



# **Consumers' food label behaviour: A preventive and interventive educational model for informed decision making**

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## SUMMARY

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Food labels are a good information source intended to aid consumers in informed decision making. Global financial problems necessitate consumers optimising their limited resources and optimally using available resources, such as food labels. Consumer socialisation is a process through which consumers can learn how to utilise food labels as a resource, resulting in positive food label behaviour changes. However, sometimes, consumer socialisation is lacking due to various role-players, and this results in barriers to informed decision making. These barriers include food label opinion-, use- and understanding-related barriers and food-label knowledge gaps. Consumer education can be implemented during consumer socialisation either as a prevention measure against barriers and gaps occurring during childhood, or as an intervention during adulthood to improve informed decision making. In order to propose an educational model in this regard, this study identified consumer socialization shortcomings, with specific reference to consumers' food label behaviour, consumers' food label opinion-, use- and understanding-related barriers and food-label knowledge gaps that require investigation. Therefore, this study's focus was to propose a food label educational model based on consumers' opinion-, use- and understanding-related barriers and food-label knowledge gaps. The overall methodology employed a quantitative design with face-to-face interviews and administrated questionnaires during the collection of five different data sets (2009-2013). The results indicate a general positive food label opinion, and a general disregard of the beneficial use of food label information. Persuasion knowledge gaps and a lack of shopping skill knowledge is evident. However, the results do not reveal convincing differences between young adults and older respondents' food label behaviour. Based on these results the researcher proposed an educational model. The model was built around three basic research questions, namely: who is responsible for or most capable to provide consumer education; why should consumers receive food label education; and what are the best methods or sources for food label education? The findings illustrate that despite the natural, ongoing consumer socialisation during adulthood, the shortcomings in food label consumer behaviour persist. Consequently, it is questionable as to whether or not the respondents had the ability to make informed decisions. It is recommended that this proposed educational model be tested and implemented in a preventative and interventive consumer educational initiative.

## OPSOMMING

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Voedseletikette is 'n goeie inligtingsbron wat ten doel het om verbruikers te help om ingeligte besluite te neem. Globale finansiële probleme noodsaak verbruikers om hulle beperkte beskikbare hulpbronne, soos voedseletikette, optimaal te benut. Verbruikerssosialisering bied 'n proses waardeur verbruikers kan leer om voedseletikette as hulpbron, wat uitloop op positiewe voedseletiketgedrag, ten volle te gebruik. Tog is daar somtyds steeds tekortkominge in verbruikerssosialisering as gevolg van verskeie rolspelers wat hindernisse tot ingeligte besluitneming veroorsaak. Hierdie hindernisse sluit voedseletiket opinie-, gebruik- en begripsverwante hindernisse in. Tydens kinderjare of as intervensie tydens volwassenheid kan verbruikersopvoeding en -sosialisering voorkomend toegepas word om die vermoë van ingeligte besluitneming te verbeter. Ten einde 'n opvoedkundige model voor te stel moet tekortkominge in verbruikerssosialisering geïdentifiseer word. Met spesifieke verwysing na verbruikers se voedseletiketgedrag, is 'n ondersoek oor hinerdennisse ten opsigte van voedseletiketopinie, -gebruik, -kennis en -begrip, en -gapings genoodsaak. Die fokus van hierdie studie was daarom om 'n opvoedkundige voedseletiketmodel gebasseer op verbruikers se -opinie, -gebruik, en begripsverwante hindernisse en -kennis gapings voor te stel. Die algemene metodologie het 'n kwantitatiewe ontwerp met aangesig-tot-aangesig ondehoudvoerder-gedadministreerde vraelyste tydens die insameling van vyf verskillende datastelle gedurende 2009-2013 gevolg. Die resultate toon 'n algemene positiewe voedseletiketopinie, maar ook 'n algemene nalatigheid oor die voordelige voedseletiket inligting. Oorredingskennisgapings en lae aankoopkennisvaardighede was duidelik. Die resultate het nietemin geen oortuigende verskille tussen die jong volwassenes en die ouer verbruikers se voedseletiketgedrag getoon nie. 'n Opvoedkundige model, gebasseer op hierdie resultate is voorgestel. Hierdie model is rondom drie basiese navorsingsvrae saamgestel, naamlik: wie is verantwoordelik vir of die beste bevoeg om verbruikersopvoeding uit te voer; waarom moet verbruikers voedseletiketopvoeding ontvang; en wat is die beste manier of hulpmiddel om te gebruik gedurende voedseletiketopvoeding? Die bevindinge het getoon dat, ten spyte van spontane verbruikerssosialisering gedurende volwassenheid, die tekortkominge ten opsigte van verbruikers se voedseletiketgedrag voortduur. Die verbruikers se vermoë om ingeligte besluitneming uit te voer word gevolglik bevraagteken. Daar word aanbeveel dat hierdie voorgestelde opvoedkundige model as 'n voorkomende en intervensie inisiatief met verbruikers getoets en geïmplimenteer word.

**KEYWORDS**

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Consumer education  
Consumer socialisation  
Food label behaviour  
Food labels  
Informed decision making

## ACKNOWLEDGEMENTS

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A heart felt ♥  
**THANK you**  
to **ALL** my special people  
who supported me to  
“Never give up on MY dream.....”

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CHAPTER 1  
INTRODUCTION

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## **1.1 INTRODUCTION**

The global recession resulted in mounting economic and household debt problems for consumers (Cetorelli & Goldberg, 2012:215; Erasmus & Mathunjwa, 2011:359). As food consumption behaviour is linked to food availability and affordability (Schönfeldt & Hall, 2012:153), a variety of problems faced by consumers might force them to make unhealthy food choices. Numerous general physical, emotional, cultural, and social well-being problems (Prinsloo *et al.*, 2012:94) as well as specific health problems, such as undernourishment, micronutrient deficiencies, and over-nutrition (triple-burden of disease) might result (Gomez *et al.*, 2013:129). Communally, consumers should have the knowledge to make informed decisions (Schönfeldt & Hall, 2012:152) in order to optimise their limited resources, regardless of their challenging circumstances.

One way to assist consumers to make informed food purchase decisions is by providing them with accurate, understandable and accessible information on food labels (Annunziata *et al.*, 2011:519; Zepeda *et al.*, 2013:605). International studies on consumers' interaction with food and nutrition labels conclude that consumer education is needed to aid in the thorough use and understanding of food labels (Lubman *et al.*, 2012:398; Prieto-Castillo *et al.*, 2015:226). In the South African context, published research also stresses the importance of adequate consumer food label knowledge through education (Bosman *et al.*, 2012:40; Koen *et al.*, 2016:15). Food label education can either be implemented as a preventative manner as a part of childhood consumer socialisation, or as an intervention during adult consumer socialisation. Thus, this study proposes an educational model aimed at child consumers and older consumer groups.

## **1.2 BACKGROUND AND MOTIVATION**

Over the last decade, while numerous countries worldwide have designed, debated, and studied different label formats, numerous studies have been conducted involving consumers and reading, use and understanding of food/nutrition labels. Food, nutrition, and/or different front-of-pack labels have been used in studies to determine consumers' use (Prieto-Castillo *et al.*, 2015), opinions (Bosman *et al.*, 2012), attitudes (Annunziata, 2011), perceptions (Kempen *et al.*, 2011), understanding (Aday & Yener, 2014), knowledge (Miller & Cassady, 2015) and preferences (Zepeda *et al.*, 2013). Even though these studies state that nutrition labelling is an important aid in making healthy food choices, it is not always possible to present food label information according to consumers' preferences (Möser *et al.*, 2010:170; Prinsloo *et al.*, 2012:83). Despite efforts from governments and food manufacturers in this regard, it is not possible to guarantee that consumers will read or use the provided information (Bosman *et al.*, 2012:30; Prieto-Castillo *et al.*, 2015:226). Furthermore, it is

uncertain as to whether or not consumers will use the provided food label information to its full potential (Annunziata *et al.*, 2011:520). Neither can it be guaranteed that consumers will ultimately make informed decisions by changing their buying behaviour (Fernandes *et al.*, 2014:95; Hensley, 2015:94), as a food label is not enough to encourage behaviour change (Kempen *et al.*, 2011:70; Yngve *et al.*, 2012:757). Researchers argue that even when food label information is available consumers might place a higher value on variables such as taste and cravings (Grunert *et al.*, 2010:177), and there are consumers who are concerned about nutrition, but still lack the self-control to achieve lifestyle changes (Blumenthal & Volpp, 2010:553), or who are just disinterested in healthier options (Miller & Cassady, 2015:2013).

Additionally, international findings point to expected problems in the event of new label formats and information being implemented. At government level, complications could arise, and such complications include a possible resistance from the food industry (Pettigrow *et al.*, 2011:2) and extra financial costs (Möser *et al.*, 2010:172). Despite this, in 2010 the South African government promulgated revised label regulations (South Africa, 2010) and they are currently in the process of changing food label regulations with draft regulations (R461) (South Africa, 2014). As a result of label regulation changes, the food industry has experienced, and is likely to experience further problems such as higher financial costs due to new package designs (Möser *et al.*, 2010:171), changes in retail activities and in all other areas of the food chain, including food research and product formulation (Schönfeldt & Hall, 2012:153).

The argument that governments and food industries might not be overly receptive to the idea of new food label formats, the lack of scientific research that confirms informed decision making based on food label information, and even the question as to whether or not consumers actually use food labels, motivates research with a focus on consumer education, rather than merely food label adjustments. Adult consumers should be provided with adequate food label education by means of an intervention pertaining to their consumer socialisation, to assist them in making informed food purchase decisions (Prinsloo *et al.*, 2012:94). However, ideally child consumers should already receive food label education during their childhood consumer socialisation, as a preventative measure on the condition that the label is in a format that they can use according their developmental stages.

Consumer socialisation provides consumers with the opportunity to acquire knowledge and to participate in a consumer society that enables them to make informed choices (Wærdahl *et al.*, 2011:128). Socialisation agents that have an impact on the knowledge acquisition of child consumers as sources of influence are firstly parents (family) in the home environment

(Mikeska *et al.*, 2016:245), secondly peers and finally other agents that children are exposed to, such as schools and the media (Ahmad, *et al.*, 2011:9). The consumer socialisation process repeats itself throughout an individual's entire life span – from childhood through to adulthood (Schiffman & Kanuk, 2010:335), with each process delivering positive and/or negative outcome(s).

