Understanding environmentally sensitive consumer behaviour: an integrative research perspective

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Abstract

Purpose – The potential underlying causal factors of environmental behaviours have been examined from various theoretical angles by mostly focusing on individual motivations in the literature. The purpose of this paper is to develop a conceptual model based on an integrative approach to better understand eco-sensitive consumer behaviours and their predictors.

Design/methodology/approach – The paper reviews distinct theoretical approaches and, based on the integrative perspective, develops a model using the framework of the goal framing theory (GFT).

Findings – On the basis of the GFT, the authors propose that 12 variables influence the pro-environmental behaviours of consumers: biospheric values, egoistic values, altruistic values, environmental concern, awareness of consequences, ascription of responsibility, subjective norms, attitudes towards behaviour, perceived behavioural control, personal norms, affect, and behavioural intention. Furthermore, the authors categorize environmental behaviours based on three different stages of the consumption process of consumers: purchase, usage, and post-use.

Originality/value – The proposed model will offer future studies a holistic understanding of the factors that predict environmentally sensitive behaviours of consumers and the extent to which such behaviours depend on moral considerations, feelings, or self-interest motives.

Keywords Affect, Environmentally sensitive behaviour, Theory of planned behaviour, Goal framing theory, Green consumer behaviour, Values beliefs norms

Paper type Conceptual paper

Introduction

> People's behaviour makes sense if you think about it in terms of their goals, needs, and motives (Thomas Mann, 1875-1955).

There is growing global concern over frequent and devastating natural disasters, constant flooding in different regions, water contamination, land degradation, air pollution, and similar high human impact environmental problems. It is imperative to better understand and address these environmental issues for the prosperity and well-being of future generations. It is accepted by numerous researchers that identifying the motives for human behaviour towards the environment is a critical step that is necessary to understand the underlying causes of each environmental action (e.g. Clayton and Brook, 2005; Saunders *et al.*, 2006; Gifford, 2007). In fact, over the last 40 years many psychologists and sociologists have been trying to do exactly this, exploring the root causes of direct and indirect environmental actions (Kollmuss and Agyeman, 2002). Although there is a growing number of studies in this area (e.g. Hines *et al.*, 1987; Kollmuss and Agyeman, 2002; Barr, 2007; Kilbourne and Pickett, 2008; Birgelen *et al.*, 2009; Young *et al.*, 2010; Park and Ha, 2012; Elgaaied, 2012), the

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underlying causes and functioning of consumers' environmental behaviours remain unclear.

In the environmental behaviour literature, various research perspectives, concepts, and variables have been applied by scholars to understand the root causes of eco-sensitive behaviours. Mainly, the necessity of an integrative approach has been suggested to fully understand these types of behaviours (Lindenberg and Steg, 2007; Steg and Vlek, 2009) because of the considerable effects of multiple motivations in the environmental behaviour domain. Furthermore, according to the European Commission (2012), a single approach coming from only one discipline does not have to be taken at the expense of the others to explain and promote green behaviours. Instead, different approaches as well as contributions from various disciplines, such as the rational economic model and social practices approach, should be acknowledged and taken into account. A multi-dimensional view that considers all relevant theories and models supports our understanding and promotes necessary actions (Jackson, 2005). The contributions of various disciplines should be acknowledged (Wilson and Chatterton, 2011) and may "help green behaviour initiatives to work at multi levels with appropriate techniques, whether they are financial incentives, regulation or encouraging community transition" (European Commission, 2012, p. 5).

In considering broader theories, goal framing theory (GFT) (Lindenberg, 2001a, b, 2006) covers different motivations to explain a certain behaviour. This theory has been suggested to be appropriate as an integrative framework that can explain eco-sensitive behaviours (Steg and Vlek, 2009). Although suggested, it is not yet known how multiple motivations may affect these types of behaviours. GFT appears to be a promising integrative framework. This paper reviews several distinct theoretical approaches and, based on the integrative perspective, develops a model using the framework of the GFT. Furthermore, with a unique interdisciplinary approach, this paper combines consumer behaviour studies from business management and marketing, neoclassical economic theories of economics, social and personal norms (PN) approaches and models of sociology, and emotional motivation (e.g. affect theories) models from psychology. Currently, there is no evidence of a comprehensive framework using GFT in the literature to examine the environmentally sensitive behaviours of consumers.

Theories of environmental behaviour studies

There are a wide range of theories in the literature that have been applied to explain environmental behaviour. Environmental behaviours' potential underlying factors have been examined from various theoretical angles (e.g. Vining and Ebreo, 2002; Steg and Vlek, 2009) by mostly focusing on individual motivations. According to Steg and Vlek's (2009) perspective of taking a multi-line research approach in this area, different environmental behaviours can be explained by individual motivations, such as perceived cost and benefits, normative and moral considerations, and affective and symbolic motives. These three research paths suggest different perspectives in an attempt to explain individual motivations towards pro-environmental behaviours.

