmental concern and the evaluation of environmental benefits on purchase intention had a significant influence on positive emotions (β=.39, $p<.001$ and β=.29, $p<.001$), thus confirming *H5a* and *H6a*. Positive emotions evoked by the ecological responsible packaging were particularly strong for respondents who had high concern for the environment in general and positive evaluations of the environmental benefits of the packaging. The results did not support *H5b*, as there was no effect of environmental concern on negative emotions. However, the perceived ecological benefits of the packaging had a significant negative influence on negative emotions (β=-.20, $p<.01$), thus confirming *H6b*. This suggests that if respondents are not certain about the benefits of the new packaging, the more likely they will feel nervous and worried. It has been questioned whether emotions can be formed without prior cognitive evaluation (Izard, 1977; Zajonc, 1980). The findings of this study are consistent with the cognitive appraisal theory that an individuals' cognitive appraisals lead to emotions (Lazarus, 1991; Nyer, 1997), and previous studies that have found that environmental knowledge and awareness is needed to evoke emotions (Kollmuss & Agyeman, 2002; Preuss, 1991). However, the results suggest that the relationship between rational and emotional evaluations on purchase intention is more complex. Only general environmental concern had a direct effect on purchase intention, but not specific cognitive benefits associated with the plastic bottle made partly with plant-based material. Environmental concern and benefits associated with the ecologically responsible packaging had strong effects on positive emotions but weaker or insignificant effects on negative emotions. In order to get more insights into these relationships, the direct and indirect effects of rational elements on purchase intention via emotions are discussed in more detail below.

4.3 Examination of the role of emotions and associated mediation effects

Vining and Ebreo (2002) suggested that positive and negative emotions cannot only be predictors of conservation behavior but also act as mediators of other predictors. To examine the role of positive and negative emotions within the hypothesized framework, chi-squared difference tests were employed to assess two competing models to determine if setting the paths to and from the emotions constructs to zero reduces the fit of the model significantly. The goodness of fit statistics indicated that the competing model represents a poorer fit to the data (χ^2=441.2, *df* =141; p<.00, χ^2/df=3.13, CFI=.89, TLI=.87, RMSEA=.08). All regression path coefficients were significant. However, the competing model only explained 47.5% of variation in purchase intention (compared to 61%). The chi-squared difference statistic was used to assess the two competing models (Hair et al., 2007) and the results demonstrate that the change is highly significant ($\Delta\chi^2_{(6)}$=177.39, p<.001) supporting the notion that emotions play an essential role in the framework. Furthermore, the Akaike's Information Criterion (AIC) (Akaike, 1987) is also frequently employed in comparing two competing models, with smaller values representing a better fit of the hypothesized model (Hu & Bentler, 1995). The AIC value for the research model was 373.8, smaller than 539.2 for the competing model, thus confirming a better fit for the model including emotions.

Table 2: Evaluation of direct and indirect effects

	Direct effect without mediation	Direct effect with mediation	Indirect effect	Mediation effect
EnvCon – posEmot – BehInt	.56 (p<.001)	.33 (p<.001)	.16 (p<.001)	Partial
EnvCon – negEmot – BehInt	.56 (p<.001)	.37 (p<.001)	.02 (p<.032)	Partial
CogBen – posEmot – BehInt	.21 (p<.018)	.07 (n.s)	.11 (p<.001)	Full
CogBen – negEmot – BehInt	.21 (p<.018)	.03 (n.s)	.05 (p<.001)	Full

Note: Standardized coefficients are displayed in the table

In addition, in accordance with the procedures outlined by Baron and Kenny (1986), the mediating role of emotions in the relationship between rational evaluations and purchase intention was assessed in more detail and the results are displayed in table 2. Firstly, the modified model (i.e. without positive and negative emotions as the mediators) with direct effects from cognitive evaluations to purchase intention was tested. All paths were significant, with $\beta=.56$, $p<.001$ for environmental concern and $\beta=.21$, $p<.001$ from cognitive benefits to purchase intention. Secondly, the model was tested with positive and negative emotions as mediators. In that model, the estimated direct effect of environmental concern on purchase intention is .33, $p<.001$ when mediated by positive emotions and .37, $p<.001$ when mediated by negative emotions. As the paths are still significant, it can be concluded that positive emotions partially mediate the relationship between environmental concern and purchase intention. However, the estimated direct effect of cognitive benefits associated with ecologically responsible packaging is .07 (not significant) when mediated by positive emotions and .03 (not significant) when mediated by negative emotions. This suggests that the relationship between cognitive benefits and purchase intention is fully mediated by positive and negative emotions evoked by the packaging.