Food label knowledge may be considered as one of the outcomes of the consumer socialisation process. Through exposure to different socialisation agents as influencers that communicate to the consumer and expose them to different consumer situations (Ahmad *et al.*, 2011:9), such as food labels, consumers form their own **opinions**. When **using** a food label's information, consumers are exposed to different stimuli that enter the brain as sensations, are encoded (interpreted) and ultimately stored (Berk, 2013:G-13) as food label **knowledge** in schemata and cognitive structures. For example, in a shopping environment, children may observe their parents making a buying decision on behalf of the family, based on label information. If the child pays attention to this scenario (Evans *et al.*, 2009:29), is interested in what the parent is reading on the label, and is motivated to learn (realise importance) (Hoyer & MacInnis, 2008:173), new (food label) **knowledge** results, knowledge that can ultimately lead to **understanding** food label information, which may enhance informed decision making. Therefore, the more often that children are exposed to label **use** and new food label information, the more often the consumer socialisation process will repeat itself, and the more sophisticated their consumer-related schemata and cognitive structures for food labels will become, enhancing their food label **knowledge** and **opinion** formation. Additionally, improved food label knowledge supports food label use (Miller & Cassady, 2015:214). Parents are also simultaneously exposed to the consumer socialisation process upon interaction with food label information, and they experience similar outcomes to their children.

Through the repetition of the consumer socialisation process during childhood, certain cognitive and consumer-based milestones that include consumer socialisation and behaviour patterns, can be reached (John, 1999:186, McNeal, 1992:9; Inhelder & Piaget, 1958). These milestones can greatly affect a child's ability to make informed decisions as a future adult consumer, since these skills are also necessary to successfully encode newly encountered consumer label knowledge. The first important interpretation of milestones is Piaget's (Inhelder & Piaget, 1958) renowned four main stages of cognitive development, namely the sensorimotor, preoperational, concrete operational, and formal operational stages. John (1999:184) acknowledges an interdependent relationship between sound cognitive development and (informed) consumer behaviour by grounding her three consumer

socialisation stages (perceptual, analytical, and reflective stages) on Piaget's cognitive development theory and Selman and Byrne (1974) and Barenboim's (1981) social development ideas.

Progression through these cognitive and consumer socialisation stages (Inhelder & Piaget, 1958; John, 1999:186) results in enhanced skills that equip children to perform consumer behaviour tasks. McNeal (1992:9) distinguishes five consumer behaviour pattern stages, with stage one beginning at an early age when children become aware of the need to go to a store to buy products. At the final stage, between the ages of nine and 10 years, children are considered to be a primary market, an influence market, and a future market. To the knowledge of the researcher little research has been done with the South African child as consumer. However in an American context, children, as a primary market (starting at age four to five years of age), have their own pocket money that they independently spend on their own needs. At the age of nine or 10 years, they are considered to be confident, expert consumers (McNeal, 1978:49), and an influence market, which forms an integral part of household decision making (Schiffman & Kanuk, 2010:340).

Learning that occurs throughout childhood as a result of the activities and experiences in the course of being primary and influential consumers, shapes children into adult decision makers of the future (McNeal, 1992:9). This implies that the same child consumers that are part of the active primary and influence markets, moving through the different cognitive (Inhelder & Piaget, 1958), socialisation (John, 1999:186), and consumer behaviour stages (McNeal & Ji, 1999), will grow up to become the adult consumers of the future. Thus, knowledge, as a consumer socialisation outcome, is a valuable resource that adult consumers use to make informed decisions (Breuker, 2013:178). Thus, the thorough and continuous education of children and adults through consumer socialisation is imperative.

Many countries use consumer education to improve nutritional wellbeing (Schönfeldt & Hall, 2012:152) and to create more well-informed consumers (Danilane & Marzano, 2014:1069), such as the European Union, which has an elaborate consumer education programme (Brennan *et al.*, 2017). Consumer education is described as consumer behaviour concepts outlined in learning outcomes (Danilane & Marzano, 2014:1069), which is aimed at enhancing consumers' knowledge. Aspects addressed during consumer education could include improving or enhancing consumer safety, knowledge, (Brennan *et al.*, 2017:147), nutritional qualities (Schönfeldt & Hall, 2012:152), and consumer rights (Danilane & Marzano, 2014:1069; Mazlan *et al.*, 2014:448). Consequently, consumer education programmes should result in meaningful changes in knowledge and dietary practices.

In order to aid with children's food label education, it is necessary to engage the young adult as a consumer to identify the food label knowledge gaps that they experience when they enter the adult market at the end of their childhood consumer socialisation. This young adult group seems most appropriate as a study population because they are on the verge of adulthood, make independent consumer choices, and have financial responsibilities. However, adult consumers should also be informed (Prinsloo *et al.*, 2012:94) so that they are ultimately capable of taking control of their own health status (Yngve *et al.*, 2012:757). Therefore, the focus of this study was to propose a food label educational model that addresses a three-fold need: firstly, it must focus on child consumers (Birth-17 years of age); secondly it must focus on young adults ( $\geq 18$  year olds); and lastly it must focus on an older consumer group ( $\geq 35$  year olds). After thorough future academic testing and possible expansion or adaption of the proposed model, the child consumer focus could be implemented as a consumer education aid, during childhood consumer socialisation. Similarly, the young adult and older consumer group focus of the proposed model could be implemented during adulthood consumer socialisation with an interventive aim.

### **1.3 PROBLEM STATEMENT**

Pressing global economic problems and persistent socio-economic difficulties including unemployment, poor education, and the triple-burden of disease, all necessitate consumers making informed decisions when buying food products. It is particularly in these conditions that consumers need to optimise their limited financial resources during informed food purchases to ensure optimum health. Although food labels with precise information in a favourable format are seen as valuable information sources, research indicates that they do not ensure active label reading, nor do they reach their full intention, or ultimately ensure positive behavioural changes. Consequently, published South African consumer behaviour researchers recommend consumer education that provides adequate knowledge to ensure positive opinions, optimum use, and thorough understanding of supplied food label information. However, to date, no educational models have been proposed to start an educational campaign in this regard.

Research also indicates that consumer knowledge is accumulated from birth through the consumer socialisation process, which is facilitated by family and environmental activities and experiences. The process starts in the home environment with parents and peers acting as socialisation agents and then from other agents as children is exposed to agents such as schools and the media. The knowledge accumulated through socialisation depends on the child consumer reaching specific milestones in terms of certain cognitive, social, and

behavioural developmental stages that ideally result in the ability to make informed decisions. This socialisation process continues during adult years where further knowledge is accumulated, opinions are formed and understanding results. To date, South African research on food labels has not focussed on the young adult market segment with an interventional educational model for child consumers (up to 17 years) in mind. Neither is there an interventional educational model that focusses on young adults ( $\geq 18$  years) and older consumers ( $\geq 35$  years). Therefore, this study proposes an educational model focused on food label behaviour, which includes opinions, use, knowledge, and understanding of food labels. The model will have a three-fold purpose that can be implemented to educate: (1) child consumers (aimed at prevention), (2) young adults (aimed at intervention); and (3) older consumers (aimed at intervention).

#### **1.4 AIM AND OBJECTIVES**

The main aim of this study was to propose a food label educational model that visually outlines child consumers, young adults, and older consumers' food label opinion-, use-, and understanding-related barriers and knowledge gaps. This entailed an empirical investigation into the food label opinions, use, knowledge, and understanding of young adults and older consumers. Possible differences between the food label opinion and use of the young adults and older consumers were also investigated, and a preliminary conclusion was made on these two groups' abilities to make informed decisions. To reach the aim the following objectives were formulated:

##### **Objective 1**

- 1.1 to respectively describe young adults and older consumers' food label opinion-, use- and understanding-related barriers; and
- 1.2 to conclude on whether or not there were any shortcomings in children's consumer socialisation, based on the food label opinion, use, and understanding of young adults who recently experienced childhood consumer socialisation.

##### **Objective 2**

- 2.1 to respectively determine the difference between young adults and older consumers' food label knowledge gaps;
- 2.2 to determine the difference between young adults and older consumers' food label knowledge in, respectively 2010 and 2013; and
- 2.3 to conclude on whether or not there were any shortcomings in children's consumer socialisation with regard to their food label knowledge.

### **Objective 3**

- 3.1 to respectively assess young adults and older consumers' food label education needs (why, who, how); and
- 3.2 to theoretically investigate consumers' food label educational needs during childhood consumer socialisation (who, why, how) from literature.

### **Objective 4**

- 4.1 to conclude whether or not the young adults and the older consumers would be able to make informed decisions based on the results of objectives 1, 2, and 3; and
- 4.2 to propose an educational model focussed on children to prevent future negative food label behaviour, and to provide interventions for young adults and older consumers with respect to food label behaviours, based on the results of objectives 1, 2, and 3.

## **1.5 CONCEPT CLARIFICATION**

**Consumer education:** Consumer education is defined as consumer behaviour concepts, outlined in outcomes (Danilane & Marzano, 2014:1069), and is therefore aimed at enhancing consumers' knowledge (Brennan *et al.*, 2017:147) and consumer rights to ensure that consumers (Danilane & Marzano, 2014:1069) become informed and responsible consumers (Mazlan *et al.*, 2014:448).

**Consumer socialisation:** Consumer socialisation represents the process by which consumers acquire the skills, knowledge, attitudes, and experiences to function as consumers (Mikeska *et al.*, 2016: 245; Schiffman & Kanuk, 2010:333). For the purpose of this study, consumer socialisation that took place from birth up to the point where the individuals left their parental homes and took responsibility for their own financial well-being, usually at 18 years old, will be labelled as being involved in childhood consumer socialisation. Those people older than 18 years will be considered to be involved in adulthood consumer socialisation.

**Food label:** A label is printed material that is either printed on the packaging itself, or attached to a product's container, and it provides consumers with information as a primary source and aid to sell the product (Annunziata *et al.*, 2011:519; Koen *et al.*, 2016:13). This study will focus on the primary food label information (expiry date, nutrition, ingredient list, allergens, quality guarantees) on the contents of the product (Van der Colff *et al.*, 2016:227).