The perspective of "perceived costs and benefits" considers "the assumption that individuals make reasoned choices and choose alternatives with highest benefits against lowest costs (eg. in terms of money, effort and/or social approval)" (Steg and Vlek, 2009, p. 311). Fishbein and Ajzen (1975) and Ajzen and Fishbein's (1980) theory of reasoned action (TRA), as well as Ajzen's (1991) theory of planned behaviour (TPB) frameworks are good examples of this cost/benefit approach. These frameworks have been used widely in many diverse disciplines, such as business management,

behavioural economics, and consumer behaviour studies. It is also common to see similar theoretical constructs in environmental behaviour studies (e.g. Bamberg and Schmidt, 2003; Heath and Gifford, 2002; Mannetti *et al*., 2004; Kaiser and Gutscher, 2003).

Moral and normative frameworks look at the role of values, moral, and normative aspects in determining environmental behaviours. Theories about values, altruism, and environmental concerns, such as New Environmental Paradigm (NEP) (Dunlap and Van Liere, 1978; Dunlap *et al*., 2000), theory of normative conduct (Cialdini *et al*., 1991), norm-activation model (NAM) (Schwartz, 1977; Schwartz and Howard, 1981), and value-belief-norm (VBN) theory of environmentalism (Stern *et al*., 1999; Stern, 2000), are good examples of these frameworks. These theoretical frameworks and theories have been widely employed by many scholars in the environmental behaviour literature (e.g. De Groot and Steg, 2007, 2008; Poortinga *et al*., 2004; Nordlund and Garvill, 2002; Schultz and Zelezny, 1999; Dunlap *et al*., 2000; Steg *et al*., 2005).

Although not widely examined, affective and symbolic motives are also another important perspective adopted in environmental behaviour research. For example, some studies have tried to explicitly examine the role of affect in explaining car use (Gatersleben, 2007). Within this perspective, other than a few studies, most research has been exploratory and not theory based (Steg and Vlek, 2009). Dittmar's (1992) material possessions theory was used by Steg (2005) to examine symbolic and affective motives, which she suggests could be a promising viewpoint for motivations as to why individuals act in an environmentally friendly manner. However, more empirical studies are needed to further elucidate this perspective.

Apart from these three lines of research, according to Steg and Vlek (2009), there is also an integrative perspective regarding environmental motivation that should not be neglected. In fact, the literature shows that many scholars have incorporated different concepts, models, and variables from various theories with the aim of demonstrating that multiple motivations play a crucial role in explaining environmental behavioural outcomes (Heath and Gifford, 2002).

As such, the three aforementioned theoretical perspectives should not be considered as mutually exclusive (Steg and Vlek, 2009). It may in fact be that integrating them can provide us with superior explanatory power for our own models and frameworks. As suggested by Steg and Vlek (2009), GFT (Lindenberg, 2001a, b, 2006) is promising as an integrated theory that recognizes the importance of examining multiple motivations in order to explain related behaviours. To date, this theory has not been applied to environmental behaviour research (Steg and Vlek, 2009).

Theoretical framework based on GFT

GFT (Lindenberg, 2001a, b, 2006)

GFT looks at the influence of multiple motives and the interactions between them. The theory suggests that goals outline how individuals may want to process information taken from the outside and act accordingly. "When a goal is activated (that is, when it is the focal goal or 'goal-frame'), it influences what a person thinks of at the moment, what information (s)he is sensitive to, what alternatives (s)he perceive, and how (s)he will act" (Steg and Vlek, 2009, p. 311). According to Lindenberg and Steg (2007), there are three general goal-frames that can be distinguished:

(1) gain goal-frame "advancing or protecting individual resources";

(2) normative goal-frame "behaving properly"; and

(3) hedonic goal-frame "feeling better".

This theory suggests that motivations are hardly ever homogeneous. When one of the goals is focal (i.e. main goal), it has a strong influence on information processing. This process is also called a "goal-frame". The two other background goals strengthen or weaken the power of the focal goal, the "goal-frame". Thus, multiple goals are dynamic at any given moment. For example, an individual can make a decision to behave in certain way while holding a particular goal-frame, that is, one goal will be the strongest and thus will guide that individual more than the other goals. At the same time, other goals may also weaken the influence of the foreground goal.

There are also three theoretical frameworks widely used in the literature that coincide with the three mentioned goal-frames:

(1) the TPB focuses on gain goal-frames;

(2) the NAM, VBN theory, and other similar value and environmental-concern focused frameworks coincide with normative goal frames; and

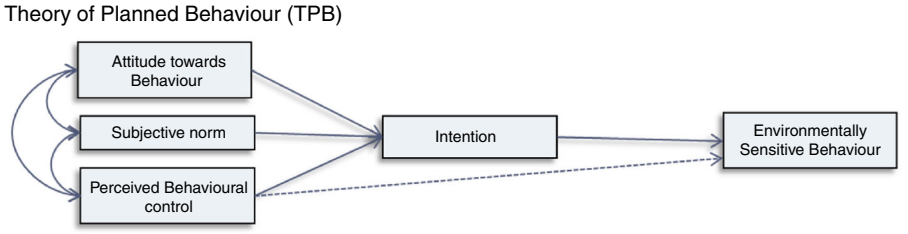
(3) theories and frameworks on affect that coincide with hedonic goal-frames.

