

CONSUMERS' UNDERSTANDING AND USE OF TEXTILE ECO-LABELS DURING PRE-PURCHASE DECISION MAKING

Heleen Dreyer*, Eloise Botha, Daleen van der Merwe, Neoline le Roux & Susanna Ellis

OPSOMMING

Eko-etikette het 'n groot impak op die waarskynlikheid dat verbruikers omgewingsvriendelike produkte sal koop en dit is 'n hulpmiddel om beter ingeligte aankoopbesluite gedurende hulle besluitnemingsproses te neem. Die tekstielindustrie is verantwoordelik vir 'n groot hoeveelheid besoedeling, maar het begin om 'n meer holistiese, omgewingsvriendelike benadering te volg. Inligting rakende tekstiele se eko-vriendelike eienskappe word aan verbruikers gekommunikeer deur middel van eko-etikette. Deur aan te dring op eko-tekstielprodukte kan verbruikers die tekstielindustrie beïnvloed om meer produkte met eko-etikette in hul tekstielreeks in te sluit. Internasionale studies toon egter aan dat verbruikers nie tekstiel-eko-etikette of die inligting daarop verstaan nie. 'n Gebrek aan begrip verhoed hulle om omgewingsvriendelike produkte in die aankoopbesluitnemingsproses in te sluit. Daar is wel verbruikers in ontwikkelde en ontwikkelende lande wat eko-etiketprodukte aankoop en bereid is om meer daarvoor te betaal. Daar is egter beperkte navorsing op die gebied, veral in 'n Suid Afrikaanse konteks, wat dus meer navorsing in hierdie studieveld genoodsaak het. Daarom het hierdie studie dit ten doel gestel om verbruikers se begrip en gebruik van tekstiel-eko-etikette tydens die aankoop- verbruikerbesluitnemingsproses te verken.

Die navorsing is gedoen deur middel van 'n sneeubalsteekproefmetode (N=234), met 'n kwantitatiewe gestruktureerde aanlynvraelys vir data-insamelingsdoeleindes. Die data is ingesamel gedurende Junie/Julie 2012. Data-analise het beskrywende statistiek, verkennende faktorontleding en ontledings soos variansie-analise, T-toetse en tweerigtingtabelle ingesluit. Die bevindinge dui daarop dat respondente slegs tot 'n sekere mate omgewingsbewus was. Die meeste respondente het eko-tekstielprodukte objektief verstaan maar hulle het nie tekstiel-eko-etikette of inligting op die etikette rakende organiese katoenproduksieprosesse verstaan nie. Die respondente het aangedui dat hulle nie eko-

etikette tydens die besluitnemingsproses gebruik nie, alhoewel hulle tot 'n mate die behoefte aan eko-produkte erken het, omdat hulle bewus is van omgewingsimplikasies. Met betrekking tot die inligting op eko-etikette, het respondente gesoek na die inligting oor die kwaliteit van die eko-tekstielprodukt, gevolg deur die versorgingsinstruksies en die vertrouenswaardigheid van die eko-etiket. Laastens was daar 'n segment van die respondente wat eko-tekstielprodukte koop en gebruik en bereid is om 'n hoër prys vir hierdie produkte te betaal. Die hoër prys was die belangrikste faktor wat ander verhoed het om eko-tekstielprodukte te koop.

Verbruikers kan baat by opleiding met betrekking tot omgewingsvraagstukke en die impak wat hulle aankoopkeuses op die omgewing kan hê. Verder kan opleiding van verbruikers oor eko-tekstielprodukte hulle bewustheid en gebruik van hierdie produkte verhoog. Op sy beurt kan 'n bewustheid van eko-etikette verbruikers aanmoedig om hierdie tipe produkte in hulle aankoopbesluitnemingsproses in te sluit. Daarbenewens kan die industrie daarna streef om die prys van eko-etiketprodukte vergelykbaar te hou met dié van ander produkte se pryse, om dit makliker te maak vir verbruikers om keuses tussen die verkillende produkte te maak op grond van die omgewingsvriendelike eienskappe, en nie op grond van die prys nie. Die tekstielindustrie en vervaardigers kan ook daarna streef om tekstiel-eko-etikette aantrekliker en treffender te maak sodat verbruikers se aandag gefokus sal word op die etikette. Verder kan woorde en simbole saam op hierdie etikette gebruik word om verbruikers se begrip van eko-etikette te verhoog. As al hierdie elemente van 'n eko-etiket dieselfde boodskap oordra, kan dit daartoe lei dat verbruikers die boodskap, soos bedoel deur vervaardigers en die industrie, beter verstaan.

— *Ms H Dreyer**

African Unit for Transdisciplinary Health Research
North West University
Potchefstroom, South Africa

Tel: +27 (0)18 299 7108
Fax: +27 (0)18 299 2470
Email: heleen.dreyer@nwu.ac.za
*Corresponding author

— **Ms E Botha**

African Unit for Transdisciplinary Health
Research
North West University
Potchefstroom, South Africa
Tel: +27 (0)18 299 4422
Email: eloise.botha@nwu.ac.za

— **Prof D van der Merwe**

African Unit for Transdisciplinary Health
Research
North West University
Potchefstroom, South Africa
Tel: +27 (0)18 299 2476
E mail: daleen.vandermerwe@nwu.ac.za

— **Ms N le Roux**

African Unit for Transdisciplinary Health
Research
North West University
Potchefstroom, South Africa
Tel: +27 (0)18 299 2083
E mail: neoline.leroux@nwu.ac.za

— **Ms S Ellis**

Statistics Consultation Services
North West University
Potchefstroom, South Africa
Tel: +27 (0)18 299 2016
E mail: suria.ellis@nwu.ac.za

FUNDING

The authors would like to acknowledge the financial support provided by the North-West University as well as the National Research Foundation (NRF). Disclaimer: Any opinion, finding and conclusions or recommendations in this material are those of the authors and therefore the NRF does not accept any liability in regard thereto. NRF Grant number: 69117.

INTRODUCTION

Green consumption behaviour is an intricate, ethical phenomenon and a significant aspect of sustainable development (Young *et al.*, 2010). Environmentally friendly behaviour leads to positive consumer emotions and feelings as a

result of contributing towards environmental protection (Abdul-Muhmin, 2007). In addition, consumers' environmental concern influences their textile products decisions (Yan *et al.*, 2012).

A product label is important to convey product information to consumers and it influences first impressions about products (D'Souza *et al.*, 2006). Eco-labels, as an environmental label or seal of approval added to product labels or packaging, communicate environmentally-friendly attributes to assist consumers to make more informed purchase choices through improved knowledge and understanding (Bratt *et al.*, 2011). For the purpose of this study, an eco-label implies a symbol or seal of approval that is added to existing labels, such as packaging, hang tags or care labels.