**Food label behaviour:** For the purpose of this study, a consumer's food label behaviour is defined as the consumer's food label opinion, use, knowledge, and understanding. This

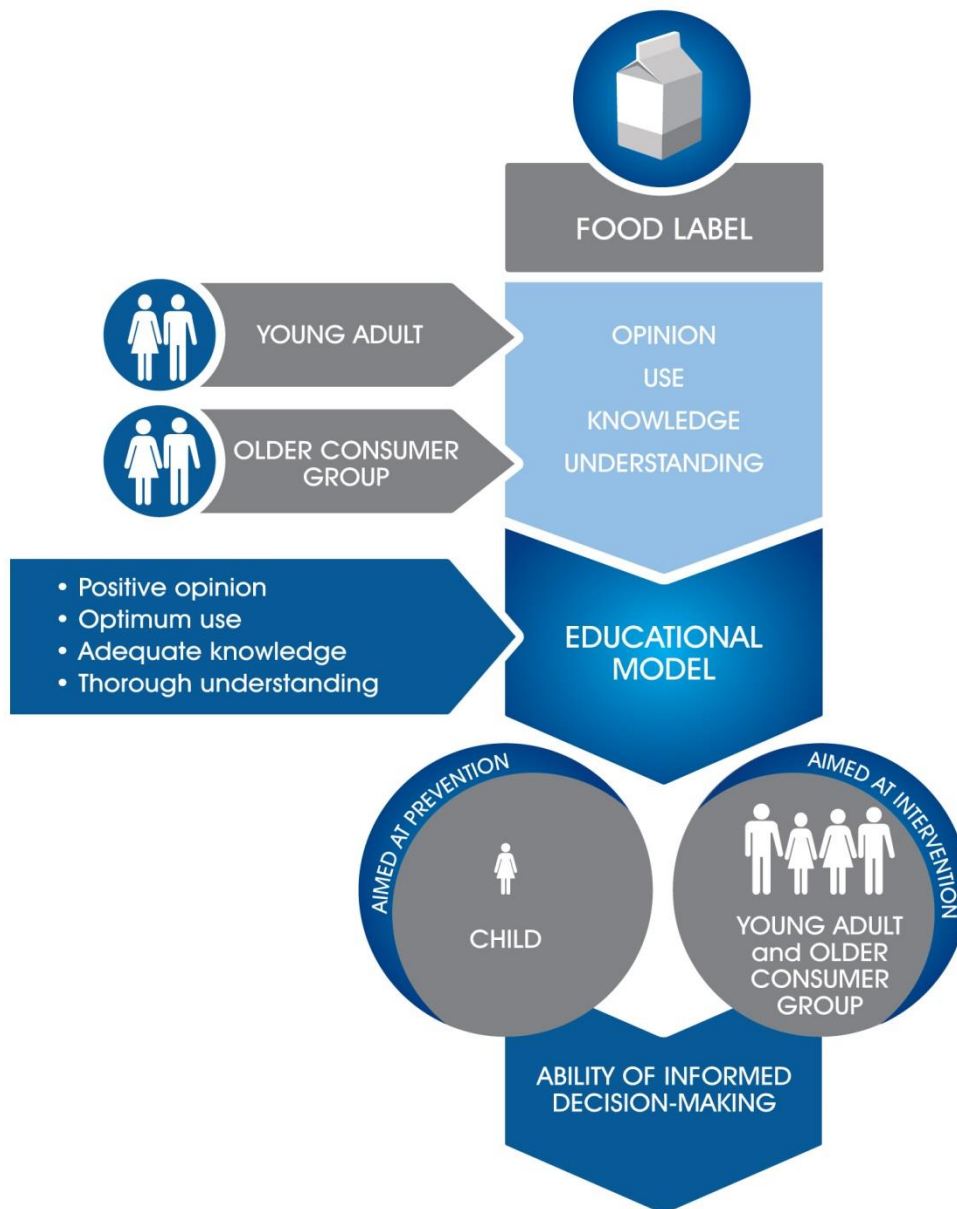
includes situations when consumers are exposed to different aspects of food products, where they form their own **opinions** and accumulate **knowledge** of food labels. When they **use** the food label's information, consumers build broader **opinions** and **knowledge** that could ultimately lead to the **understanding** of food label information, as well as optimum **use** of the label information. Communally, this could result in **informed decision making** in terms of food labels and positive food label behaviour.

**Informed decision making:** Theoretically, being informed implies an ability to apprehend the impact of one's market actions and choices (Alpa, 2005:720), and ensuring that consumers are properly educated (Buckingham, 2009:218).

## 1.6 CONCEPTUAL FRAMEWORK

Figure 1.1 depicts a conceptual framework for this study. During situations where consumers are exposed to different aspects of food products, they form their own **opinions** and accumulate **knowledge** of **food labels**. When they **use** the food label's information, they build broader **opinions** and **knowledge**, which could ultimately lead to the **understanding** of **food label** information as well as optimum **use** of the label information. Collectively this could ultimately result in an **ability of informed decision making** with respect to food labels. When food label information is presented to **children** as part of the consumer socialisation process, different stimuli of the food label will enter their brains as sensations, be encoded, and then stored as **food label knowledge**.

Newly encoded food label knowledge is considered one of the outcomes of the consumer socialisation process, ultimately leading to adults being able to make **informed decisions**. Therefore, **prevention** has taken place. If, for some reason, **prevention** fails, consumer education can be implemented as an **intervention** during adulthood consumer socialisation to assist in the development of positive food label **opinions** that could lead to effective encoding of adequate food label **knowledge**, optimum **use**, thorough **understanding**, and ultimately **informed decision making**. In order to identify and address possible shortcomings of food label consumer education during childhood consumer socialisation, a comprehensive study of **young adults** and **older consumers' food label opinions, use, knowledge, and understanding** is needed (Figure 1.1).



**Figure 1.1** Conceptual framework.

## 1.7 THEORETHICAL BACKGROUND

In this research, the social cognitive theory was implemented as several of the assumptions of this perspective could be applied successfully to the focus of this study. However, only a brief overview of the applicable assumptions will be provided in this chapter with a more thorough discussion to follow in chapter two (the literature review):

- as rational beings, humans try to **make sense** of their surrounding world (Berk, 2013:222);
- humans learn by **observing** others (Schiffman & Kanuk, 2010:224);

- humans use internal mechanisms to **process** external stimuli (Kaiser, 1990:253);
- there is a dynamic **interaction** between people and their environments (Bandura, 2004:144; Glanz et al., 2008:170); and
- there is an **outcome** expectancy (Ambrose & Chiravuri, 2010:249; Schiffman & Kanuk, 2010:481).

The social cognitive theory deals with the contribution of an individual's thought processes (when receiving and using food label information) to their social perception (Kaiser, 1990:39). To clarify this contribution and the set assumptions (indicated in brackets in the rest of the paragraph), the following scenario is given. During children's everyday exposure to consumer-related situations, e.g. co-shopping with a parent (**interaction**), new information reaches the brain through sensory receptors, namely sound, sight, touch, taste, and smell in the form of stimuli, and this causes a response in the brain called a sensation (**make sense; process**) (Schiffman & Kanuk, 2010:152). In a shopping environment, a stimulus might consist of a visual shelf loaded with cereal boxes (**interaction**). Children might watch their parents comparing the nutritional values of different cereals before making a choice (performing a non-programmed decision) (**make sense; observing**) (Schiffman & Kanuk, 2010:224-225), or they might observe their parent taking a familiar family favourite without hesitating (programmed decision) (**observing**) (Blythe, 2008:267). If children pay attention (devote mental activity) to this scenario (notice it) (Evans *et al.*, 2009:29; Hoyer & MacInnis, 2008:74), are interested in what their parents are doing, and are motivated to learn, these stimuli will be encoded in their brains (learned) and temporarily stored in the sensory memory (**make sense; process**) (Hoyer & MacInnis, 2008:29, 173).

Subsequently, a child's brain needs to identify a schema of the same (concerning cereal) or a related theme (food to eat) to successfully complete the process of encoding (**make sense; process**) (Berk, 2013:222). Therefore, storage of information takes place via the integration of new knowledge with existing knowledge in schemata (Evans *et al.*, 2009:64), or the making of new schemata where the information can be stored as knowledge. Schemata are psychological structures consisting of motor action patterns (such as infants' sucking reflex) that develop as more stimuli are encoded in the schema, providing an organised way of making sense of experiences (Berk, 2013:222, G-13), by linking and associating the information with a concept (Hoyer & MacInnis, 2008:94). The newly stored consumer knowledge that led to the development of cognitive structures and schemata results in a reduction of cognitive effort that in turn improves a consumer's ability to analyse, elaborate on, and remember product information (**outcome**) (Alba & Hutchinson, 1987:412; Bandura, 2004:144).

## 1.8 CONTRIBUTION OF THE STUDY

The main contribution of this study is of an academic nature. It suggests guidelines in the form of a proposed model for academics in the field of consumer sciences and nutrition. These guidelines can enhance consumer education and facilitation of South African children to make informed decisions when selecting and purchasing food items. It can also be applied as an intervention for adult consumers, in an effort to improve their ability to make informed decisions regarding healthy food choices. Once this model has been tested in an academic environment, it can also be practically applied as a food label educational instrument. Lastly, it can be adapted to be tested and implemented in other developing countries with similar problems to those experienced in South Africa with the result being to educate their consumers.

## 1.9 THESIS OUTLINE

Table 1.1 presents a summary on the chapter divisions of the thesis. This table also outlines the three articles, contributing authors for this study's results, and the publishing journals.

**Table 1.1** Chapter division, article titles, publishing journals, and article authors

| CHAPTER |                    | TITLE                                                                                                                 | OVERVIEW                                                                                                                               | OBJECTIVE | JOURNAL                                   | AUTHORS                                                                                                |
|---------|--------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------|--------------------------------------------------------------------------------------------------------|
| 1       | Introduction       | Introduction                                                                                                          | Introduction, motivation, theoretical perspective, problem statement, aim, objectives, concept clarification, and conceptual framework |           | Not applicable                            |                                                                                                        |
| 2       | Literature Review  | Young adults and food labels – a social cognitive perspective                                                         | Literature review<br>Theoretical framework<br>Social cognitive perspective                                                             |           | Not applicable                            |                                                                                                        |
| 3       | Methodology        | Methodology                                                                                                           | A thorough discussion of the study methods                                                                                             |           | Not applicable                            |                                                                                                        |
| 4       | Research Article 1 | Young adult and older consumers' self-reported food label behaviour: identifying barriers to informed decision making |                                                                                                                                        | 1         | International Journal of Consumer Studies | Mrs S.D. van Zyl<br>Prof. M. van der Merwe<br>Prof. S.M. Hanekom<br>Prof. S.M. Ellis                   |
| 5       | Research Article 2 | Consumers' food label knowledge: identifying gaps                                                                     |                                                                                                                                        | 2         | British Food Journal                      | Mrs S.D. van Zyl<br>Prof. M. van der Merwe<br>Prof. S.M. Hanekom<br>Prof S.M. Ellis                    |
| 6       | Research Article 3 | A food label educational model                                                                                        |                                                                                                                                        | 3+4       | Public Health Nutrition                   | Mrs S.D. van Zyl<br>Prof. M. van der Merwe<br>Prof. S.M. Hanekom<br>Prof G. Reitsma<br>Prof S.M. Ellis |
| 7       | Concluding Chapter | Concluding chapter                                                                                                    | Conclusions, recommendations, limitations, and implications                                                                            | 1+2+3+4   | Not applicable                            |                                                                                                        |

### 1.10 AUTHOR'S CONTRIBUTION

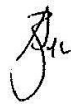
This study, as reported in the thesis, was planned and executed by a team of researchers. The role of each researcher is reported in Table 1.2.