Underlying theories of GFT

In order to understand GFT and develop the research based on its framework, it is important to look at the underlying theories that form it. As such, in this section, we elaborate on these sub-theories and how they form the base components of a macro and integrative GFT.

Theory 1: TPB (Ajzen, 1991). Various studies in environmental behaviour literature focus on the assumption that individuals make reasoned choices, and by doing this, they evaluate and choose low-cost alternatives with high benefits. A low cost does not only mean material cost, but can also include social and/or effort-associated costs. The TRA by Ajzen and Fishbein (1980) is one of the theories weighing costs and benefits. An updated version was formulated in 1991 by Ajzen and is called the TPB.

This theory suggests that human actions are guided by behavioural beliefs (a person's beliefs about his/her action's possible consequences), normative beliefs (a person's beliefs about the others' normative expectations on a behaviour), and perceived control beliefs (a person's beliefs about the ease or difficulty of performing the behaviour) (Figure 1). Furthermore, a combination of behavioural attitude, subjective norm, and behavioural control perception all lead to a behavioural intention formation (Steg and Vlek, 2009). The TPB presumes that an individual's intent to perform a behaviour is formed when his/her attitude towards that behaviour and the subjective norms relating to performing that behaviour are favourable, and the perceived behavioural control (PBC) is also greater.



Source: Adapted from Ajzen (1991)

Figure 1. Theory of planned behaviour is widely used to explain environmental behaviours

The TPB has been proven to explain different types of pro-environmental actions, such as purchasing environmentally friendly products, choosing travel mode, water usage, household recycling, waste composting and some other behaviours generally categorized as environmentally sensitive behaviours (Bamberg and Schmidt, 2003; Shaw, 2008; Ramayah *et al.*, 2012; Kaiser and Gutscher, 2003; Mannetti *et al.*, 2004).

Theory 2: VBN theory (Stern et al., 1999; Stern, 2000). In general, VBN theory builds upon some earlier theoretical constructs. It connects value theory, the NAM, and the NEP viewpoint using a causal series of connected variables that lead to relevant behaviour. These connected variables in VBN are personal values (biospheric, altruistic, and egoistic), ecological worldview (NEP), awareness of undesirable consequences (AC), ascription of responsibility to self (AR), and PN for acting pro-environmentally (Figure 2).

VBN theory consists of two sub-theories: Schwartz's model of human values and NEP.

Sub-theory 1: Schwartz's model of human values. Theories on human values have also been used widely by scholars to explain environmental behaviours. One of these theories is based on Schwartz's (1992, 1994a) organizational structure for human values. In Schwartz's model, the classification of values is outlined in two core dimensions:

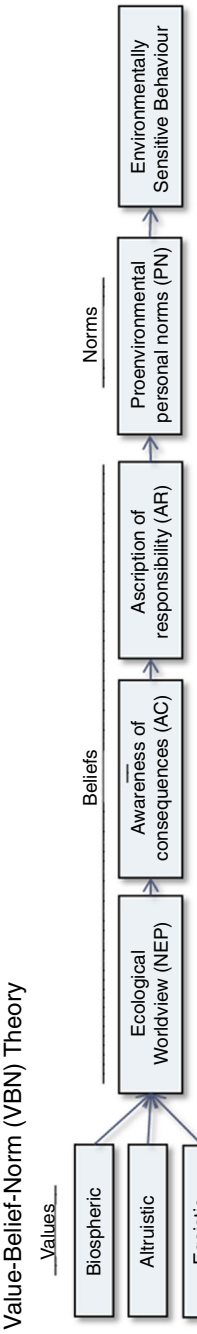
- Dimension 1: self-transcendence to self-enhancement.
- Dimension 2: openness-to-change to conservatism.

These two dimensions carry specific underlying motivational types where each contains particular life goals (Schwartz, 1994b). For instance, self-transcendence contains 18 different life goals, such as being helpful, honest, forgiving, and loyal. These kinds of goals promote "the interests of other persons and the natural world" (p. 101). In contrast, self-enhancement includes goals like authority, wealth, success, and ambition that "promote own interests regardless of others' interests" (p. 101). The second value-type dimension, openness-to-change and conservatism, orients around being supportive to change or the retention of known traditions. In this dimension, openness comprises life goals such as creativity, curiosity, and living an exciting life. Conversely, conservatism contains life goals like politeness, respect for tradition, and honouring parents and elders.

The definition provided by Schwartz and subsequent studies applying the dimension show that self-transcendent values are the most closely aligned with environmental concern and the action-related dimension. In fact, as Schwartz points out, self-transcendent values include "protecting the environment" and "unity with nature" as core items (Schultz and Zelezny, 2003).

Research shows that the more strongly individuals subscribe to values other than their direct own interests, such as being self-transcendent, altruistic, eco-centric, pro-social, or biospheric, the more likely they are to be inclined towards environmentally sensitive behaviours (Steg and Vlek, 2009; De Groot and Steg, 2008).