Although many eco-labels pertaining to textile products are available internationally, in South Africa the concept is still relatively new. Only a few internationally awarded eco-labelled textile products are available in this country, such as maternity wear with the Oeotex eco-label. However, many self-declared environmentally friendly textile products are available in well-known chain stores, such as 100% organic cotton products, products made from bamboo fibres and recycled plastic polyethylene terephthalate (PET) bottle fibres used for inners of duvets and pillows.

By purchasing and demanding eco-labelled textile products, consumers could persuade the textile industry to introduce greener technology textiles (Momborg *et al.*, 2012). However, in order to make an informed purchase decision, consumers first need to be aware of and understand the intended meaning of eco-labels (Lee *et al.*, 2012). Thus, they need background knowledge about environmental challenges, or environmental consciousness, to purposefully consume greener products (D'Souza *et al.*, 2006). Knowledge and understanding are closely related, since prior knowledge of products is essential to understand information presented by products (Hoyer & MacInnis, 2010:92). It is valuable to distinguish between subjective knowledge (self-perceived knowledge or what consumers think they know), objective knowledge (consumers' actual knowledge) and prior experience with such products (Brucks, 1985; Raju *et al.*, 1995). These can translate into subjective understanding (what consumers think they understand), as opposed to objective understanding (what they actually understand)

(Hawker & Waite, 2007:993). Knowledge about environmental issues can therefore be the initiating point of understanding and using environmental labels (Thøgersen *et al.*, 2010). Furthermore, individual environmental consciousness is known to influence decision behaviour in favour of eco-labelled products (Shen *et al.*, 2012). The Target Group Index South Africa (TGI SA) (2009) concluded that South African consumers are becoming more conscious of environmental problems and supportive of green initiatives. The objectives of this study were to determine consumers' environmental consciousness, their subjective and objective understanding of textile eco-labels (from examples available in South Africa) and their use of textile eco-labels during the consumer pre-purchase decision-making process.

BACKGROUND AND CONCEPTUAL FRAMEWORK

A clear link exists between human behaviour and global warming, which is increasingly being blamed for weather-related disasters (Below *et al.*, 2011). The textile industry is also known for contributing to pollution (International Centre for Creativity Innovation Sustainability (ICCIS), 2011), which influences global warming and poses health and environmental risks (Scheer *et al.*, 2008). Since green issues have an effect at all stages of the textile production and supply process, the textile industry is increasingly considering a more eco-friendly approach (ICCIS, 2011). This information is communicated to consumers by means of eco-labels (Bratt *et al.*, 2011).

Eco-Labels

Eco-label information programmes have become critical to assure consumers that a product's environmental features are of a high standard (Belz & Peattie, 2010:29). Eco-label information programmes have three core objectives: to safeguard the environment, support environmentally sound innovation and leadership and enhance consumers' environmental consciousness (Global Eco-labelling Network (GEN), 2004). A trustworthy eco-label programme supplies an independent 'seal of approval' for textiles and clothing that meet high environmental standards, such as guaranteeing that chemicals with the worst environmental impact are removed from the

factory production process and that raw materials are grown ecologically (Dauvergne & Lister, 2010). Most available eco-label designs rely extensively on visual communication, which consists of symbols or graphics, short phrases or abbreviations about the product that are added to the usual label of the product (Tang *et al.*, 2004).

Classification of eco-labels Internationally, the classification of eco-labels is either mandatory or voluntary; and furthermore, certification can be done independently or not (GEN, 2013). Mandatory environmental labelling is implemented by an independent third party and approved by legislation – this is commonly the case for performance issues, such as water or energy consumption (Scheer *et al.*, 2008). Voluntary eco-labelling, however, is categorised by the International Standards Organisation (ISO) into three categories and can involve first and third party labelling (GEN, 2011).

ISO Type I labels are third-party independently certified labels for certified products and are awarded to governments or companies approved by international governments, such as the *EU Flower* and the *Forest Stewardship Committee* labels (GEN 2013). *ISO Type II* labels include third-party labels verified by self-declarations of economically reliant stakeholder companies, such as the *Better Cotton Initiative*, *Bluesign*, *Cotton made in Africa*, *German Ökotex* (which is also available in South Africa) (International Institute of Sustainable Development (IISD), 2013a) and the *Eco-Choice Africa (ECA)* label. The latter entails the initiative for manufactured products by the Heritage Environmental Management Company through GEN and the only initiative of its kind in Africa (ECA, 2010). *ISO Type II* labels mostly convey messages such as *degradable*, *environment-friendly*, *recycled*, *ozone-friendly* and *earth-friendly* (D'Souza *et al.*, 2006:163). *ISO Type III* voluntary programmes provide quantified ecological data of a product, within a set of parameters that are determined by an eligible third party, based on the assessment of products' lifecycles (IISD, 2013a).

Various products with environmental declarations such as *100% natural*, *eco-friendly* and *recyclable* (Grundey & Zaharia, 2008) do not provide environmental-attribute information and might be seen as attempts of 'greenwashing', which refers to manufacturers' false claims of environmental friendliness in order to promote their products (Pedersen &

Neergaard, 2006). Such claims may confuse consumers and make independent third party labelling schemes less reliable. This situation necessitates third-party, independent standards (GEN, 2011).

Eco-labels in South Africa Currently, South Africa does not have an own accredited eco-label (Hanks *et al.*, 2002). Therefore most eco-labelled products used in South Africa are internationally produced. Exceptions include the Eco-Choice Africa label (ECA, 2010) and the Eco Standard South Africa, but the latter only pertains to building materials and standards. The Ecolabelling Project, an initiative of the National Cleaner Production Centre South Africa (NCPCC-SA), which is a public entity dually endorsed by the South African Department of Trade and Industry (dti) and the United Nations Industrial Development Organisation (UNIDO), is in the process of developing eco-label standards for South Africa, including standards for textiles (United Nations Environment Program (UNEP), 2009). Although eco-labelled products are scarce in South Africa, eco-labels are more prevalent in the food industry. Consumers are also more aware of the eco-label for organic produce (Barrow, 2006:15). Examples of food products include Fair Trade and Organic Coffee and Marine Stewardship Council (MSC) for certified sustainable seafood.

Some green and sustainable textile products available in South Africa (of which examples were included in the questionnaire for this study) include organically grown cotton products, products from sustainable biodegradable fibres such as bamboo, and organic wool and textile products made from recycled PET bottle fibres (Woolworths Holdings Limited (WHL), 2011). Most of these products are 'green' initiatives of well-known retailers and manufacturers in South Africa. However, the Oeko Tex Standard 100 – which is an international standardised testing and certification system for textile fibres, unprocessed materials and end products at all production stages (*ISO Type II*) (Oeko-Tex, 2012) – is available on textile products in South Africa. A well-known retailer is in the process of adapting the Oeko Tex Standard 100 for their textile products (Council for Scientific and Industrial Research (CSIR), 2007) and of buying textile products from Viyellatex, who also complies with the OekoTex 100 standard (Viyellatex, 2012:9).