**Table 1.2** Authors contribution

| AUTHOR                 | CONTRIBUTION                                                                         |
|------------------------|--------------------------------------------------------------------------------------|
| Mrs S.D. van Zyl       | Researcher, PhD student                                                              |
| Prof. M. van der Merwe | Project leader, promoter, general project advisor, funding                           |
| Prof. S.M. Hanekom     | Co-promoter, project advisor                                                         |
| Prof. G.M. Reitsma     | Assistant promoter, project advisor on consumer education, Article 3                 |
| Prof S.M. Ellis        | Statistician, assisted with data analysis and interpretation, co-author on articles. |

The following is a statement from the co-authors confirming their individual role in the study, and granting permission for the articles to form part of this thesis.

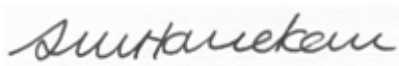
*I declare that I have approved the articles included in this thesis, that my role in the study, as indicated above, is representative of my actual contribution, and that I hereby give my consent that it may be published as part of the Philosophiae Doctor in Consumer Sciences of Mrs S.D. van Zyl.*



**Mrs S.D. van Zyl**  
Researcher



**Prof. M. van der Merwe**  
Promoter



**Prof. S.M. Hanekom**  
Co-promoter



**Prof S.M. Ellis**  
Statistician



**Prof. G.M. Reitsma**  
Assistant promoter

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CHAPTER 2  
LITERATURE REVIEW  
Consumer behaviour and food labels – A social cognitive perspective

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## 2.1 INTRODUCTION

Consumers worldwide are in a financial crisis, and many South African consumers are faced with the additional problem of difficult socio-economic conditions, such as high levels of unemployment, a lack of housing, inadequate education, poor levels of health care and high levels of HIV/AIDS (Finchilescu & Tredoux, 2010:227; Gobodo-Madikizela, 2012:253). It can be argued that in light of mounting economic and household debt problems, it is important to ensure that future adult consumers will be able to make informed decisions to optimise limited resources – particularly ill-informed consumers that are easily taken advantage of, resulting in further financial distress (Hensley, 2015:98).

As food consumption behaviour is linked to both availability and affordability of food (Schönfeldt & Hall, 2012:153), the poor socio-economic conditions faced by consumers might force them into unhealthy food choices that could contribute to numerous problems associated with general emotional, cultural and social well-being (Prinsloo *et al.*, 2012:94). Indeed, the increases seen in food and dietary intake-related problems point to the possibility that consumers struggle to make informed food choices (Möser *et al.*, 2010:169). Researchers also warn against the risk of non-communicable diseases resulting from poor dietary choices (Mchiza *et al.*, 2015:8230).

One way to assist consumers in making informed decisions is by providing them with accurate, easily accessible information on food labels (Annunziata *et al.*, 2011:519; Zepeda *et al.*, 2013:605). Many international studies have concluded that consumer education on nutritional and general food label information is needed (Ellis & Glanville, 2010:6; Lubman *et al.*, 2012:398; Ranilovic & Baric, 2011:119), since consumers' general food label use and knowledge are limited. In the South African context, published research also emphasises the importance of adequate consumer knowledge through education (Bosman *et al.*, 2012:40; Prinsloo *et al.*, 2012; Van der Colff *et al.*, 2016:227). Yet, currently, an educational intervention aimed at either child or adult consumers in this regard is still lacking.

When an educational intervention is planned, an understanding of the complexity of cognitive development and the consumer socialisation process that results in consumer knowledge acquisition is needed. This chapter explores the significance and interrelationship of and between the relevant cognitive and socialisation theories, models and processes. Although care has been taken to include the most recent literature and research results, the primary and authoritative yet older sources of the theories and models had to be included.

## 2.2 DEFINING THE FOOD LABEL

A label consists of any printed, written or graphic material on the packaging itself, or attached to a product's container (Prinsloo *et al.*, 2012:85; South Africa, 2010). In the international context effort was also given to investigate front-of-pack labelling (Pomeranz, 2011; Sacks *et al.*, 2009; Vyth *et al.*, 2010). In South African labelling regulations this labelling format are not included, yet acknowledged as label type (South Africa, 2010). The food back-of pack label usually consists of two parts: (1) primary (expiry date, nutritional information, ingredient list, allergens, quality guarantees) and secondary (usage instructions, symbols, manufacturer name, country of origin, serving number) information on the contents of the product (Van der Colff *et al.*, 2016:227), and (2) picture(s) that indicate the colour, form, proposed use and shape of the product (Singla, 2010:84). Several South African studies explored different label aspects (Prinsloo, 2012; Van der Colff *et al.*, 2016; Van der Merwe *et al.*, 2014). For the purpose of this South African study, the focus will be on the 'back-of-pack' primary and secondary information presented on the food label.

The central function of labelling, as a communication channel from producer to consumer (McEachern & Warnaby, 2008; Stuart, 2010), is to provide consumers with information on a product's nutritional value and the content of pre-packaged food products (Hieke & Wilczynski, 2011:773), therefore reducing the information gap between producer and consumer (Annunziata *et al.*, 2011:519; Singla, 2010:83). Some researchers argue that labels play a predominant role as direct shopping aids and primary information sources during consumers' purchase decision making processes (Annunziata *et al.*, 2011:519; Ellis & Glanville, 2010:7). An important goal of food labels is therefore to aid consumers in improving their food intake choices (Pettigrow *et al.*, 2011:2; Temple & Fraser, 2014:258) by providing the needed information to select the most suitable product or to make an overall healthy food choice (Ranilovic & Baric, 2011; Van der Merwe *et al.*, 2010). A study in Turkey confirmed that the packaging and label are the most important factors that might affect consumers' buying behaviour (Aday & Yener, 2014:385). Other studies that focus on different packaging and label features are also abundant (Arrúa *et al.*, 2017; Crosetto *et al.*, 2016; Hawley *et al.*, 2013); however, a further focus on consumers' food label behaviour is needed.

## 2.3 CONSUMERS' FOOD LABEL BEHAVIOUR

A change in consumers' behaviour can be described as the ultimate effect intended by education interventions (Del Mar Pàmies *et al.*, 2016:607). A variety of methodological approaches, such as focus groups, in-depth interviewing, hedonistic and experimental

approaches, have been used to analyse consumers' food label behaviour (Annunziata *et al.*, 2011:520). Several studies have focused on determining consumers' use (Kempen *et al.*, 2012; Lubman *et al.*, 2012; Miller & Cassady, 2015), opinions (Bosman *et al.*, 2012), attitudes (Annunziata, 2011; Wills *et al.*, 2009), perceptions (Kempen *et al.*, 2011; Möser *et al.*, 2010), understanding (Nocella & Kennedy, 2012; Prieto-Castillo *et al.*, 2015), knowledge (Lubman *et al.*, 2012; Miller & Cassady, 2015), preferences (Zepeda *et al.*, 2013) and perspectives (Ali & Kapoor, 2009; Van der Merwe & Venter, 2010) with respect to food labels. The focus of the present study will be on consumers' **opinion, use and knowledge** of food label information. Each of these aspects will be outlined in the discussion below.

### **2.3.1 Food label opinion**

Opinions represent the oral or written description of consumers' beliefs, views, thoughts or intentions of future events, and might be changed rather easily (Bareham, 1997; Hornby, 2015) and are described as an expression of the self (Kokkoris & Kühnen, 2013:1062). Consumer opinions are important role-players in the final buying decisions, as they can provide the rational or motivation for behaviour, or might even guide consumers' behaviour (Bareham, 1997). For instance, one study has found that consumers' choices are influenced by online posted opinions (Zhu & Zhang, 2010), while a more recent study found a positive association between food label opinions and use (Van der Merwe *et al.*, 2014). Despite limited scholarly research on consumers' food label opinions, it is clear that a positive opinion on food labels is imperative, since they can influence consumers' behaviour. Unnecessary negative opinions can result in less than optimum use. However, research also shows that opinions can be changed quite easily, thus an educational intervention would be ideal to ensure adequate knowledge on which to base positive opinions.

### **2.3.2 Food label use**

The researchers defined food label use as the actual reading and applying of food label information for the present study. Consumers' use of label elements depends on demographics (Campos *et al.*, 2011) and how important they deem the labelled information to be, as label use imposes costs upon consumers (Annunziata *et al.*, 2011: 519), such as the time spent reading the label (Drichoutis *et al.*, 2006). Recent findings indicate that women and consumers with higher education levels are amongst the most frequent label users (Drichoutis *et al.*, 2006; Ranilovic & Baric, 2011:118). Further factors that positively affect label use include age (older consumers are more interested) (Drichoutis *et al.*, 2006; Grunert & Wills, 2007:389), higher income (Kim *et al.*, 2001; Lin *et al.*, 2004), the presence of children (Grunert & Wills, 2007:389), students, those physically active and those on a specialised diet (Prieto-Castillo *et al.*, 2015:226; Ranilovic & Baric, 2011:118). There are also gender

differences regarding the perception of the importance of certain information on the label, in that females have been shown to find the fat content most important, while males often favour the protein content (Aday & Yener, 2014:385). In contrast to these results, a recent study in South Africa showed no practically significant associations between demographics and food label expectations and perceived performances (Van der Colff *et al.*, 2016:227).

An understanding of who, how and why nutrition labels are used (Graham & Jeffery, 2011:189; Kempen *et al.*, 2011:70) could assist in addressing incompatibilities between consumers and food labels, that may hinder the 'actual reading and application' of the information, as outlined in the definition. A positive result of these interventions could result in consumers' more effective use of food labels during the selection of healthy foods (Graham & Jeffery, 2011:189). Any identified incompatibilities could be addressed through consumer education and socialisation to improve food label knowledge and understanding.