Sub-theory 2 NEP (revised) (Dunlap *et al.*, 2000). The first New Environmental or Ecological Paradigm (NEP) measurement instrument was developed by Riley Dunlap and colleagues at Washington State University in 1978 (Dunlap and Van Liere, 1978). They were inspired by the environmental movement of the 1960s and 1970s in the USA, which started after the publication of *Silent Spring* by Rachel Carson. This original NEP had 12 items. Although the measurement was used by various scholars in different studies, it was extensively criticized because of several shortcomings



Source: Adapted from Stern (2000)

Figure 2.
Value-belief-norm (VBN) theory is also used to explain environmental behaviours

(e.g. lacking internal consistency among responses, poor correlation between the scale and behaviour). In 2000, the NEP scale was further developed by Dunlap and colleagues to respond to these criticisms and overcome the shortcomings. This updated measurement is sometimes referred to as the revised NEP scale.

There is wide use of NEP in studies that focus on the role of environmental concern. In general, when environmental concern is high, individuals are expected to act more pro-environmentally, although studies generally did not find a strong association between the two (e.g. Schultz and Zelezny, 1998; Poortinga *et al.*, 2004).

Theory 3: theory of affective and symbolic motives (e.g. Dittmar, 1992; Russell, 1980). Apart from other commonly applied theories, the literature also has a few studies that explicitly examine the role of affect and related theories and models in explaining environmental behaviour, mostly in the context of car use (Gatersleben, 2007; Steg, 2005). For example, Gatersleben's study showed that there is an association between car use and affective and symbolic factors. These studies that focus on the role of affective or symbolic motivations usually do not utilize relevant theories as the base concept. However, according to Steg (2005), Dittmar's (1992) material possession focused theory can be a good approach towards a more theoretical perspective in this line of research on environmental behaviour. The theory by Dittmar suggests that by using material goods and services, individuals can fulfill three essential functions: affective, instrumental, and symbolic. The study by Steg (2005) on car use and its possible predicting factors in terms of affective motives showed that this specific behaviour is most strongly associated with symbolic and affective motives. Instrumental motives, on the other hand, were not as important.

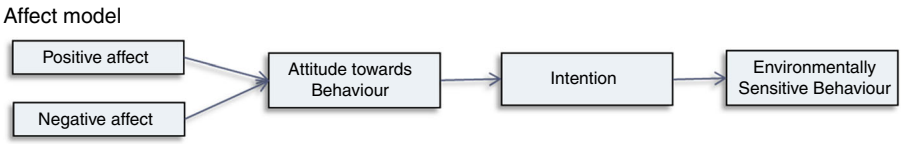
The circumplex model of affect developed by Russell (1980) has been increasingly used in consumer behaviour studies. According to Russell, affective responses may be categorized into two separate dimensions: pleasure and arousal. The approach by Russell is also promising for environmental behaviour studies.

According to Ajzen (2001), affect influences behavioural attitudes directly. Furthermore, as pointed out by Huijts *et al.* (2012) in their study on sustainable energy technology acceptance, it influences behavioural intention indirectly following the TPB. In their conceptual study, Huijts *et al.* (2012) also develop a model representing hedonic motives in this context. A simplified version of this model on affect is displayed in Figure 3.

Environmental behaviour research framework

Model development

In this section, we develop a conceptual integrative model based on the GFT as an overarching framework that covers the three important theories/models



Source: Adapted from Huijts *et al.* (2012)

Figure 3.
Affect model and theories are rarely used to explain environmental behaviours

underneath it. As mentioned earlier, the GFT looks at the influence of multiple motives and interactions between them. The theory suggests that goals outline or "frame" how individuals want to process information and how they act accordingly. According to Lindenberg and Steg (2007), three general goal-frames can be distinguished: first, gain goal-frame "advancing or protecting individual resources"; second, normative goal-frame "behaving properly"; and third, hedonic goal-frame "feeling better".

Following these three categorizations of goals, three main theories of focus have been identified:

(1) TPB: this theory represents the gain goal-frame. In the TPB, three factors determine behavioural intentions: attitudes towards the behaviour, subjective norms, and PBC.

(2) VBN theory: this theory represents the normative goal-frame. It combines the perspectives of value theory, norm-activation theory, and the NEP using a causal series of connected variables that lead to relevant behaviour. These variables are personal values (biospheric, altruistic, and egoistic), ecological worldview (usually measured with NEP), awareness of undesirable consequences (AC), ascription of responsibility to self, and PN for acting pro-environmentally.

(3) Affect theory: this theory represents the hedonic goal-frame. For the purpose of this study, the affect model developed by Russell (1980) has been used. As mentioned, according to this model, affective responses can be categorized into two separate dimensions: pleasure and arousal (Steg, 2005). Because the arousal dimension could capture an irrelevant concept in the context of environmental behaviour, only the pleasure dimension can be used to identify affect variable.

Linking the various goal-frames to these theories begins the process of integrating the various theories. These three theories help us to develop a model that can be used for future studies. The developed model based on the GFT is displayed in Figure 4.

Environmental behaviour categorization

Environmentally sensitive behaviour or pro-environmental behaviour is defined as "behaviour that harms the environment as little as possible, or even benefits the environment" (Steg and Vlek, 2009, p. 309). In the environmental psychology literature, common adopted measures of environmentally sensitive behaviour are usually based on a list of environmentally sensitive behaviours developed by the researcher (Gatersleben *et al.*, 2002). Alternatively, some studies in the literature focus on only one type of behaviour, for example, recycling behaviour as seen in studies from Tonglet *et al.* (2004) and Best and Mayerl (2013), household energy use as seen in a study by Abrahamse and Steg (2011), or travelling behaviour as seen in studies from Steg *et al.* (2001) and Van Lange *et al.* (1998).