Organically produced cotton includes no harmful chemicals, requires less water, is safer for

people and animals and is a more environmentally friendly and feasible option (Kadolph, 2010:67). However, many products available in South Africa only contain a percentage of organic cotton in their fibre composition. Examples of organic cotton products in South Africa include towels, bedding and clothing (WHL, 2011).

Bamboo is an eco-friendly crop due to its sustainable properties: it seldom needs chemical pesticides or synthetic fertilisers, it has less water needs than cotton, it produces more oxygen than trees (Kyllo, 2010:9), re-growth occurs naturally and fast and it is biodegradable (Waite & Platts, 2009:362). Bamboo is often used in socks and towelling (WHL, 2011).

PET bottles are used for a variety of product packaging, including water, soft drinks, detergents and other household products (Plastics Federation of South Africa, 2011). Greenhouse gas emissions are reduced by almost 55% in the manufacturing of PET bottles, compared to glass, and the net energy consumption is also halved (Plastic Polyethylene Terephthalate Company (PETCO), 2011). A retail group in South Africa has innovatively utilised PET bottles by processing the recycled bottles into fibres and using them for duvet inners and pillows (WHL, 2010).

Textile product labelling in South Africa In general, textile labelling information consists of mandatory and voluntary information in English (Collier & Tortora 2001:503; Kadolph, 2010:514). South Africa has strict labelling requirements with regard to textile goods and complies with international standards (International Trade Centre, 2010). The regulation of the Merchandising Act 17 of 1941 states that all merchandise that falls under this Act must have a label that is clearly visible, easy to read and indicates the following mandatory information: the country of origin, whether imported textiles where used to manufacture the item, fibre content and care instructions, size and manufacturer (Collier & Tortora 2001:503; iFashion, 2010). These regulations also require textile merchandise to conform to South African National Standards (SANS), previously known as South African Bureau of Standards (SABS) (Office for Textiles and Apparels (OTEXA), 2011). These standards include SABS 011 - 1990, "Care labelling of textile & clothing" and SABS 0235 – 2003, Edition 1.5, "Fibre-content labelling of textiles & textile products" (SABS, 2012).

Voluntary label information include colour, price, the type of labour used, style number and brand name of the textile product (Glock & Kunz, 1995:545) as well as licensing, certification and warranty programmes (Kadolph, 2010:514). Eco-label certification can appear voluntarily on a textile label if the garment and textile fibre production complies with the specific eco-label standards (D'Souza *et al.*, 2006). As indicated above, eco-label certification is usually provided in the form of a symbol, or a symbol/logo combined with abbreviations and text. Although Kylo (2003) argues that symbols are globally recognisable and need no translation (in the case of care instructions on textile labels), Tang *et al.* (2004) are of the opinion that a combination of symbols and text is more universally understandable.

South Africa does not have specific legislation and regulation on eco-labelling (Van Zyl, 2004:12), but the National Environmental Management Act (NEMA) provides principles of co-operative, environmental governance (South Africa Government Info, 1998). This is done by setting principles for decision-making on matters that affect the surroundings, institutions that promote supportive authority and measures to synchronise environmental functions (South African Government Info, 1998). The *environment* is defined as the natural environment and the chemical, physical, aesthetic and cultural properties that affect individuals' health and well-being (Environmental Resource Management, 2012). The constitution also states that everyone has the right to the fortification of the environment in the course of reasonable legislative and other measures (South African Government Info, 2009:1251-1252). Hence, there is a constitutional mandate for the creation of legislative measures for eco-labelling (Van Zyl, 2004:12).

Accreditation, certification and the establishment of standards are some of the most important aspects of an eco-labelling scheme (Van Zyl, 2004:16) and in South Africa this responsibility falls directly within the scope of the South African standards, quality assurance, accreditation and metrology (SQAM) infrastructure (Hanks *et al.*, 2002). Subdivisions of SQAM are the SABS, also known as SANS, and South African National Accreditation Standards (SANAS). SANS already work with ISO 14000 series, which are also the standards that international eco-labelling programmes use (IISD, 2013a).

Understanding as an internal influence of decision making

The emergent interest in and demand for green products and eco-labels are becoming a reference for green consumers (Belz & Peattie, 2010:27). Although studies indicate that eco-labels are necessary and used, there is uncertainty as to whether this information influences consumers' buying behaviour and how well consumers understand it (D'Souza *et al.*, 2006). International studies indicated uncertainty about whether consumers' knowledge of environmental labels results in possible confusion (Thøgersen *et al.*, 2010; Mowbray Communications Ltd (MCL) Global, 2012). Insufficient clear information (such as fibre content, country of origin, trustworthiness of certification, manufacturing processes and symbols on labels) and difficulty to distinguish between various textile eco-labels can obstruct consumers' understanding of eco-label information and prevent them from buying sustainable textiles (MCL Global, 2012).

Previous research indicated that consumers in developed and developing countries are willing to pay higher prices for eco-labelled products and products from environmentally friendly and responsible companies (Cohn & Wolf *et al.*, 2010; Leire & Thidell, 2005) However, these tendencies have yet to be confirmed in other developing countries, such as South Africa, and for eco-labelled textile products. Eco-friendly textiles have not yet been accepted in the South African market, as such products are relatively unavailable and consumers lack knowledge about the products (Momborg *et al.*, 2012). Eco-labelled products, especially for textiles, are relatively new in South Africa. Furthermore, it is uncertain how well South African consumers understand eco-label information or to what extent they include these labels in their pre-purchase decision-making process concerning textile products.

Internal influences of consumer decision making are motivation, personality, perception, learning and attitude. Understanding as part of learning is thus an internal influence (Schiffman & Kanuk, 2010:483) that implies the way that consumers categorise their knowledge and extract higher-order meaning from these categories to know or grasp the intended meaning or cause (Hawker & Waite, 2007:993; Hoyer & MacInnis, 2010:109). Consumers *objectively* understand a message if they correctly interpret the message from the sender (Grunert & Willis, 2007). *Subjective*

understanding occurs when they misunderstand the intended message or have their own subjective interpretation of the information. This can be a result of the way the information is presented, the quantity of information (D'Souza, 2004) and/or the differences between the prior knowledge of respectively the sender and the receiver (Kardes *et al.*, 2011:124). Consumers' understanding of labels depends on their cognitive abilities to read and interpret this information, which result in actions taken (Cowburn & Stockley, 2005). In order to understand eco-labels, consumers should be aware of these labels, recognise the labels and have knowledge about the meaning of the labels (Thøgerson, 2000). Consumers should be aware that by buying eco-labelled products, they contribute towards a more sustainable environment. As previously explained,

knowledge (subjective knowledge, objective knowledge and previous experiences) and understanding (subjective and objective understanding) are closely related, since prior knowledge of products is essential to understand information presented by products (Hoyer & MacInnis, 2010:92; Rao & Monroe, 1988).