### **2.3.3 Food label knowledge and understanding**

*Knowledge* is viewed as a key strategic and competitive resource proven to affect consumer decision making (Brucks, 1985). The attainment of knowledge is rooted in an educational process that elevates an individual's thoughts and expressions beyond mere personal beliefs and *opinions* (Fenstermacher, 1994:33-34). Knowledge entails information, facts, descriptions and/or skills acquired through experience or education (Hornby, 2015) and can therefore be seen as a consumer competency (Wright, 2002). Consequently, in order for a consumer to be knowledgeable about something, for example food labels, they had to have encountered it previously and understand its meaning (Hoyer & MacInnis, 2008:92).

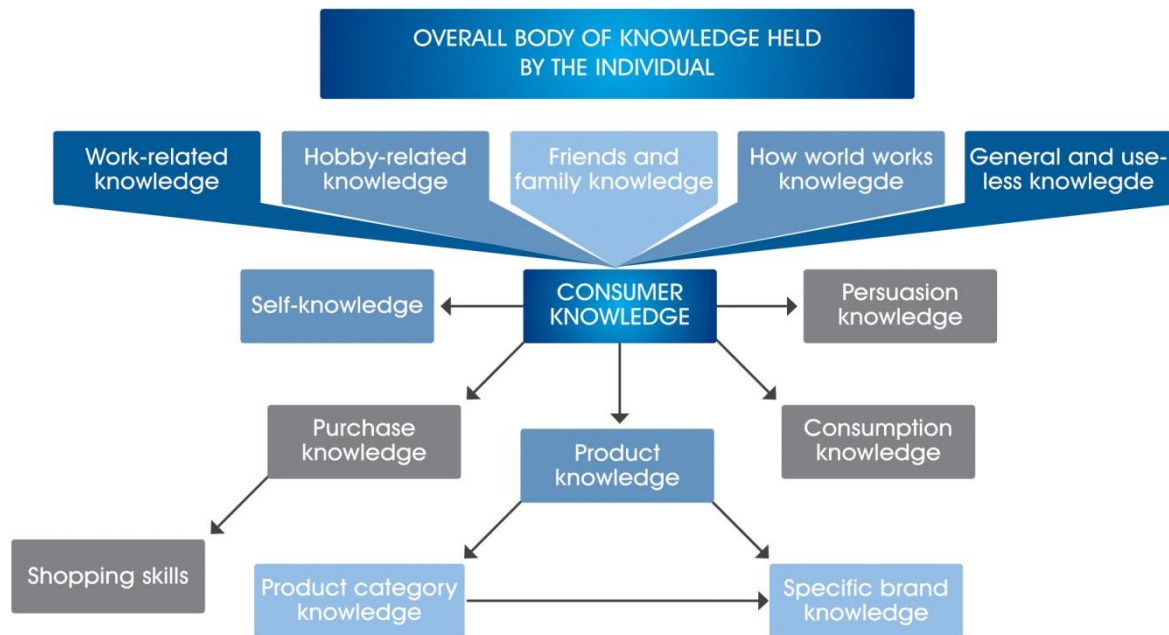
Knowledge about food label information can be gathered from a large number of sources, both personal and impersonal, which may or may not be controlled by marketers (Blythe, 2008:131-132). This classification of knowledge sources is outlined in Table 2.1 and for the purpose of this study is approached from the classification of Blythe (2008:132). According to this classification, but from a food label perspective, the most common knowledge source is the product itself as a marketer-controlled, impersonal information source. However, the non-marketer-controlled personal information sources are important socialisation agents during childhood consumer socialisation and should be utilised during consumer education initiatives.

**Table 2.1** Classification of knowledge sources (Blythe, 2008:132)

|                                   | Marketer-controlled                                                  | Non-marketer-controlled                                                                                         |
|-----------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Personal sources of information   | Sales people<br>Service people<br>Paid product endorsers             | Family and friends<br>Work colleagues<br>Other shoppers<br>Experts<br>Opinion leaders<br>Internet and bulletins |
| Impersonal sources of information | Products<br>Point-of-purchase materials<br>Advertising<br>Catalogues | TV and radio shows<br>Books<br>Government reports<br>Newspapers<br>Magazines                                    |

Consumer knowledge that is gained from these knowledge sources can be categorised as subjective or objective knowledge. For the purpose of this study the focus will be on objective knowledge. Consumer knowledge can also be sub-divided in several different ways, and comprises different knowledge categories (Figure 2.1). These categories include *persuasion knowledge*, which entails an understanding of the goals and tactics of people who might be trying to persuade consumers to buy, and *self-knowledge*, which emphasises the importance of knowledge about one's own needs (Blythe, 2008:126). *Product knowledge* (the information about all the possible solutions to the need problem), *purchase knowledge* or *shopping skills* (how to buy, what things cost and from where to buy) and *consumption or usage knowledge* (how to use and dispose of the product, risks in using) are also important prior knowledge categories (Blythe, 2008:126; John, 1999:196). However, not all of these knowledge categories can be successfully incorporated into a study on consumers' food label behaviour (opinion, use, knowledge and understanding).

While self-knowledge is the unique conviction of every individual consumer, product knowledge includes a vast number of food products with food labels available. This study will therefore focus on the persuasion, purchase and consumption knowledge of consumers, which will be discussed in more detail below.



**Figure 2.1** Categorisation of consumer knowledge (Blythe, 2008:125)

### **2.3.3.1 Persuasion knowledge**

When consumers have an awareness about the strategies and tactics employed by retailers and manufacturers to convince them to buy products and the motives for using such strategies, they possess persuasion knowledge (Campbell & Kirmani, 2000; Friedstad & Wright, 1994), which enables them to attain their own goals through adaptive responses to the persuasion attempts (Friedstad & Wright, 1994). Persuasion itself is an act that causes someone to do or believe something (Kachersky, 2011:482) and is usually concealed by marketers (de Pelsmacker & Neijens, 2012:1) as looking natural, innocent (Van Reijmersdal et al., 2009; Wouters & de Pelsmacker, 2011) and pleasurable (Cauberghe & de Pelsmacker, 2010), such as brand placements in movies, television programmes, games (Van Reijmersdal et al., 2009; Wouters & de Pelsmacker, 2011), websites (Cauberghe & de Pelsmacker, 2010), advertising (John, 1999:188) and even social network sites (de Pelsmacker & Neijens, 2012:1). Manufacturers' use of nutrient and health claims on food labels can also be seen as concealed 'innocent and pleasurable' persuasion attempts. Consumers whose socialisation has resulted in the development of a high degree of persuasion knowledge are less likely to be influenced by product placements as persuasion attempts (Nyilasy & Reid, 2007).

A model of persuasion knowledge has been developed to describe individuals' responses to persuasion attempts (Friedstad & Wright, 1994). These responses of the adults during the persuasion interaction were based on three types of knowledge: (1) knowledge about *the agent* – non-persuasion-related knowledge about the agent's characteristics and competencies (such as the brand and logo) (Hibbert *et al.*, 2007); (2) knowledge about *the topic* – non-persuasion-related about the content of the attempt (such as nutrient and health claims on food labels); and (3) knowledge about *the product* of the persuasion process (Lorenzo & Russell, 2012:58). Consumers consequently need three types of knowledge to empower them to react responsibly and be informed when confronted with food labels, namely agent, topic and persuasion knowledge. When only topic and agent knowledge are present, the consumer can react positively to persuasion attempts, even though such attempts can be deceiving and biased, such as in the case of false nutrient claims. The result in this scenario might include irresponsible purchasing of unhealthy food products. When consumers only have persuasion knowledge without the underlying needed topic and agent knowledge, the consumer might overlook a nutritionally balanced product on sale, owing to a negative response to the persuasion attempt that is perceived. It can also happen that a consumer with high levels of persuasion knowledge does not identify a persuasion attempt, and therefore reacts positively towards the attempt despite the possible disguised dangers.

#### **2.3.3.2. Purchase knowledge/Shopping skills**

One of the most important aspects of purchase knowledge, also known as transaction knowledge, is an understanding of the 'sequence of events' involved in shopping (John, 1999:194). Based on research findings, this understanding evolves from an understanding of the basic shopping script entailing a concrete set of events that unfolds in stable order (at ages three to seven years), to an ability to formulate one's own contingent events in any particular shopping experience (at ages seven to 11 years) (John, 1999:195). Ideally, the thorough examination of food labels should also be part of a well-set sequence of events to improve informed decision making.

Children learn to be consumers by shopping with their parents (Blythe, 2008:235; Keller & Ruus, 2014). The time spent in the marketplace leads to many additional opportunities for consumer education (McNeal *et al.*, 1998:60), facilitating pedagogical situations and working as a tool for informal education (Pettersson *et al.*, 2004:317). A consumer's knowledge base is positively built by experiencing an event, which is more involving and interesting than just being heard about (Hoyer & MacInnis, 2008:275).

Thus, the more often parents take their children shopping, the more the children learn practical skills and theoretical knowledge of consumer-related tasks (Pettersson *et al.*, 2004:325). These practical skills and theoretical knowledge include a consciousness about product information, such as brands, prices (Shim, 1996), information on the handling and storing of food (Pettersson *et al.*, 2004:324), where transactions take place and the forming of a shopping script or sequence (John, 1999:192). Children learn to take the initiative, solve problems and explore identities, as well as time/money management skills, goal orientation and perseverance (Shim *et al.*, 2010:292), how to use a code scanner, return plastic bottles, place products in the check-out counter or pack products into bags after paying (Pettersson *et al.*, 2004:323). A further skill pertaining to purchase knowledge is the ability to compare product value prior to purchase (John, 1999:196) with the aid of the provided food label information.

#### **2.3.3.3 Consumption knowledge**

Consumption knowledge includes how to use and dispose of used products or product parts as well as aspects such as risks in using products (Blythe, 2008:126; John, 1999:196). As soon as the product is taken home, this third knowledge category, consumption knowledge, is needed. Through consumption, children learn and build their consumer knowledge base, like which products are healthier, brand preference, whether advertising claims can be believed, and products social meanings and functional properties (Wilson & Wood, 2004), which in turn also build the persuasion knowledge base. Most of the information needed in this category can be found on food labels, highlighting the necessity of food label education.

### **2.4 FOOD LABEL EDUCATION**

Consumer education is widely used to improve nutritional wellbeing (Schönfeldt & Hall, 2012:152) and is also seen as a requirement for individuals and families (Purutcuoglu & Bayraktar, 2004:443). The concept of consumer education is described in terms of consumer behaviour according to its relationship to consumption (Purutcuoglu & Bayraktar, 2004:443), consumer choice (Davidson, 2015:206) and attitudes (Batty *et al.*, 2015:69). The aim of consumer education is to enhance consumers' knowledge (Brennan *et al.*, 2017:147).