In contrast, other scholars have developed various scales that combine various types of eco-sensitive behaviours (see Gatersleben *et al.*, 2002). As pointed out by Stern *et al.* (1997) and Gatersleben *et al.* (2002), many studies focus on a relatively limited set of behaviours in terms of their environmental impacts. Their limited scopes and associated results are mainly caused by considering only certain stages of the

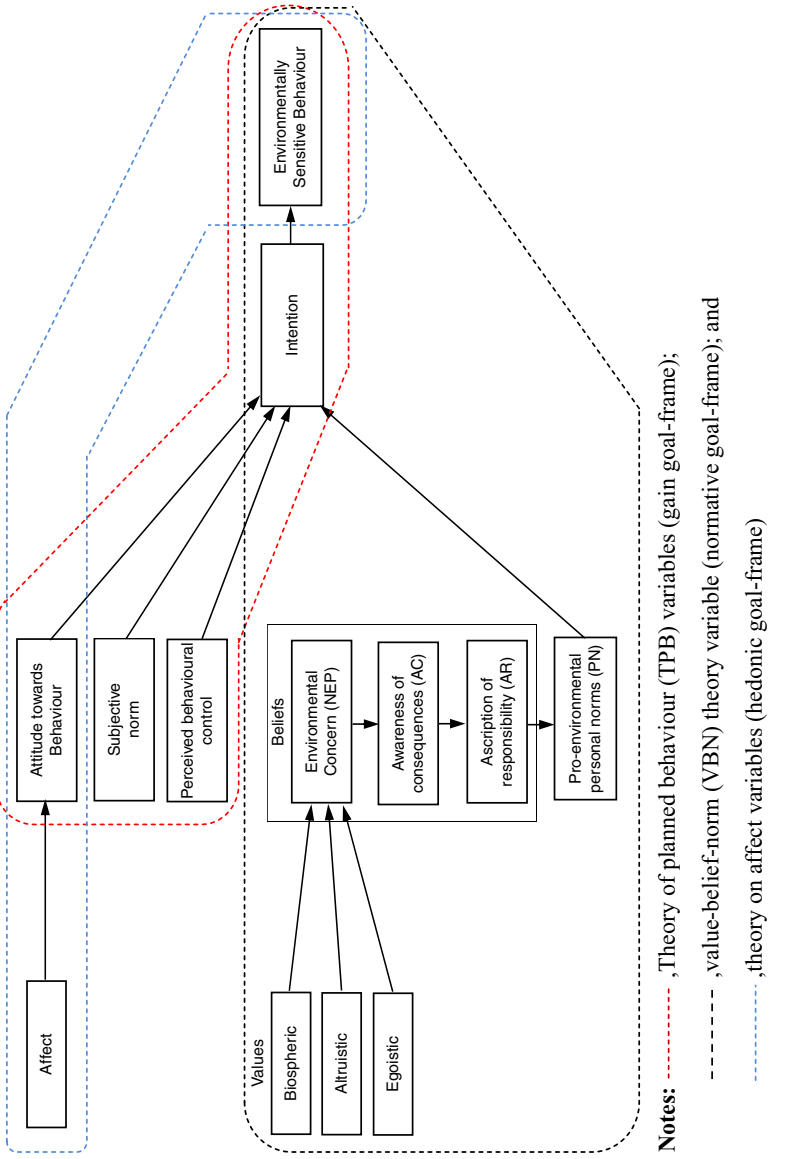


Figure 4.
Proposed combined model showing the influence of gain goal-frames, normative goal-frames, and hedonic goal-frames on environmentally sensitive behaviour

consumer behaviour processes. Thus, it is crucial to focus on a wide variety of consumer behaviours at different stages of consumer behaviour processes and to look at how they eventually impact our surroundings and significantly contribute to environmental problems.

Building upon this notion, it is important to categorize and define different types of environmentally sensitive behaviours in order to examine and understand the underlying causes and/or barriers of these actions separately and thoroughly. This approach is also needed for the purpose of practicality and manageability of the studies. Taking a unique approach, we utilize sustainability marketing literature to define and categorize consumer green behaviours, namely environmentally sensitive behaviours.

In fundamental terms, green consumer behaviour is the behaviour of an individual who considers environmental or social issues while making consumption decisions – acquiring, purchasing, using, disposing, etc. (Peattie, 2010). Therefore, green consumer behaviour deals with consumers' attitudes about green products and services, as well as their decision-making processes considering environmental impacts with regard to purchase, usage, and post-use behaviours, such as disposal, recycling, or reuse.