Use of textile eco-labels as an external influence of decision making

External influences, for the purpose of this study are knowledge about environmental degradation, labels as an information source (eco-labels) regarding the sustainability of the product, price, family, informal information sources, social class and social status, culture and sub-culture. Textile eco-label use is also an

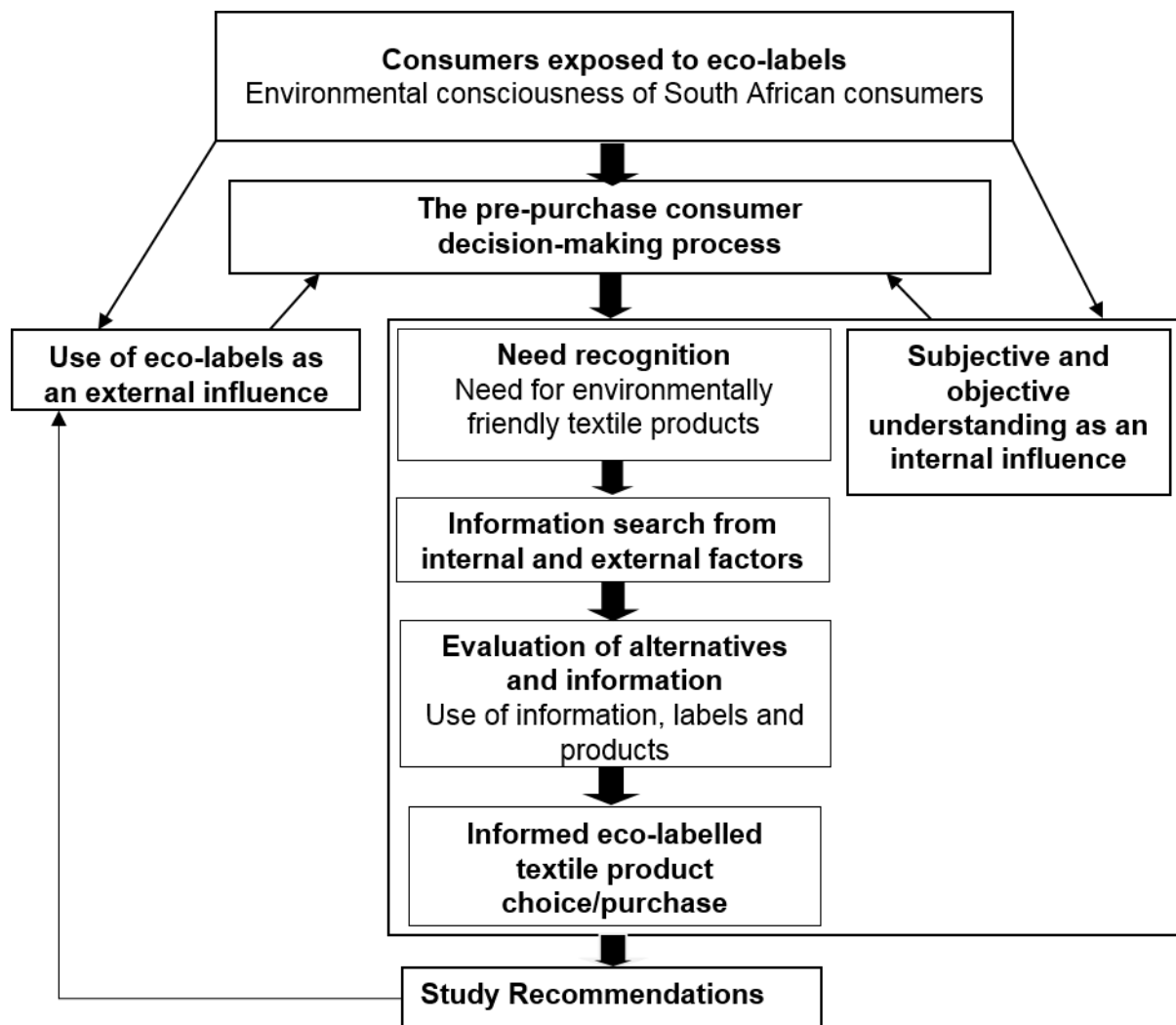


FIGURE 1: CONCEPTUAL FRAMEWORK OF CONSUMERS' UNDERSTANDING AND USE OF TEXTILE ECO-LABELS DURING PRE-PURCHASE DECISIONS (ADAPTED FROM JACOBS ET AL., 2010 AND SCHIFFMAN AND KANUK, 2010:483)

external influence in consumer decision making. Availability of eco-labels does not necessarily translate into eco-label use: it can only be assumed that the label was used when consumers had read the label and when the information on the label had influenced their actions (Leir & Thidell, 2005).

Conceptual framework

The conceptual framework for this study (Figure 1) is constructed from existing literature and adapted from frameworks of Jacobs *et al.* (2010) and Schiffman and Kanuk (2010:483). It is based on the consumer decision-making processes before making purchasing decisions. The framework illustrates consumers' subjective and objective understanding and the use of textile eco-labels in the decision-making process which is influenced by various internal and external factors.

METHODOLOGY

Research design and sampling

Due to limited research on eco-labels in South Africa, this descriptive study was explorative in nature (Kumar, 2005:10). The sample consisted of South African consumers, 18 years and older, residing in Pretoria, who are literate and had access to a computer with internet. Only those who considered buying or already had bought an environmentally friendly product were included since they had a point of reference to answer the questions. Sampling encompassed snowball sampling, where the selected respondents provided contact details of other potential respondents who met the inclusion criteria (Fox & Bayat, 2011:60). Snowball sampling is used when the population should meet certain very specific criteria (Maree & Pietersen, 2007:80), which in the present study involved exposure to textile eco-labels, which are still relatively scarce in South Africa. The researcher contacted individuals who possibly met the inclusion criteria, and asked them to participate in the study and to forward the questionnaire to acquaintances who were likely to meet the inclusion criteria. Although snowball sampling can yield a biased distribution of respondents (Snijders, 1992), this technique was successfully used in other studies on consumers' environmental friendliness (Abdul-Muhmin, 2007) and attitudes towards hang tags (Hyllegard *et al.*, 2012), and suited the

explorative nature of the study. Online administration of the questionnaire was suitable since it is usually the higher educated and higher income groups who are interested in green products (Dos Santos, 2012). They generally also have internet access.