Furthermore, the significance of the indirect effects of emotions on purchase intention has been tested by employing an additional and more rigorous method, i.e. the bias-corrected bootstrapping method utilizing 2000 bootstrap samples (Cheung & Lau, 2008; Shrout & Bolger, 2002). Results indicate that the indirect effects of environmental concern on purchase intention ($\beta=.16$, $p<.001$, mediated by positive emotion and $\beta=.02$, $p<.032$, mediated by negative emotion) are significant, thus confirming partial mediation. The indirect effects of cognitive benefits on purchase intention ($\beta=.11$, $p<.001$, mediated by positive emotion and $\beta=.05$, $p<.001$, mediated by negative emotion) are also significantly different from zero, thus

confirming full mediation. Thus, positive and negative emotions mediate the effects of environmental concern and cognitive benefits on purchase intention.

The mediation analyses show that environmental concern exerts both direct and indirect influences on purchase intention, with positive and negative emotions partially mediating these effects. In contrast, cognitive benefits associated with ecologically responsible packaging only has a significant indirect effect on purchase intention, mediated by positive and negative emotions. Table 2 summarizes these results. The bootstrapping analysis also estimates the total effects of environmental concern (β=.50, $p<.001$) and cognitive benefits (β=.24, $p<.001$) on purchase intention. These confirm that general environmental concern is a main factor in predicting purchase intention of ecologically responsible packaging.

5. Discussions and Implications

This paper started with the proposition that an apparent difficulty by consumers in synthesizing competing claims about ecological credentials of products led to a view that they could be guided by 'greenwash' claims of producers. We began by reviewing arguments that the response to the apparent problem of consumer decision making based on 'greenwash' should be greater rationality in describing the ecological benefits of products. A review of literature found a long tradition seeking to attribute rationality and logic to consumers' evaluation of products in general and ecological products in particular. Although widely used in modeling consumers' decision making processes with respect to ecologically benign products, TRA and TPB were noted to have weaknesses, reflected in their typically low levels of explained variance in behavior and behavioral intention.

The relative absence of predictive models of ecologically informed buying behavior incorporating affect may seem surprising, given the recognition of affect in other aspects of marketing, for example brand development and advertising. The study has found evidence

that consumers may not only act with rationality and logic when making ecologically responsible purchases, and that affect may provide an important explanation of consumers' intention to buy such products. The findings support previous research demonstrating that emotions have a significant influence on intentions to engage in pro-ecological behavior (Carrus et al., 2008; Damasio, 1998; Fraj & Martinez, 2006; Meneses, 2010). The proposed model was able to predict 61% of the variation of behavioral intention, operationalized in this study as likelihood of purchase, which is much higher than many studies based on TPB, that typically explain only 39% of variance in behavioral intention and 27% of actual behavior (Armitage & Conner, 2001). The results have confirmed that emotions play an important role in predicting pro-environmental purchasing behavior in the context of ecologically responsible packaging. The findings have also supported previous research, which has found a link between an individual's general level of environmental concern and their rational appraisal of the benefits of a bottle made partly from organic plant material (Hartmann & Apaolaza-Ibáñez, 2012; Kilbourne & Pickett, 2008; Schlegelmilch et al., 1996). Earlier studies had questioned the strength of this association and whether knowledge of the link was sufficient to change behavioral intention (Dunlap, Gallup, & Gallup, 1993; Thøgersen, 2000). The present study confirms that in addition to emotions, environmental concern significantly influences purchase intention of pro-environmental packaging (Chamorro et al., 2009; Kalafatis et al., 1999; Roberts & Bacon, 1997).