In their book *Sustainability Marketing: A Global Perspective*, Belz and Peattie (2009) mention that consumer behaviour is a key to societal impact on the environment. The consumption process of consumers covers six stages: recognition of need and want, information search, evaluation of alternatives, purchase, use, and post-use (see Figure 5) (Belz and Peattie, 2009). Conventional marketing emphasizes only the purchase stage and it often leads people to overlook the negative impact of consumption activities. In comparison, negative social and environmental consequences are evaluated at each stage of the consumption process in sustainability marketing. Understanding the entire consumption process is essential in that sense. For the purpose of this study, three stages of consumer behaviour process are considered: purchase, usage, and post-use. These three stages are shown in the darker colour on the right side of the graph in Figure 5.

The purchase stage comes after evaluation of alternatives and reflects a purchasing of goods and services that have minimal environmental impacts relative to similar competing products that also serve the same purpose. The use stage, shown as the second dark blue arrow in the figure, is the most ecologically disruptive due to the consumption of energy and water (e.g. automobiles and washing machines). The use phase generates more ecological impacts than all the other stages. The post-use stage, on the other hand, reflects the disposal of the product, recycling or remanufacturing, selling, trading, renting or loaning, placing into storage, or altering use in another way (Belz and Peattie, 2009). This also has an impact on the environment due to the fast pace at which the world is accumulating wastes and the consequent distressing impacts.

Source: Adapted from Belz and Peattie (2009)

Figure 5.
Total consumption process

Based on the aforementioned categorization of consumer behaviour, future environmental studies can focus on understanding these three types of consumer behaviours; environmentally sensitive purchase, usage, and post-use.

Conclusion

Integrative perspective is an important approach to understanding the environmental behaviours of consumers. Here, we developed a research model using the framework of the GFT. We propose that 12 variables influence pro-environmental behaviours of consumers: biospheric, egoistic and altruistic values, environmental concern, awareness of consequences, ascription of responsibility, subjective norms, attitudes towards behaviour, PBC, PN, affect, and behavioural intention. Also, with an interdisciplinary approach, we categorize behavioural outcomes as purchase, usage, and post-use considering three different stages of the consumption process of consumers. The proposed model will be helpful for future studies that aim to holistically analyse those factors that predict the environmentally sensitive behaviours of consumers.

References

Abrahamse, W. and Steg, L. (2011), "Factors related to household energy use and intention to reduce it: the role of psychological and socio-demographic variables", *Human Ecology Review*, Vol. 18 No. 1, pp. 30-40.

Ajzen, I. (1991), "The theory of planned behaviour", *Organizational Behaviour and Human Decision Processes*, Vol. 50 No. 2, pp. 179-211.

Ajzen, I. (2001), "Nature and operation of attitudes", *Annual Review of Psychology*, Vol. 52 No. 1, pp. 27-58.

Ajzen, I. and Fishbein, M. (1980), *Understanding Attitudes and Predicting Social Behaviour*, Prentice Hall, Englewood Cliffs, NJ.

Bamberg, S. and Schmidt, P. (2003), "Incentives, morality, or habit. Predicting students' car use for university routes with the models of Ajzen, Schwartz, and Triandis", *Environment and Behaviour*, Vol. 35 No. 2, pp. 264-285.

Barr, S. (2007), "Factors influencing environmental attitudes and behaviors", *Environment and Behavior*, Vol. 39 No. 4, pp. 435-473.

Belz, F.M. and Peattie, K. (2009), *Sustainability Marketing: A Global Perspective*, John Wiley and Sons Ltd, Chichester.

Best, H. and Mayerl, J. (2013), "Values, beliefs, attitudes: an empirical study on the structure of environmental concern and recycling participation", *Social Science Quarterly*, Vol. 94 No. 3, pp. 691-714.

Birgelen, M.V., Semeijn, J. and Keicher, M. (2009), "Packaging and pro-environmental consumption behavior: investigating purchase and disposal decisions for beverages", *Environment and Behavior*, Vol. 41 No. 1, pp. 125-146.

Cialdini, R.B., Kallgren, C.A. and Reno, R.R. (1991), "A focus theory of normative conduct: a theoretical refinement and reevaluation of the role of norms in human behaviour", *Advances in Experimental Social Psychology*, Vol. 24 No. 20, pp. 1-243.

Clayton, S. and Brook, A.T. (2005), "Can psychology help save the world? A model for conservation psychology", *Analyses of Social Issues and Public Policy*, Vol. 5 No. 1, pp. 87-102.

De Groot, J.I. and Steg, L. (2007), "Value orientations and environmental beliefs in five countries validity of an instrument to measure egoistic, altruistic and biospheric value orientations", *Journal of Cross-Cultural Psychology*, Vol. 38 No. 3, pp. 318-332.

De Groot, J.I. and Steg, L. (2008), "Value orientations to explain beliefs related to environmental significant behaviour how to measure egoistic, altruistic, and biospheric value orientations", *Environment and Behaviour*, Vol. 40 No. 3, pp. 330-354.

Dittmar, H. (1992), *The Social Psychology of Material Possessions: To Have is To Be*, Harvester Wheatsheaf/St Martin's Press, Hemel Hempstead/New York, NY.

Dunlap, R., Van Liere, K., Mertig, A. and Jones, R.E. (2000), "Measuring endorsement of the new ecological paradigm: a revised nep scale", *Journal of Social Issues*, Vol. 56 No. 3, pp. 425-442.