Measurement instrument design and data collection

The questionnaire consisted of six sections (A to F) and a total of 33 questions with several sub-sections under each question. Section A served as a sifting tool to determine whether respondents met the inclusion criteria; Section B consisted of the demographic and general information; and Section C explored environmental consciousness. The four-point Likert-type scale items (Table 1) were derived from Do Paço *et al.* (2010), Dunlap *et al.* (2000) and Lin (2010); and collectively from Vlosky *et al.* (1999) and Goswami (2008), who also studied environmental consciousness.

Section D tested subjective understanding of eco-labels and included a five-point Likert-type scale (Table 1) which consisted of questions adapted from literature. The first part of section E included questions regarding respondents' objective understanding of eco-labels by including pictorial examples of eco-labels (organic cotton products versus conventional cotton; products made from bamboo fibres and from PET bottle fibres as well as the Oekotex eco-label). The questionnaire in Jacobs *et al.* (2010) was used as a guideline to compile questions regarding labels and consumers' understanding of these labels, and also included questions that respondents could answer correctly or incorrectly. Options given to respondents included "TRUE or FALSE" and "YES or NO". This corresponds with recommendations by Johnson and Russo (1984) that objective knowledge is best assessed using objective tests of an individual's extent of knowledge regarding a product or domain. The second part of section E tested the extent to which consumers agree with reasons for not understanding textile eco-labels. The four-point Likert-type scale was adapted from Lin (2010) and Thøgersen (2000), while some questions were also based on literature.

Section F explored the utilisation of eco-labels in the decision-making process. Questions were adapted from Van der Merwe and Campbell (2008) and some questions were also based on literature. Questions focused on the use of

textile labels; important information consumers search for on textile labels; and the different phases of the decision-making process (a question was included for each phase of the decision-making process). Respondents were also presented with a fictional choice between an eco-labelled and conventional product. One product had to be chosen based on the provided label information. Finally, respondents had to indicate to which extent specific criteria listed in the four-point Likert-type scale influenced their decision (Table 1).

Data (N=234) were collected by means of an electronic questionnaire designed with SurveyMonkey© (2013). The link to the questionnaire was sent to respondents via e-mail. Since several studies on green consumerism indicated that respondents provide socially desirable responses with interviewer-administrated questionnaires, an anonymous online questionnaire provided respondents the opportunity to provide more honest responses

(Tang *et al.*, 2004). This study satisfied all the required ethical aspects of conducting research with humans, and ethical approval was obtained from the applicable university (reference number: XXX-00024-09-A1).

Validity and reliability

Face and content validity was ensured by a panel of experts in the field of consumer research who inspected the questionnaire and analysed the contribution of each construct in the questionnaire. Exploratory factor analysis was done to determine external and construct validity (Field, 2013:628). Principal axis factoring was used for extraction of factors using the Direct Oblimin with Kaiser Normalisation as rotation method. All Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) values were higher than the minimum suggestion of 0.6. Using Kaiser’s criterion, only factors with eigenvalues higher than one were extracted and the percentage variance explained was ≥50%,

TABLE 1: SUMMARY OF SECTIONS IN QUESTIONNAIRE WITH APPLICABLE FACTORS, MEAN FACTOR SCORE (MFS), LIKERT SCALES (LS) USED IN EACH SECTION

Section in Questionnaire	Factors within sections	MFS	LS#	α
Section C: Environmental Consciousness	Environmental consciousness	3,3	1	,57
	Negative environmental consequences	3,6		,51
	Positive orientation towards green production processes Knowledgeable about green products	3,1 2,4		,80 ,70
Section D: Subjective understanding	Subjective understanding of textile eco-labels	3,4	2	,93
Section E: Objective understanding (OU) of textile eco-labels	OU of textile eco-labelled products	68,3%	3	,91
	OU of textile eco-labels	42,7%		
Section E: Reasons for not understanding textile eco-labels	OU of label information regarding organic cotton production	43,8%	1	,69
	Unavailability of eco-labels	3,4		
	Barriers in understanding	2,7		
Section F: Decision-making process	Label information use			
	Textile eco-label information use	2,2	4	,88
	Recognition of needs			
	Need recognition for green textile products	2,5	5	,83
	Information search process			
Important information sought on eco-labels	2,5	5	,84	
	Price ²	3,3		
Evaluation of alternatives (Fictional choice between a conventional and eco-labeled textile product)	Evaluation criteria for buying/not buying textile eco-products	3,1	1	,68
Purchase choice	Reasons for purchasing green products	3,1	2	,73
Reasons for not purchasing green products	Negative associations with eco-labels	3,1	2	,72
	Unavailability of eco-labels and information about eco-labels	3,6		

#Type of Likert scale used:

- 1: 1 = Not at all; 4 = to a great extent
- 2: 1 = Strongly disagree; 5 = Strongly agree
- 3: % correctly answered (“True” / “False”; “Yes” / “No”)
- 4: 1 = Never; 4 = Always
- 5: 1 = Not important at all; 4 = Very important

OU: Objective understanding

MFS: Mean Factor Score

² There was only one item in the extracted factor “Price” and therefore there is no Cronbach alpha for this factor

TABLE 2: SUMMARY OF EXPLORATORY FACTOR ANALYSIS OF OBJECTIVE UNDERSTANDING OF TEXTILE ECO-LABELS SCALE

Item	Factor loadings*		
	Objective understanding of textile eco-labelled products	Objective understanding of textile eco-labels	Objective understanding of label information regarding organic cotton production
T-shirt bearing label 2 contains conventional cotton	,91		
T-shirt bearing label 2 is made from organic cotton	,80		
T-shirt bearing label 1 contains conventional cotton	,75		
T-shirt bearing label 1 is made from conventional cotton only	,71		
Organic cotton is the same as conventional cotton	,64		
T-shirt bearing label 1 is made from blend of organic cotton and conventional cotton	,62		
Organic cotton has something to do with the environment	,60		
Recycled symbol communicates a product's environmentally friendly attributes	,39		
Satisfying specific requirements is necessary before a company can put an eco-label on their products	,38		
When this label appears on a textile product's label it indicates that the textile item does not contain harmful substances	,35	,31	
"100% cotton" indicates that the product is environmentally friendly	,33		
When this label appears on a textile product's label it indicates an eco-friendly textile		,82	
When this label appears on a textile product's label it indicates that textile item satisfies strict eco-friendly requirements		,81	
Is this an eco-label?		,65	
"Made from recycled materials" indicates that product is environmentally friendly		,42	,36
Organic cotton production uses no fertilisers			,63
Organic cotton production uses no pesticides			,61
"100% organic cotton" indicates that product is environmentally friendly			,50
Organic cotton production uses less water than conventional cotton			,43
Inter Item correlations	,47	,47	,35
Cronbach alpha coefficient	,91	,77	,69
Mean factor score	68,3%	42,7%	43,8%
Standard Deviation	±(0,34)	±(0,34)	±(0,34)

*Factor loadings from principal components analysis

which is adequate (Field, 2013:640). Therefore, construct validity was achieved.