Effective consumer education regarding food labels should include guidance on where to find health- and nutrition-related information (Kempen *et al.*, 2012:21), the practical application of labels in making healthier food choices (Bosman *et al.*, 2012:40) and the resultant more purposeful use of food labels during the various stages of the consumer decision making process (Prinsloo *et al.*, 2012:94). Making non-reading and selective-reading consumers aware of the health benefits of reading food label information (Bosman *et al.*, 2012:40) and

the importance of revisiting the food label (reading) (Kempen *et al.*, 2012:21) through consumer education could motivate them. Consumer socialisation can be used as a means during such consumer education to transfer the knowledge needed to make an informed decision.

## **2.5 THE NECESSITY OF FOOD LABEL EDUCATION**

In the theoretical framework, it has been indicated that food label education can provide consumers with positive food label opinions and the ability to actively use and thoroughly understand food label information, as well as persuasion and consumption knowledge and shopping skills. Although a question might arise regarding why label education is necessary when mere label adjustments might also result in the needed food label knowledge, it is important to note that research indicates that it is not always possible to provide all the information in a preferred manner on food labels (Prinsloo *et al.*, 2012:91), as consumers' needs and expectations differ (McEachern & Warnaby, 2008; Teisl *et al.*, 2008). Consumers do not base their demands on substantiated product knowledge and are therefore not always realistic in their demands. Higher income consumer groups also increasingly demand more food product information (Ali & Kapoor, 2009; Singla, 2010), not realising that food label information cannot be extensive and can only be presented in one language owing to limited label space (Annunziata *et al.*, 2011:159; Prinsloo *et al.*, 2012:91).

All consumers do not necessarily read or use the food label information (Bosman *et al.*, 2012:31; Prieto-Castillo *et al.*, 2015:226; Ranilovic & Baric, 2011:110), despite the fact that consumers favour the most easily available information sources (Möser *et al.*, 2010:172). For instance, consumers from lower socio-economic groups often find label information quite intimidating (Giskes *et al.*, 2007; Pettigrow *et al.*, 2011). Literacy and/or numeracy skills to understand and utilise food label information are also sometimes lacking (Swartz *et al.*, 2013:6; Rothman *et al.*, 2006), resulting in a tendency to make less healthy food choices (Giskes *et al.*, 2007).

In some instances, technical and scientific terminology used on food labels might prevent informed purchasing decisions (Singla, 2010:89; Van der Merwe & Venter, 2010). Consumers sometimes find it fairly difficult (Singla, 2010:89) or even impossible (McIlveen & Semple, 2002) to understand confusing (Nørgaard & Brunsø, 2009) food labels, resulting in a total lack of understanding and misinterpretation (Prieto-Castillo *et al.*, 2015:230; Van der Merwe *et al.*, 2010). To help address this issue, the format of label information, which has a notable impact on label use, should be clear and concise (Annunziata *et al.*, 2011:520; Ranilovic & Baric, 2011:119). Research also confirms that consumers' informed decision

making is remarkably affected by label information with which they are discontented (Van der Colff *et al.*, 2016:225).

Consumers also do not read food label information and use it to its full potential (Annunziata *et al.*, 2011:520; Miller & Cassady, 2015:207; Ranilovic & Baric, 2011:110). Research indicates that consumers also do not easily change their buying decisions based on label information (Hieke & Wilczynski, 2011:776; Kempen *et al.*, 2011:70), as a food label is sometimes not enough to produce behaviour change (Yngve *et al.*, 2012:757). A review by Cowburn and Stockley (2005) confirmed that consumers' actual label use was lower than generally reported. Although recent research goes on to question whether or not improved knowledge would result in positive behaviour changes (Hensley, 2015:94; Fernandes *et al.*, 2014:1861), Miller and Cassady (2015:207) conclude that prior knowledge is associated with how well food label information is used.

Some of the reasons that consumers do not fully utilise food labels include being untroubled by the information (Prieto-Castillo *et al.*, 2015:226), being habitual purchasers or having time and price concerns (Bosman *et al.*, 2012:40; Kempen *et al.*, 2011:76), and encountering problems with the usually small font size (Singla, 2010:89). Some consumers also place a higher value on variables such as taste and personal desires (Grunert *et al.*, 2010). The disregard of food labels might even be true for consumers who know that informed choices are healthier (Borgmeier & Westenhoefer, 2009:183) or who are concerned with nutrition, but still lack the self-control to achieve lifestyle changes (Blumenthal & Volpp, 2010). Complications experienced with food labels point to a need for food label education.

## **2.6 CONSUMER SOCIALISATION DEFINED**

Consumer socialisation is a way through which children develop into consumers (Mikeska *et al.*, 2016:245) by acquiring consumer-related skills such as knowledge and attitudes. Children are provided with the opportunity to participate in a consumer society, learn how to make consumer choices and estimate the value of consumer goods (Wærdahl *et al.*, 2011:128). Consumer socialisation can consequently also be identified as a way to obtain food label knowledge that is currently lacking within the consumer. Through consumer socialisation, children acquire skills, knowledge and attitudes over time (Caruana & Vassallo, 2003) and gain consumer-related experiences and exposure that contribute to their functioning as consumers (Schiffman & Kanuk, 2010:333) as well as positive food label behaviour. Consumer socialisation therefore largely determines the ability to function independently and make informed decisions (Nelson, 2002; Williams, 2002). Numerous formal definitions view consumer socialisation as either an *influence* (Heckler *et al.*, 1989),

an *outcome* (Lachance *et al.*, 2000:128) or a *process* (Hoyer & MacInnis, 2008:397; Muratore, 2003:252). A discussion on each of these three viewpoints will follow.

### **2.6.1 Consumer socialisation as an *influence***

Consumer socialisation is firstly defined as an *influence*, or the transfer of skills, preferences, values and behaviours (Heckler *et al.*, 1989) through a learning *process* by observing parents and other role players as socialisation agents (Schiffman & Kanuk, 2010:333). The child and the socialisation agent (*influence*) form the centre of consumer socialisation in an agent-learner relationship that results in new consumer knowledge and experiences (Moschis & Churchill, 1978:600) of, for instance, food label information. The learning process takes place through modelling (imitation of the agent's behaviour when reading or using a food label), reinforcement (reward when the benefits of food label use are realised) and social interaction (in a shopping environment) (Moschis & Churchill, 1978:600). Bravo *et al.* (2008:257) add habits exhibited by the parent (such as frequent label reading) and communication with parents (about food label attributes) as additional influence channels. Through observing and imitating their parents (Schiffman & Kanuk, 2010:333), children learn and acquire product preferences that take into account concerns about quality, price and value (Shim, 1996). This learning process, facilitated by activities and experiences, starts in the home environment with parents (Ahmad *et al.*, 2011:9; Jorgensen & Savla, 2010:467), where consumption habits are inter-generationally transferred (Bravo *et al.*, 2008:255). Peers as *influencers* follow shortly, as well as other socialisation agents to which they are exposed, such as the media (Ahmad *et al.*, 2011:9).

Parents consequently provide information on what types of products children should consume and buy, how much control children have over buying desired products (Hoyer & MacInnis, 2008:398; Mikeska *et al.*, 2016:245) and their willingness to pay a price premium for a brand (Bravo *et al.*, 2008:266). Parent-child interactions are critical during a child's consumer socialisation (Kim *et al.*, 2008:955), and have an ongoing impact (Del Mar Pàmies *et al.*, 2016:602), taking either a direct (to teach) or indirect (to suggest) path (Muratore, 2003:257). An indirect manner includes mediating their children's interactions with the other socialisation mediums, such as the media (Moschis, 1985; Schiffman & Kanuk, 2010:335), by influencing the types of products, television programs and advertisements to which their children are exposed (Ahmad *et al.*, 2011:9; Hoyer & MacInnis, 2008:398), which could include food label information. There are also wider role players that influence children's consumer behaviour, namely television advertising, packaging, friends' views, children's own consumption experiences and advice from friends and relatives (Moore & Lutz, 2000; Wilson & Wood, 2004).

The role of parents as consumer socialisers and influencing agents for their children becomes less important when the children reach early to middle childhood, as school friends (peers) often become more important product influencers (Evans *et al.*, 2009:192). These peer influences grow to such an extent that some researchers argue this to be the most important socialisation agent by the time adolescence is reached (Brechtwald & Prinstein, 2011; Shim *et al.*, 2010:291). Peer influence describes the extent to which child consumers and peers interact in a process of forming the child's consumer socialisation outcome (Ahmad *et al.*, 2011:9). This influence can be both positive and negative depending on the context. Negative socialisation outcomes include compulsive buying (of, for instance, unhealthy food items), overspending and shoplifting (Shim *et al.*, 2010:291).

Several studies also confirm the role of the media in influencing young consumers (Moschis & Churchill, 1978), for example, through aggressive marketing that influences children's consumption socialisation (Schor, 2014). Children and adolescents are also increasingly using the internet as a primary source of consumer information and entertainment (Rose *et al.*, 2009).

### **2.6.2 Consumer socialisation as a *process* and an *outcome***

The most popular way to describe consumer socialisation is as a *process* (Hoyer & MacInnis, 2008:397; Muratore, 2003:252; Rose, 1999:107; Schiffman & Kanuk, 2010:333). Here, it is comprehended as a complex environmental (Rose, 1999:107) or inherently cultural route (Baumrind, 1980:640) by which individuals acquire (develop) consumer-related skills, knowledge and attitudes (Moschis & Churchill, 1978:599), which is also applicable to food label information. This consumer socialisation process repeats itself throughout an individual's entire life span, with each process exhibiting its own outcome with positive or negative results (Erasmus *et al.*, 2005:91; Moschis & Moore, 1987; Schiffman & Kanuk, 2010:335). Positive outcomes include new consumer skills, knowledge and attitudes (Ahmad *et al.*, 2011:9) that can be used to enhance informed decision making based on food label use. Consumer socialisation as an *outcome* entails the learning properties relevant to the development of behavioural, cognitive or affective characteristics (Lachance *et al.*, 2000:128-129). However, it is important to note that the environment in which consumers grow up and function as adults plays a major role in the process of consumer socialisation and resultant outcomes. As such, a discussion on the unique South African setting in which consumer socialisation takes place will follow.