This study has extended knowledge by noting that the effects of environmental concern and perceived benefits of ecologically sound packaging on intention to purchase are significantly mediated by emotions, thus confirming and extending Vining and Ebreo's (2002) proposition that positive and negative emotions cannot only have direct but also indirect (i.e. mediator) effects on the intention to engage in conservation behavior. In this research, the direct effects of perceived cognitive benefits on purchase intention were only

marginally significant with relatively low regression coefficients. However, when positive and negative emotions were introduced as mediators, the model provided a much higher level of explanatory power. The study was undertaken in a context free of specific brand associations. It could be objected that consumers do not evaluate the specific credentials of packaging, but instead evaluate the general ecological credentials of a brand. For example, consumers may react cynically to ecologically responsible packaging where it is perceived as being inconsistent with a manufacturer's poor ecological practice elsewhere in its supply chain (e.g. excessive transport used to move products). It is therefore possible that emotions could be evoked by the brand associations rather than the specific packaging. The results of this study are notable because participants were not introduced to specific brands which might have confounded emotional responses to the packaging material.

More specifically, this study demonstrated that both positive and negative emotions significantly influenced purchase intention and that positive emotions had a slightly larger effect than negative emotions associated with the packaging. Previous studies linking negative emotions with environmentally informed consumption decisions have focused on negative emotions associated with the environmentally harmful alternative (for example fear and guilt). We have extended this conceptual domain by identifying negative emotions which may act as a counter balance to the presumed positive emotions evoked by consuming environmentally friendly products. Emotions evoked by a beverage bottle containing organic material were identified on the basis of preliminary qualitative research. In addition to the positive emotions of happy, optimistic, enthusiastic, proud and content, the preliminary research identified nervous and worried as potential negative emotions. In the context of our study, it could be expected that most emotions evoked by pro-environmental packaging would be positive, and unsurprisingly, this was the case. However, our study has also suggested a significant effect of negative emotions in explaining purchase intention. Various

studies have shown that environmental innovations can evoke negative emotions such as anxiety, fear and worry leading to unfavorable attitudes and lower purchase intentions (Chaudhuri et al., 2010; Midden & Huijts, 2009; Montijn-Dorgelo & Midden, 2008; Peters & Slovic, 2008). The results also demonstrated a significant negative influence of the cognitive benefits associated with the pro-environmental packaging on negative emotions. This supports the suggestions of Hoeffler (2003), that uncertainty and thus negative emotions are evoked due to consumers' lack of understanding of the attribute-to-benefit linkages in innovations.

We started with the notion that manufacturers should 'return to rationality' (Peattie, 2001, p. 198) in making environmental claims. This study has provided further evidence that in the context of packaging, evaluations based on emotions may be important in influencing intention to purchase products using ecologically responsible packaging, and rational evaluations themselves are mediated by emotions. The preliminary research indicated that some aspects of an organic plant-based bottle, such as fear about the purity of materials used, or worry about broader effects on food supply chains could be associated with negative emotions. If emotional claims are not backed up by reality, negative emotions might be derived from feelings of dismay at being exploited by companies which are perceived as using environmental claims for their own financial gains, rather than delivering benefits to the environment ('greenwashing').

An implication of our findings is that marketers should not only rely on consumers' cognitive responses to advertising but also emphasize the positive emotions evoked by using ecological packaging. This is consistent with Hartman et al. (2005) who noted that functional and emotional strategies should be considered complementary rather than as alternatives, as the rational benefits of pro-environmental consumption alone might be insufficient as a motivating factor to adopt pro-environmental purchasing behavior. Therefore rational

messages such as “packaging that is good for the planet” should be combined with emotional messages, for example “feel good about your actions”. The study found a significant link between cognitive and emotional evaluations of the pro-environmental packaging.