Table 1 provides a summary of the sections in the questionnaire with applicable factors, the mean factor score of each factor, the Likert scale used in each section and the Cronbach alpha (α) of each factor. Only reliable factors were extracted from each section (Table 1). Several items not included in Table 1 were viewed individually. Items regarding brand (*important information consumers seek* – part of section F) did not present a loading in the factor

analysis, but were considered as an individual item because it identified valuable statistically significant differences between demographic groups.

A follow-up article will discuss the exploratory factor analysis with more detail regarding the eight extracted factors and item loadings in the factors. The objective understanding of textile eco-labels is given as an example in Table 2. The two items with cross-loadings represented important concepts in the study and it was decided not to remove them but assign them to

TABLE 3: DEMOGRAPHIC PROFILE OF THE STUDY POPULATION (N=234)

Variables	Frequency (n)	Percentage (%)
Gender		
Male	68	29,3
Female	164	70,7
Ethnicity		
White	212	91,8
Black	18	8,2
Age		
25 - 34	96	41,6
35 - 44	41	17,7
45 - 54	33	14,3
55 - 64	35	15,2
≥65	5	2,2
Tertiary education		
Grade 12 and less than grade 12	45	19,5
Tertiary education	186	80,5
Income		
R0 – R4 000	19	8,2
R4001 – R8000	27	11,7
R8001 – R20 000	82	35,5
R20 001 – R50 000	75	32,5
≥R50 001	15	6,5
Non-disclosure	9	3,9

the factor that made theoretically most sense and thus keep maximum information about the topic. Cohen considered correlations of 0.3 as moderately important and therefore loadings of larger than 0.3 were retained in the pattern mix (Field, 2013:57).

We included all extracted factors where the Cronbach alpha was above 0.50, which is acceptable when measuring psychological constructs (such as environmental consciousness and negative environmental consequences), thus indicating acceptable levels of internal consistency for all constructs (Kline, 1999:11). All the factors' mean inter-item correlations were between 0.15 and 0.55 except for *Subjective understanding of eco-labels on textile products* (0.66) and *Availability of eco-labels and information regarding eco-labels* (0.57), which both had slightly higher values. This can be a result of the few items in each identified factor and the great extent of similarity between items. Therefore, the internal reliability of all factors extracted was acceptable.

Statistical analysis

Data was analysed using IBM® SPSS® Version 21 in consultation with the Statistical Services of the relevant university. Descriptive statistics were determined and statistically significant

differences ($p \leq 0.05$) in means between variables of extracted factors in the study were tested using Tukey's tests and one-way analysis of variance (ANOVA). P-values were not reported, since Cohen's effect sizes (d -values) were used to determine whether differences between demographic variables and extracted factors were practically noteworthy (Cohen, 1977:20). Only differences/associations of medium ($d \geq 0.5$; $\phi \geq 0.3$) to large effect sizes ($d \geq 0.7$; $\phi \geq 0.4$) were considered and reported here, since these indicate useful significance (tendencies and practical importance respectively) for social sciences (Morgan *et al.*, 2007:92).

RESULTS AND DISCUSSION

Demographics

Respondents were mostly female (71%), white (92%), with a tertiary education (81%) and earning R8 001 – R50 000 per month (68%); where R15 equals approximately US \$1 (Table 3). A total of 72% indicated that they had switched products/brands for ecological reasons, which was more than the almost 50% of respondents in a USA study (Cotton Incorporated, 2010).

Almost half the respondents were from younger generations (18 – 34 years old; 51%) and only 2% were 65 years or older (Table 3). These findings are consistent with similar international research which concluded that eco-labelled products are usually consumed by consumers with a higher level of education and income (D'Souza *et al.*, 2007) and that young adults tend to be the most responsive age group (IISD, 2013b). Previous research in South Africa also confirmed that consumers who are interested in environmentally friendly products and are knowledgeable about environmental issues are in higher socio-economic groups, often have a tertiary education (TGI SA, 2009; Dos Santos, 2012) and tend to be from younger generations (Barrow, 2006). The demographic profile of respondents in this study is thus consistent with other findings regarding eco-labelled products, since the inclusion criteria required that respondents had to consider buying or had previously bought an environmentally friendly product. The snowball sampling method can possibly explain the uneven distribution of certain demographic characteristics of this sample, such as ethnicity and the fewer black respondents who met the inclusion criteria.

Respondents' environmental consciousness

The factor *environmental consciousness* indicated that respondents were environmental conscious to some extent (Table 1) and greatly concerned about negative environmental consequences. Yet, respondents considered themselves knowledgeable about green production processes to a small extent and were to some extent positively orientated towards green products. Similarly, another recent South African study indicated that although consumers are aware of and concerned about environmental issues, they are only knowledgeable to a limited extent in this regard (Dos Santos, 2012).

Respondents' subjective and objective understanding of textile eco-labels

Subjective understanding of textile eco-labels as a factor indicated that most respondents were unsure about their subjective understanding of textile eco-labels (Table 1). They agreed that they understood the individual item of symbols on textile labels (mean =3.5), though, which corresponds with previous findings by Van der Merwe *et al.* (2014) on textile labels in general. Respondents in our study were uncertain as to whether they understood textile eco-label

symbols specifically (mean =3.2 – individual item in factor) and the intended message of the manufacturer of the eco-labelled product (mean =3.3 – individual item in factor). Thus, respondents were more certain about their understanding of *textile labels* in general than *textile eco-labels*.

According to the mean factor scores, respondents' objective understanding (% correct) of the factor *eco-textile products* (Table 1) was adequate. However, their objective understanding of the factors *textile eco-labels* and *label information regarding organic cotton production* proved to be inadequate. This may indicate that consumers experience difficulty to determine whether products like clothes (or organic textile products in this case) are eco-friendly when these products go through elaborate production processes (Cervellon & Carey, 2011).

There were no important associations between the factors describing respondents' subjective and objective understanding of textile eco-labels ($\phi < 0.4$). Respondents' own judgment of their understanding of textile eco-labels were therefore not a good indication of their actual understanding of these labels, although both their subjective and objective understanding of eco-labels proved to be inadequate in the present study.

The factors (Table 1) revealed two main reasons why respondents did not understand textile eco-labels. Firstly, most respondents agreed to a great extent that eco-labels are unavailable: their lack of exposure to it meant that they could not understand it. The factor *barriers in understanding* indicated that respondents experienced certain barriers in understanding textile eco-labels. The individual items in this factor identify the most important barriers as contradictory label information (mean =3.0); not understanding the symbols on these labels (mean =2.9) and insufficient environmental knowledge to understand the information (means = 2.9). Momberg *et al.* (2012) confirmed that the lack of knowledge and the unavailability of such products prevent South African consumers from adopting eco-friendly textile products. These factors show that respondents did not subjectively understand symbols on textile eco-labels, as reflected by their poor objective understanding of symbols. International studies indicated that because of inadequate clear information and the difficulty to distinguish between various eco-labelled

textiles, consumers struggle to understand labels, with the result that they do not buy sustainable textiles (MCL Global, 2012).