## **2.7 THE UNIQUE SOUTH AFRICAN SETTING FOR CHILDHOOD CONSUMER SOCIALISATION**

The focus of this section will be on unique South African factors influencing consumer socialisation during childhood, such as culture, socioeconomic disadvantages, as well as parental status due to factors among which HIV and a high divorce rate. From a young age, children usually learn consumption-related attitudes and behaviours from the dominant culture (Kim *et al.*, 2008:961). A *culture* consists of beliefs, attitudes, habits and behaviours that are shared and transferred to others (Rousseau, 2003:397). South Africa has two main cultural groups, Afrocentricity (collectivistic) and Eurocentricity (westernised, focused on individualism, materialism, a work ethic, achievement and success) (Rousseau, 2003:401). A child in an individualistic culture (Eurocentric) is socialised to become a distinct, autonomous individual with emphasis on self, whereas a child in a collectivist culture (Afrocentric) is socialised to become an inherently integrated person with others (Rose, 1999).

Research indicates that the consumer socialisation of children from different cultures varies (Schiffman & Kanuk, 2010:335; Wang *et al.*, 2007), due to diverse family constitutions (Blythe, 2008:233), communication patterns (Kim *et al.*, 2008:957) and decision making styles (Blythe, 2008:236; Du Plessis, 2003:49) – for instance in African cultures, family decision making tends to be male-dominated (Blythe, 2008:236). Given South Africa's divergent cultural composition (Du Plessis, 2003:49), there can be no doubt that the differences within and between cultural groups play a major role in the consumer socialisation processes of the South African child.

The result of an absent parent as (the) main socialisation *influence* should also be acknowledged, since the consumer socialisation of many South African children is influenced by the absence of a primary socialisation agent. Based on the most recent available statistics, a major reason for this absence is the high prevalence of HIV/AIDS, with more than five million South Africans reported in 2010 to live with HIV/AIDS (UNICEF, 2010). Another problem is that of the absent father figure, owing to a need to migrate for employment (Madhavan, 2008:649). Similarly, a high divorce rate trend in South Africa (Prince, 2009) causes the absence of family members. Because of these and other reasons, seven million children in South Africa (40%) in 2009 were reported to be raised by single mothers (Bojuwoye & Akpan, 2009:261), outnumbering the just more than six million (34% of the country's children) growing up with both parents (Prince, 2009). These numbers can be expected to have grown in recent years.

Child consumers from single-parent families experience a socioeconomic disadvantage (Franz *et al.*, 2003; Whitehead & Holland, 2003), which includes a lower income capacity, resulting in a lower household income and fewer household resources (Roman, 2011:578). Lengthy working hours, strain and chronic fatigue owing to the single parent's diverse obligations (Roman, 2011:578; Segal-Engelchin & Wozner, 2005) might further lead to neglect of consumer socialisation. It can be argued that the result of these constraints on consumer socialisation could result in inexperienced consumers with limited knowledge.

## **2.8 THE RESULT OF LIMITED CONSUMER SOCIALISATION**

In order to fully comprehend the possible effects of inexperience and limited knowledge due to limited consumer socialisation on a consumer's decision making; the basic decision making process of a consumer needs to be studied. Owing to a lack of consumer socialisation, inexperienced consumers with limited knowledge are usually faced with limited *extensive problem-solving* skills due to limited or no established criteria at their disposal with which to evaluate product categories or brands (Cant *et al.*, 2006:200; Schiffman & Kanuk, 2010:526). Buying situations where extensive problem solving is especially relevant include the evaluation of high-priced products, technically complex products and specialty goods, as well as when the performance risk is high (Assael, 1998). It can be argued that this situation may also apply to food labels, since study results indicate that consumers find food label information difficult to understand (Prieto-Castillo *et al.*, 2015:230; Van der Merwe *et al.*, 2010). When a higher risk product such as medication or diet-specific food items need to be bought, the inability to understand label information may consequently lead to extensive problem solving. This may include a more intense search for other information sources.

Inexperienced consumers with limited knowledge regarding a product or brand are also challenged with *limited problem-solving* situations, where they manage to accumulate the basic needed criteria for evaluation, but still lack the self-knowledge that would clarify their preferences and basic needs (Schiffman & Kanuk, 2010:526). It is arguable as to whether or not inexperienced consumers with limited knowledge will be faced with *habitual decision making* (Cant *et al.*, 2006:199), as consumers in this scenario usually have experience with the product category and an established set of evaluation criteria (Schiffman & Kanuk, 2010:527). In order to fully comprehend the possible effects of inexperience and limited knowledge owing to poor consumer socialisation on a consumer's decision making, the basic decision making process of a consumer needs to be revisited.

### **2.8.1 The buying decisions of inexperienced consumers with limited knowledge**

The cognitive decision making model describes a rational and systematic approach (Hoyer & MacInnis, 2008:229), where the stages do not necessarily follow each other in a set order (Cant *et al.*, 2006:193), as some may be skipped or extras added. Nevertheless, stage one of this model is the *need or problem recognition stage*, where consumers realise a need in their life (Blythe, 2008:260; Cant *et al.*, 2006:195). The next stage, the *information search stage* (stage two), may be executed internally (remembering) or externally (Blythe, 2008:260; Cant *et al.*, 2006:195). During the *pre-purchase evaluation of alternatives* stage (stage 3), consumers consider the alternatives to determine which product would best meet their needs (Blythe, 2008:260; Schiffman & Kanuk, 2010:534). Stages four and five consist of the *purchase* stage and the *consumption* stage, respectively (Blythe, 2008:260). Lastly, consumers consider whether or not the specific purchase has met their needs during the *post-consumption evaluation* stage (stage six), and then disposes of the packaging and other residue in the *divestment* stage (stage seven) (Blythe, 2008:260). Three of these decision making stages are especially important when investigating the effect of limited consumer socialisation on the ability to make informed decisions with respect to food labels, namely the *information search* stage, the *pre-purchase evaluation of alternatives* stage and the *purchase* stage (Blythe, 2008:263; Schiffman & Kanuk, 2010:533).

#### **2.8.1.1 The information search stage**

The information search stage requires consumers to organise information within their frame of reference (Rousseau, 2003:118). This stage necessitates that the consumer be exposed to new food label information, pay attention to this new information and be able to comprehend the new information (Assael, 1998). The consumer therefore needs to undertake physical and mental activities (learning processes) to obtain new information during this stage (Cant *et al.*, 2006:197).

Consumers' information processing ability varies based on their amount of prior (existing) knowledge (Hoyer & MacInnis, 2008:107). Those with rich and well-organised prior knowledge are better equipped for information retrieval and product judgement; whereas, insufficient and less specific prior knowledge may cause an inability to relate to and understand new, incoming product information (Lee & Lee, 2011:363, 365).

Research shows that consumers primarily rely on their internal knowledge (already stored information) during information search situations (Jansen *et al.*, 2009:263). Such internal knowledge comprises information and feelings (Hoyer & MacInnis, 2008:198), commonly due to past (childhood) consumer socialisation. The inexperienced consumer already faces a

drawback, with limited knowledge stored and implemented as part of their internal information sources (Hoyer & MacInnis, 2008:198), and is therefore forced to rely on external sources for information (Schiffman & Kanuk, 2010:533). Abundant information may further confuse inexperienced consumers who have limited knowledge (Brennan *et al.*, 2017:149), causing them to ignore possible important information that could aid in informed decision making, such as food label information, leading to a decline in decision quality (Erasmus *et al.*, 2005:90; Lurie, 2004).

Research shows that controlling the flow of information can assist in a better match with preferences and better knowledge and memory (Ariely, 2000). With limited or even a lack of internal information sources, the inexperienced consumer with limited knowledge is forced to rely on (sometimes) untrustworthy or misleading external information sources, or become confused by a wealth of food label information that may not necessarily assist with informed decision making.

#### **2.8.1.2 The pre-purchase evaluation of alternatives stage**

During the pre-purchase evaluation of alternatives stage, consumers aim to make a buying choice that would best meet their needs by assessing the relative merits and demerits of each product (Cant *et al.*, 2006:201). Food label information could greatly assist consumers during this process. Generally, two types of information, which form the evaluation criteria, are used during pre-purchase evaluation. These include a list of brands/models from which a selection is made (evoked/consideration set) (Hoyer & MacInnis, 2008:199) and a set of criteria to be used during the evaluation process (Schiffman & Kanuk, 2010:534). The extent and thoroughness of these information sets depend on consumers' previous experience and consumer knowledge (Hoyer & MacInnis, 2008:198). Inexperienced consumers with limited knowledge will therefore struggle to conclude this stage of the process, and, for instance, base their decisions on the product price rather than on other product features outlined on the food label, ultimately leading to suboptimal decisions (Blythe, 2008:264; Hardesty *et al.*, 2007).

Image-building factors to improve one's lifestyle might also be used during buying situations when consumers lack experience and knowledge (Erasmus *et al.*, 2005:93). Such factors include status factors (Rousseau, 2003:110) such as brand names (Hunt *et al.*, 1996:65). 'Shortcut decision rules' or heuristics, such as pride, fear and affection (Rousseau, 2003:110), are often used by inexperienced consumers during their final decision making to overcome their shortcomings (Gothan & Erasmus, 2008:640; Schiffman & Kanuk, 2010:529) and reduce the effort of making judgements.

### 2.8.1.3 *The purchase stage*

The *purchase* stage of the cognitive decision making model usually results in a financial transaction (Cant *et al.*, 2006:201). During the performance of this stage, it can be argued that a consumer's purchase knowledge is especially important. A sound knowledge base of shopping scripts, which entails a set of events unfolding in a stable order that leads to an ability to formulate one's own sequence of events in any particular shopping experience, seems particularly useful here (John, 1999:195). Ideally, the use of food label information should be a part of these 'events' to help ensure informed decision making. The social cognitive theory provides a framework with which to comprehend the effects of limited food label knowledge, and will therefore be discussed next.

## 2.9 THE SOCIAL COGNITIVE THEORY

The social cognitive theory focuses on all the cognitive (mental) human processes (Bandura, 2004:144) that lead to 'knowing' (knowledge) or cognition (Berk, 2013:221) of, for instance, food label information. This section elaborates on the following assumptions outlined in the previous chapter:

- Humans are rational beings and consequently try to **make sense** of their surrounding world (Berk, 2013:222).
- Humans learn through **observing** others (Schiffman & Kanuk, 2010:224).
- Humans use internal mechanisms to **process** external stimuli (Kaiser, 1990:253).
- There is a dynamic **interaction** between people and their environments (Bandura, 2004:144; Glanz *et al.*, 2015:170).
- There is an **outcome** expectancy (Ambrose & Chiravuri, 2010:249; Schiffman & Kanuk, 2010:481).