Negative emotions associated with environmentally responsible packaging may occur, for example if consumers are uncertain about the manufacturer’s claimed ecological benefits and the perceived level of risk are high. The results suggest that manufacturers should stress the cognitive benefits of their products in order to reduce the level of uncertainty and thus negative emotions such as worry and nervousness. Positive emotions should also be emphasized in their communications as previous studies suggested that positive emotions can compensate for any negative effects resulting from uncertainty and perceived risk related to new technologies and increase willingness to try (Chaudhuri et al., 2010; Sherry-Brennan et al., 2010).

The findings of this study would appear to contradict Peattie’s (2001, p. 198) indication of a need to ‘return to rationality’ and that consumers’ confidence in green marketing can *only* be improved “through openness, the provision of full information and consumer choice, environmentally realistic pricing and the development of innovative clean technology solutions”.

To conclude, the principal contributions of our study are threefold. Firstly, our results offer new insights into the complexity of pro-environmental buying behavior, particularly with regard to the role of positive and negative emotions. Our findings suggest that emotions and rationality drive pro-environmental purchasing behavior. Secondly, our study extends knowledge by noting that the relationship between an individual’s general environmental concerns and rationality in evaluating ecological product claims and their purchase intention is mediated by emotions. Thirdly, manufacturers should address negative emotions evoked by

ecologically responsible packaging and not assume that the ‘green’ alternative will be evaluated favorably, especially at the emotional level.

6. Limitations and Further Research

A number of limitations of this study should be noted. Like many studies of ecologically motivated purchasing, the model tested here used purchase intention as an outcome variable, rather than actual purchase. In practice, it would be difficult to develop a research framework in which actual behavior was monitored, while at the same time isolating the effects of the brand from the packaging. This study has made a contribution by isolating the effects of packaging without the confounding effects of brand evaluation. This research has been undertaken in one particular cultural context - Norway - which has a high level of environmental awareness. Furthermore, the sample was slightly over represented by people with a higher level of education. It may be expected that in this context, rational evaluation of cause and effect may be greater than emotional evaluation, but this was not the case. The set of emotions used in this study was limited to basic emotions using a quantitative methodology, and it was not possible to probe reasons for specific emotions being evoked.

Further research should seek to replicate the effect of emotions in a different cultural context where there is possibly less awareness of ecological issues. This study focused on a low involvement product, and further extension of the model should replicate this to a relatively high involvement context. A more complex model might seek to incorporate emotions provoked by the brand, as distinct from the specific packaging. Further refinement of the outcome variable of purchase intention should incorporate further indicators, for example willingness to pay a higher price once more knowledge is known about the ecological benefits of a product.

Appendix A

Constructs and measures	Standardized loading	CR	α	AVE
Environmental Concern		.80	.79	.54
I think we are not doing enough to save scarce natural resources from being used up.	.75			
Natural resources must be preserved even if people must do without some products.	.62			
*Much more fuss is being made about air and water pollution than is really justified.**	-			
I feel angry and frustrated when I think about the harm being done to plant and animal life by pollution.	.78			
I think the government should devote more money toward supporting conservation and environmental programs	.78			
Positive Emotions		.83	.90	.66
Knowing that you were drinking from a plastic bottle made partly with plant-based material would make you feel…				
Happy	.89			
Optimistic	.83			
Enthusiastic	.89			
Proud	.82			
Content	.61			
Negative Emotions		.67	.86	.76
Nervous	.88			
Worried	.87			
Cognitive Benefits		.86	.83	.51
The plastic bottle partly made with plant-based material				
... reduces the dependence on non-renewable resources.	.64			
... will benefit the planet to a great deal.	.74			
... helps to reduce environmental problems.	.78			
... generates less CO2 emissions during production than conventional petroleum-based PET bottles.	.57			
... is environmentally friendly.	.83			
... helps to avoid global warming.	.69			
BehaviorPurchase Intention		.67	.64	.47
Assuming that everything else is constant (e.g. taste, design, price, etc.), how likely would you be to				
… buy bottled water in a plant-based plastic bottle?	.72			
… switch from your favorite brand to one which is using a plant based plastic bottle?	.65			

Note: CR denotes construct reliability, AVE denotes average variance extracted, Item in italics deleted from final analyses due to low factor loadings, * denotes reverse coded item

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