The pre-purchase decision-making process

Label information use The factor *textile eco-label information use* showed that on average, respondents rarely used textile eco-labels and the information on these labels during their pre-purchase decision-making process (Table 1). This is in accordance with the finding that consumers “seldom read clothing labels” in Sonnenberg *et al.* (2014); but more negative than the finding (for textile labels in general) that they “sometimes/always read textile labels” in Van der Merwe *et al.* (2014). However, consumers in developed countries are mostly aware of and use eco-labels in purchasing decisions (D’Souza *et al.*, 2007). This contrast might be explained by the novelty of textile eco-labels in South Africa and by this country’s status as a developing country, where consumers display different purchasing choices than in developed countries.

Recognition of needs *Need recognition for green textile products* as a factor revealed that respondents to some extent recognised the need to buy eco-friendly textile products (Table 1). Respondents agreed to some extent with individual items in this factor, indicating that their awareness of environmental issues (mean =3.1), contribution towards and support of green initiatives (mean =2.8) and changing lifestyles through greener purchasing decisions (mean =2.7) were their most important needs when buying textile eco-labelled products. They agreed to a great extent that by purchasing eco-labelled products, they were contributing towards environmental conservation (mean =3.6). Hence, the environment was their most important consideration and their purchases serve as a lifestyle-based expression of respondents’ identity (Haanpää, 2007) and eco-centric behaviour. This conflicts with findings by Cervellon and Carey (2011) that lifestyle or social image is ego-centrally based on the trendiness of ‘green’ behaviour to drive eco-label support.

Information search process According to the mean factor scores of the factor *important information sought on eco-labels*, all the label information was important to respondents during their information search (Table 1), as well as price. Consequently the individual items in this factor indicated that the quality of the green

textile product was important (mean =3.0), followed by the care instructions (mean =2.9), the credibility of the eco-logo (mean =2.8), the general information on the label regarding the green attributes of the product (mean =2.6) as well as the textile composition (mean =2.6). These findings are consistent with similar South African findings which indicated that apart from price, care instructions and quality are the most important factors when textile eco-labelled products are bought (Momberg *et al.*, 2012). Indian consumers also regarded eco-label credibility as important (Goswami, 2008). Respondents in our study indicated that they only considered *brand* (individual item) to be somewhat important (mean =2.3) in seeking textile eco-label information.

Evaluation of alternatives The use of textile eco-labels during respondents’ evaluation of product alternatives entailed a selection between an eco-labelled and a conventional textile product, where respondents had to indicate to what extent the given criteria influenced their evaluation of the two products. Although respondents in our study indicated that they were environmentally conscious only to some extent and had a limited objective understanding of eco-textile labels, 59% chose the eco-labelled textile product above the conventional textile product (42%). This can possibly be explained by their adequate objective understanding of eco-textile products (68%) and not the eco-label as such.

Purchase choice (Fictional choice between a conventional and eco-labelled textile product) Most respondents (64%) had previously bought an eco-labelled textile product, with 99% intending to purchase such products again. These respondents have probably adopted the use of eco-products and will consider the product label when choosing products (Thøgersen *et al.*, 2010). The mean factor score (Table 1), however, shows that respondents were uncertain about the *reasons for purchasing green products*. The major individual reason for their product choice was the product quality (mean =3.6). Respondents were uncertain if negative associations with eco-labels (reasons for not purchasing green products) prevented them from buying the eco-labelled product, but they agreed that unavailability of eco-labels prevented them from buying eco-labelled products.

Noteworthy differences were evident between respondents’ choice between the products and

the criteria they considered important in their evaluation of alternatives. Respondents who to a great extent chose the conventional product, indicated the lower price as an influential factor (mean =3.5; $d =1.12$), while those who chose the eco-labelled product were only to some extent influenced by price (mean =2.5). This confirms that the premium price of eco-labelled products prevents price-sensitive respondents from purchasing such products (Romero & Braun, 2013). Consequently, it can be concluded that at least 42% of respondents in the current study were not willing to pay a higher price for eco-labelled products, whereas Cohn and Wolf *et al.* (2010) indicated that more than 70% of consumers from developing countries are willing to pay a premium price.

Respondents who chose the eco-labelled product considered all other criteria as more influential than those who chose the conventional product. Thus, respondents mostly agreed to a greater extent (means =3.2-3.5) that the quality associated with the eco-logo on the product ($d =0.99$), the environmentally friendliness of the product ($d =1.15$) and the credibility of the eco-logo ($d =0.98$) were reasons for their choice of eco-labelled products; as opposed to those who agreed to some extent (means =2.4-2.5) with the reasons for choosing the conventional product. For respondents who chose the eco-labelled product, the green attributes of the product evidently outweighed the price. Respondents used the compensatory decision rule by choosing the most favourable environmentally friendly alternative after evaluating all the different options. These respondents also used a quality-conscious decision-making style in seeking quality during the decision-making process (Potgieter *et al.*, 2013).

Differences between demographic groups regarding extracted factors

Tukey's multiple comparison tests yielded practical significant differences indicating that younger respondents (18-24 years) were environmentally conscious to some extent (mean =3.2; $d =0.76$), whereas respondents in the age group 45 - 54 years were so to a great extent (mean =3.5). These differences are consistent with findings by Do Paço *et al.* (2010) and D'Souza *et al.* (2007) that older consumers are more environmentally conscious and critical towards the content of environmental labels. ANOVA also indicated a noteworthy difference ($d =0.7$) between age groups, in that price was

very important to the middle age group (35 - 44 years; mean =3.5) during the information search, and only somewhat important to the younger group (18 - 24 years; mean =3.0). Younger consumers might be more impulsive and fashion-conscious than older consumers when buying new products (Potgieter *et al.*, 2013) regardless of price; while the middle age group might have younger children in the household, which requires disciplined budgeting.