Dunlap, R.E. and Van Liere, K.D. (1978), *Environmental Concern: A Bibliography of Empirical Studies and Brief Appraisal of the Literature*, Vance Bibliographies, Monticello, IL.

Elgaaied, L. (2012), "Exploring the role of anticipated guilt on pro-environmental behavior – a suggested typology of residents in France based on their recycling patterns", *Journal of Consumer Marketing*, Vol. 29 No. 5, pp. 369-377.

European Commission (2012), "Science for environment policy, future brief: green behavior", available at: http://ec.europa.eu/environment/integration/research/newsalert/pdf/FB4.pdf (accessed 28 January 2015).

Fishbein, M. and Ajzen, I. (1975), *Belief, Attitude, Intention and Behaviour: An Introduction to Theory and Research*, Addison-Wesley, Reading, MA.

Gatersleben, B. (2007), "Affective and symbolic aspects of car use", in Garling, T. and Steg, L. (Eds), *Threats to the Quality of Urban Life from Car Traffic: Problems, Causes, and Solutions*, Elsevier, Amsterdam, pp. 219-233.

Gatersleben, B., Steg, L. and Vlek, C. (2002), "Measurement and determinants of environmentally significant consumer behaviour", *Environment and Behaviour*, Vol. 34 No. 3, pp. 335-362.

Gifford, R. (2007), *Environmental Psychology: Principles and Practice*, Optimal Books, Colville, WA.

Heath, Y. and Gifford, R. (2002), "Extending the theory of planned behaviour: predicting the use of public transportation", *Journal of Applied Social Psychology*, Vol. 32 No. 10, pp. 2154-2185.

Hines, J.M., Hungerford, H.R. and Tomera, A.N. (1987), "Analysis and synthesis of research on responsible pro-environmental behavior: a meta-analysis", *The Journal of Environmental Education*, Vol. 18 No. 2, pp. 1-8.

Huijts, N.M.A., Molin, E.J.E. and Steg, L. (2012), "Psychological factors influencing sustainable energy technology acceptance: a review-based comprehensive framework", *Renewable and Sustainable Energy Reviews*, Vol. 16 No. 1, pp. 525-531.

Jackson, T. (2005), *Motivating Sustainable Consumption: A Review of Evidence on Consumer Behavior and Behavioral Change*, Sustainable Development Research Network, Centre for Environmental Strategy, London, available at: www.sd-research.org.uk/wp-content/uploads/motivatingscfinal_000.pdf

Kaiser, F.G. and Gutscher, H. (2003), "The proposition of a general version of the theory of planned behaviour: predicting ecological behaviour", *Journal of Applied Social Psychology*, Vol. 33 No. 3, pp. 586-603.

Kilbourne, W. and Pickett, G. (2008), "How materialism affects environmental beliefs, concern, and environmentally responsible behavior", *Journal of Business Research*, Vol. 61 No. 9, pp. 885-893.

Kollmuss, A. and Agyeman, J. (2002), "Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior?", *Environmental Education Research*, Vol. 8 No. 3, pp. 239-260.

Lindenberg, S. (2001a), "'Social rationality versus rational egoism'", in Turner, J. (Ed.), *Handbook of Sociological Theory*, Kluwer Academic/Plenum, New York, NY, pp. 635-668.

Lindenberg, S. (2001b), "Intrinsic motivation in a new light", *Kyklos*, Vol. 54 Nos 2/3, pp. 317-342.

Lindenberg, S. (2006), "Prosocial behaviour, solidarity and goal-framing processes", in Fetchenhauer, D., Flache, A., Buunk, P. and Lindenberg, S. (Eds), *Solidarity and Prosocial Behaviour: An Integration of Sociological and Psychological Perspectives*, Springer, New York, NY, pp. 23-44.

Lindenberg, S. and Steg, L. (2007), "Normative, gain and hedonic goal frames guiding environmental behaviour", *Journal of Social Issues*, Vol. 63 No. 1, pp. 117-137.

Mannetti, L., Pierro, A. and Livi, A. (2004), "Recycling: planned and self-expressive behaviour", *Journal of Environmental Psychology*, Vol. 24 No. 2, pp. 227-236.

Nordlund, A.M. and Garvill, J. (2002), "Value structures behind pro-environmental behaviour", *Environment and Behaviour*, Vol. 34 No. 6, pp. 740-756.

Park, J. and Ha, S. (2012), "Understanding pro-environmental behavior: a comparison of sustainable consumers and apathetic consumers", *International Journal of Retail & Distribution Management*, Vol. 40 No. 5, pp. 388-403.

Peattie, K. (2010), "Green consumption: behaviour and norms", *Review of Environment and Resources*, Vol. 35 No. 1, pp. 195-228.

Poortinga, W., Steg, L. and Vlek, C. (2004), "Values, environmental concern, and environmental behaviour: a study into household energy use", *Environment and Behaviour*, Vol. 36 No. 1, pp. 70-93.

Ramayah, T., Lee, J.W.C. and Lim, S. (2012), "Sustaining the environment through recycling: an empirical study", *Journal of Environmental Management*, Vol. 102, July, pp. 141-147, doi: 10.1016/j.jenvman.2012.02.025.

Russell, J.A. (1980), "A circumplex model of affect", *Journal of Personality and Social Psychology*, Vol. 39 No. 6, pp. 1161-1178.

Saunders, C.D., Brook, A.T. and Eugene Myers, O. (2006), "Using psychology to save biodiversity and human well-being", *Conservation Biology*, Vol. 20 No. 3, pp. 702-705.

Schultz, P.W. and Zelezny, L. (2003), "Reframing environmental messages to be congruent with American values", *Human Ecology Review*, Vol. 10 No. 2, pp. 126-136.

Schultz, P.W. and Zelezny, L.C. (1998), "Values and pro-environmental behaviour. a five-country study", *Journal of Cross-Cultural Psychology*, Vol. 29 No. 4, pp. 540-558.

Schultz, P.W. and Zelezny, L.C. (1999), "Values as predictors of environmental attitudes: evidence for consistency across 14 countries", *Journal of Environmental Psychology*, Vol. 19 No. 3, pp. 255-265.

Schwartz, S.H. (1977), "Normative influences on altruism", in Berkowitz, L. (Ed.), *Advances in Experimental Social Psychology*, Vol. 10, Academic Press, New York, NY, pp. 221-279.

Schwartz, S.H. (1992), "Universals in the content and structure of values: theoretical advances and empirical tests in 20 countries", *Advances in Experimental Social Psychology*, Vol. 25 No. 1, pp. 1-65.

Schwartz, S.H. (1994a), "Are there universal aspects in the structure and contents of human values?", *Journal of Social Issues*, Vol. 50 No. 4, pp. 19-45.

Schwartz, S.H. (1994b), Beyond individualism/collectivism: new cultural dimensions of values, in Kim, U., Triandis, H.C., Kagitcibasi, C., Choi, S.C. and Yoon, G. (Eds), *Individualism and Collectivism: Theory, Method, and Applications*, Sage, Newbury Park, CA, pp. 85-119.

Schwartz, S.H. and Howard, J.A. (1981), "A normative decision-making model of altruism", in Rushton, J.P. and Sorrentino, R.M. (Eds), *Altruism and Developmental Perspectives*, Hillsdale, NJ, pp. 189-211.

Shaw, P.J. (2008), "Nearest neighbour effects in kerbside household waste recycling", *Resources, Conservation and Recycling*, Vol. 52 No. 5, pp. 775-784.

Steg, L. (2005), "Car use: lust and must. Instrumental, symbolic and affective motives for car use", *Transportation Research Part A: Policy and Practice*, Vol. 39 No. 2, pp. 147-162.

Steg, L. and Vlek, C. (2009), "Encouraging pro-environmental behaviour: an integrative review and research agenda", *Journal of Environmental Psychology*, Vol. 29 No. 3, pp. 309-317.

Steg, L., Dreijerink, L. and Abrahamse, W. (2005), "Factors influencing the acceptability of energy policies: a test of VBN theory", *Journal of Environmental Psychology*, Vol. 25 No. 4, pp. 415-425.

Steg, L., Vlek, C. and Slotegraaf, G. (2001), "Instrumental-reasoned and symbolic-affective motives for using a motor car", *Psychology and Behaviour*, Vol. 4 No. 3, pp. 151-169.

Stern, P.C. (2000), "Toward a coherent theory of environmentally significant behaviour", *Journal of Social Issues*, Vol. 56 No. 3, pp. 407-424.

Stern, P.C., Dietz, T., Abel, T., Guagnano, G.A. and Kalof, L. (1999), "A value-belief-norm theory of support for social movements: the case of environmentalism", *Human Ecology Review*, Vol. 6 No. 2, pp. 81-97.

Stern, P.C., Dietz, T., Ruttan, V.W., Socolow, R.H. and Sweeney, J.L. (Eds), (1997), *Environmentally Significant Consumption*, National Academy Press for the National Research Council, Washington, DC.

Tonglet, M., Phillips, P.S. and Read, A.D. (2004), "Using the theory of planned behaviour to investigate the determinants of recycling behaviour: a case study from Brixworth, UK", *Resources Conservation and Recycling*, Vol. 41 No. 3, pp. 191-214.

Van Lange, P.A.M., Van Vugt, M., Meertens, R.M. and Ruiter, R.A.C. (1998), "A social dilemma analysis of commuting preferences: the roles of social value orientation and trust", *Journal of Applied Social Psychology*, Vol. 28 No. 9, pp. 796-820.

Vining, J. and Ebreo, A. (2002), "Emerging theoretical and methodological perspectives on conservation behaviour", in Bechtel, R.B. and Churchman, A. (Eds), *Handbook of Environmental Psychology*, Wiley, New York, NY, pp. 551-558.

Wilson, C. and Chatterton, T. (2011), "Multiple models to inform climate change policy: a pragmatic response to the 'beyond the ABC' debate", *Environment and Planning A*, Vol. 43 No. 12, pp. 2781-2787.

Young, W., Hwang, K., McDonald, S. and Oates, C.J. (2010), "Sustainable consumption: green consumer behavior when purchasing products", *Sustainable Development*, Vol. 18 No. 1, pp. 20-31.

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