The lowest income group of R0 - R4 000 (64.0% correct) had a noteworthy better objective understanding of textile eco-labels than the higher income groups of R20 001 - R50 000 (35% correct; $d =0.82$) and the R50 001 income group, (39% correct; $d =0.72$). However, all income groups used eco-labels and information significantly more often (R4 001 - R8 000 (mean =2.2; $d =0.76$), R8 001 - R20 000 (mean =2.3; $d =0.78$), R20 001 - R50 000 (mean =2.2; $d =0.7$) than the lowest income group R0 - R4000 (mean =1.7). A tendency for more frequent use was evident for the highest income group of > R50 001 (mean =2.1; $d =0.59$), although all groups used label information to a lesser extent. The higher income group of >R50 001 (mean =3.0; $d =0.78$) were significantly more uncertain about their reasons for purchasing eco-labelled products than the lower income group of R4 001 - R8 000 (mean =3.4), who agreed to some extent with the suggested reasons. The better objective textile eco-label understanding of the lower income group could possibly be attributed to students with low income included in the sample. This could explain their adequate understanding in this regard, although their lower income may hinder them from using the information usually found on more expensive products. This finding contradicts most eco-label research internationally (D'Souza *et al.*, 2007; Cleveland *et al.*, 2011) and in South Africa (TGI SA, 2009; Dos Santos, 2012), which found that low-income respondents had inadequate knowledge of green products. It is often assumed that income has a positive relationship with education, which presumably influences knowledge (Momborg *et al.*, 2012).

Several notable differences were evident between white and black respondents regarding the different factors and items. White respondents were significantly more environmentally conscious of green production processes (mean =2.5 $d =0.77$; to some extent) than black respondents (mean =1.9; to a small extent). Furthermore, white respondents agreed to a great extent that the earth has limited

natural resources (mean =3.9), while black respondents agreed with this only to some extent (mean =3.0; $d =1.02$). Previously disadvantaged South Africans might be negatively orientated towards environmental policies due to a lack of knowledge regarding environmental issues (Latif *et al.*, 2011). This can interfere with the understanding and use of eco-labelled programmes and products, which complicates the inclusion of eco-labelled products during decision-making (Momberg *et al.*, 2012). In addition, black respondents indicated significantly more that they were not paying too much for green products (mean =2.3; $d =0.92$), whereas white respondents were uncertain (mean =3.0). This relates to value-consciousness tested by Potgieter *et al.* (2013), who also found black consumers to be less value-conscious than white consumers. Thus, the differences between respondents with regard to *paying too much for eco-labelled products* may be explained by cultural differences.

Black respondents indicated brand to be considerably more important when seeking green products (mean =3.1), whereas white respondents (mean =2.3; $d =0.78$) indicated brand to be only somewhat important, confirming that black respondents were significantly more brand-conscious (Potgieter *et al.*, 2013). Respondents often use extrinsic product attributes, such as brand, as a symbol of specific intrinsic attributes they seek (Park & Stoel, 2005) – some consumers, then, use extrinsic characteristic of textile products, such as brand, to judge the quality or the environmental friendliness of the products (De Klerk & Lubbe, 2004; Yan *et al.*, 2012). This might explain why black respondents in this study used brand as an extrinsic attribute to allocate intrinsic attributes of a green product, whereas white respondents used their adequate level of understanding concerning green production processes to distinguish between conventional and green products. It is, however, important to note that this study did not reflect the broader South African population, since only 18 black respondents participated. In reality, the majority of South African consumers are black (Statistics South Africa (Stats SA), 2013). The results nevertheless highlighted important tendencies that should be considered in practice and future research.

CONCLUSION AND RECOMMENDATIONS

This study contributes towards existing literature regarding consumers' understanding and use of textile eco-labels in the pre-purchase decision-making process. Respondents were environmentally conscious only to some extent and not sufficiently knowledgeable about green production processes, although they were concerned about the environmental consequences such as pollution and global warming.

Respondents had an adequate understanding of textile eco-products, but were uncertain about their understanding of textile eco-labels, as confirmed by their poor understanding of textile eco-label information. This lack of understanding, together with barriers such as unavailable or insufficient environmental information, contributes to respondents rarely considering textile eco-labels in the decision-making process. Yet, on average respondents to some extent recognised the need to purchase these products and they agreed that eco-label information was important to them. When evaluating alternative textile products, most respondents selected the eco-labelled option, are willing to pay a higher price for such products; and they indicated quality, environmental friendliness and credibility of eco-labels as major reasons for doing so. Some respondents, however, had not previously bought an eco-labelled product and were not interested in doing so in the future either, due to the expensiveness of eco-labelled products.

It may be concluded that on average, respondents displayed environmental concerns and saw eco-textile products as a way to support the environment, but there was an evident lack of a true understanding of green production processes and eco-labels. This lack of understanding and the identified barriers limited the application of such labels during decision making.

Younger respondents were less environmentally conscious than older respondents and were also less concerned about the price of textile eco-products. Should these consumers be assisted to become more environmentally conscious they might use textile eco-product to a greater extent, despite the price premium. Respondents with a higher income used textile eco-labels to a greater extent than those with a lower income, but were also more uncertain about their

reasons for using it. These respondents need to be informed about the true benefits of supporting textile eco-products, in order to support eco-labels to a greater extent. While white respondents were more environmentally conscious than black respondents, the latter group was more brand-conscious and willing to pay more for textile eco-labelled products. Black respondents might therefore offer a future niche market to support textile eco-labelled products to a greater extent if they could be made more aware of the benefits of environmental consciousness and the eco-labelled product range as a "brand". These demographic differences therefore identify an evident need for improvement, but also opportunities with regard to textile eco-labels.

These findings suggest that the government, textile industry, clothing manufacturers and retailers can gain from educating consumers regarding textile eco-labelled products to enhance their understanding and use of the information on these labels when purchasing these products. Furthermore, education can help consumers understand that their actions (buying and supporting green initiatives) can positively affect the environment; and help them understand why eco-labelled textile products cost more. However, the industry should strive towards keeping the prices of eco-labelled products prices relatively equal to those of regular products, so that consumers may choose between the different products based on their environmental attributes and not price. Finally, these findings can serve as baseline research for future studies to support the textile industry and manufacturers in compiling more suitable textile eco-labels. Already the present study point towards a possible need for a more comprehensive range of textile eco-labelled products that is more attractive and eye-catching to focus consumers' attention on these labels. In addition, we propose that symbols as well as words should be used and that these elements should correspond to enhance understanding, since consumers indicated that they do not always understand only symbols on labels. If all these elements of an eco-label convey the same message, consumers might be able to understand the intended message better.

It is recommended that future research make use of a larger sample and a different sampling method, to ensure a more representative distribution of respondents in South African. Regarding scale development, this study was an exploratory study – it was therefore sufficient to

only include one item (in some cases) that tested a construct. For future studies, however, we recommend that there should be more items in a scale to test a specific construct, for example "brand", as important information on a textile product label. Furthermore, respondents' actual buying behaviour regarding textile eco-labelled products can be researched instead of only their intentions to do so, due to the probable intention-behavioural gap. The results of the present study are not intended to be generalised to South African consumers in general, but it provides valuable baseline findings and recommendations that may also be of considerable value to role players in the eco-textile industry in other developing countries.

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