Cognition is based on the collection and transformation of (food label) information into knowledge through the inner processes of the human mind and includes all mental activities, such as remembering, symbolising, categorising, problem solving, creating, fantasising and dreaming (Berk, 2013:221; Meyer, 2002:10) (**process**). The information and experiences accumulated through socialisation need to be interpreted and organised so that they can be stored in the short- and long-term memory (Hoyer & MacInnis, 2008:171) (**make sense**), and thus used as consumer knowledge and to guide behaviour (Meyer, 2002:10) (**outcome**).

During children's everyday exposure to consumer-related situations (for example, co-shopping with a parent), new food label information reaches their brains through their sensory receptors – hearing, seeing, feeling, tasting and touching – in the form of stimuli and

causes a response called a sensation (Schiffman & Kanuk, 2010:152) (**interaction**). Exposure therefore takes place in the form of branding, packaging, point-of-sale material, in-store displays, websites, sales promotional offers (Evans *et al.*, 2009:29) and food labels. In a shopping environment, a stimulus can, for example, consist of a visual shelf loaded with cereal boxes. Children may watch (**observe**) their parents comparing the nutritional value of different cereals before making a choice (performing a non-programmed decision) (Schiffman & Kanuk, 2010:224-225), or witness their parent taking a familiar family favourite without hesitating (programmed decision) (Blythe, 2008:267). If children pay attention (devote mental activity) to this scenario (notice it) (Evans *et al.*, 2009:29; Hoyer & MacInnis, 2008:74), are interested in what their parents are doing and are motivated to learn, the stimuli will be encoded in their brains (learned) and temporarily stored in the sensory memory (Hoyer & MacInnis, 2008:29, 173). This **process** is supported by researchers such as Miller and Cassady (2015:208), who have studied associates between knowledge and food label use.

Two types of encoding can be distinguished, namely relational (emphasis on similarities among information pieces) and item-specific (elaboration on information unique to an object) (Lee & Lee, 2011:361), which cooperatively facilitate consumers' memory performance (Meyers-Levy & Zhu, 2007), product judgement (Malaviya, 2007) and learning (Lee & Lee, 2011:361) (**process**). Therefore, in order for child consumers to encode new information, sufficient time should be spent on the encoding process. Their brains also need to identify a schema of the same (for example, concerning cereal – item-related encoding) or a related theme (food to eat – relational encoding) to successfully complete the encoding process (Berk, 2013:222). Storage of information then takes place through the integration of new knowledge with existing knowledge in schemata (Evans *et al.*, 2009:64) or the making of new schemata where the information can be stored as knowledge (**outcome**).

Schemata are psychological structures consisting of motor action patterns (such as infants' sucking reflex) that develop as more stimuli are encoded, providing an organised way of making sense of experiences (Berk, 2013:222, G-13) through linking and associating the information with a concept (Hoyer & MacInnis, 2008:94). The **processes** of adaptation and organisation of new information develop these basic reflexes with which infants are born into schemata (Berk, 2013:223). Adaptation is a process where cognitive schemata and structures (combinations of schemes) are changed or new ones are built to accommodate new stimuli from the environment. Organisation in turn is the coordination and integration of cognitive schemes, resulting in more complex and integrated cognitive structures (Meyer & Van Ede, 2002:75). Therefore, child consumers will have to make organisational changes to

their schemata when, for example, stimuli of a new, healthier cereal are received through their senses; however, adaptation has to take place when their parents inform them that they are no longer allowed to buy their favourite cereal since the food label indicates that it contains too many additives and preservatives (**make sense, outcome**).

Relevant new information that was temporarily stored in the sensory memory will be encoded and stored in the short-term memory if the consumer is motivated to process it further (Hoyer & MacInnis, 2008:173). The short-term memory is used for the processes of knowing and understanding. Subsequently, most internal information searches and consumer decision making are done from this memory, by retrieving (remembering) or accessing stored information (Hoyer & MacInnis, 2008:171, 173, 191). Transferred knowledge to the long-term memory through repetition is stored in the semantic memory (which includes general knowledge such as words), the working memory (knowledge on more complex tasks) or the autobiographical memory (knowledge about the self and own experiences) (Hoyer & MacInnis, 2008:174-175; Louw *et al.*, 2002:335-337). These processes usually lead to rational decision making.

The newly stored consumer knowledge that led to the development of cognitive structures and schemata results in a reduction of cognitive effort that in turn improves a consumer's ability to analyse, elaborate on and remember product information (Alba & Hutchinson, 1987:412). Consumers use these cognitive structures to process external stimuli (Kaiser, 1990:253), such as new food label information. Thus, the more children are exposed to new consumer experiences that involve food labels, the more times the consumer socialisation *process* will repeat itself, and the more sophisticated their food label-related schemata and cognitive structures would become, enabling them to make informed and healthy food choices. These increasingly sophisticated schemata and cognitive structures theoretically mean that the child reaches more advanced developmental milestones as outlined by different researchers (Berk, 2013:5; John, 1999:186; Piaget, 1971; McNeal, 1999:18). These important developmental milestones require clarification, thus being discussed below.

## **2.10 CHILD CONSUMERS' DEVELOPMENTAL MILESTONES**

Certain cognitive, social and consumer-based, milestones can be reached throughout the consumer's life span and through the repetition of the accompanying socialisation *process*, being distinguished in terms of developmental stages or phases (John, 1999:186; McNeal, 1999:18; Piaget, 1971), including those the child consumer reaches at specific intervals (John, 1999:187). After progressing through some of these developmental milestones and stages, child consumers can theoretically be qualified as primary and/or influential

consumers (McNeal, 1999:17). Potential adult consumers are marked as future consumers (McNeal, 1999:18).

These milestones that are either reached or not attained due to a lack of sufficient childhood consumer socialisation can greatly affect the child, for as an adult consumer; certain cognitive-, social- and consumer-based skills are needed to successfully execute daily and more extensive consumer tasks and decisions. Therefore, these milestones, which are divided into stages and phases, need to be examined. Table 2.2 provides a summary of the periods and stages of development conceptualised by different seminal authors in this field.

**Table 2.2** Summary of the periods and stages of development (Berk, 2013:5; John, 1999:196; Piaget, 1971; McNeal, 1999:17)

| Age group           | Basic developmental phase       | Piaget's stages            | John 1999        | McNeal 1999   |
|---------------------|---------------------------------|----------------------------|------------------|---------------|
| Conception to birth | Prenatal period                 | -                          | -                | -             |
| Birth to 2 years    | Infancy to toddlerhood          | Sensorimotor stage         | -                | Stage 1       |
| 2 to 6 years        | Early childhood                 | Preoperational stage       | Perceptual stage | Stage 2, 3, 4 |
| 6 to 11 years       | Middle childhood                | Concrete operational stage | Analytical stage | Stage 5       |
| 11 to 20 years      | Pre-adolescence/<br>Adolescence | Formal operational         | Reflective stage | -             |

### 2.10.1 Childhood cognitive development by Piaget

Piaget found that children act directly on their physical world and, with that, major cognitive advances take place (Berk, 2013:221). The central construct of Piaget's theory is the equilibration that draws together the nature and nurture necessary in forming a cognitive system (Smith, 2002:507). According to his theory, knowledge is not imposed on an unreceptive child (Berk, 2013:21); rather, children actively create knowledge as they explore their world (Meyer & Van Ede, 2002:73). Cognitive development is influenced by *maturing* (of the endocrine and nerve systems), *experience and practice* (of the developing cognitive

abilities), *social interaction and transfer* (with and by parents, family, teachers and peers), and *equilibration* (reached when cognitive structures import new information) (Meyer & Van Ede, 2002:73-75). As new information enters through the senses, adaptation (building new schemata) takes place where the child assimilates (interprets) this information to accommodate (adjust and creat schemata) it, which entails a process of organisation (rearrangement and linking of schemata) in order to find a new equilibration (Berk, 2013:223).

Piaget's theory depicts the child's progress through three levels of mental organisation (knowing), from infancy (based on action), to childhood (based on representational thought) and adolescence (based on formal understanding) (Smith, 2002:507). These levels, which are closely related to age, include distinct stages in which a child's ability to think and reason is formed (Chan & McNeal, 2002). Four main stages of cognitive development are the sensorimotor stage (birth to two years), the preoperational stage (two to seven years), the concrete operational stage (seven to 11 years) and the formal operational stage (11 to adulthood) (John, 1999:184). To guide further discussion, the basic developmental phases presented by Berk (2013:5), as outlined in Table 2.2, will be used.

#### **2.10.1.1 Prenatal period**

The prenatal period runs from conception to birth and is normally a nine-month period (Louw, 2002:119). This is the stage of most rapid change, where a one-celled organism transforms into a human baby with astonishing abilities (Berk, 2013:5). Three stadia can be distinguished during development: the zygote, embryo and fetus (Louw, 2002:119), with weeks 25 to 38 marked as the period with the most rapid brain development (Berk, 2013:91).

#### **2.10.1.2 Infancy and toddlerhood**

Dramatic changes in the body and brain of a baby (first year) and toddler (second year) ensure the support of a wide range of motor, perceptual and intellectual capacities (Berk, 2013:5). There are different opinions and theories that explain the origin of knowledge and the reasons why an infant is able to learn and develop. Piaget states that a baby's cognitive development starts with the use of senses and movements to explore the world (Piaget, 1971); therefore, only things that can be integrated with the infant's limited reflexes, such as sucking and grasping, can be registered (Meltzoff, 2002:7). It can be said that infants 'think' by acting on the world with their eyes, ears and hands (Berk, 2013:22).

#### **2.10.1.3 Early childhood**

The bodies of children in early childhood become longer and leaner; their thought patterns and language skills develop at a rapid pace; their motor skills are refined; and they become more self-controlled and self-efficient (Berk, 2013:5). According to Piaget, children between the ages of two and seven years are in a preoperational phase and are known for their symbolic and illogical thinking (Berk, 2013:21). They are bound to perceptions in their immediate environment and tend to observe only the latter (Piaget, 1971).

The preoperational phase is further divided into two periods: pre-conceptual thoughts and intuitive thoughts (Piaget, 1971). Children in the pre-conceptual thoughts period are between two and four years of age and are not yet capable of understanding a concept (Meyer & Van Ede, 2002:79). From four to seven years, Piaget states that children become 'intuitive thinkers' and make conclusions based on perceptions, thus logical thinking is not applicable (Meyer & Van Ede, 2002:79). At this stage, children develop symbolic thought, although perceptual properties of stimuli are still dominant.

#### **2.10.1.4 Middle childhood**

This phase is marked as the time when a child's brain has reached its adult size and weight (Louw *et al.*, 2002:325). Piaget views this age as the turning point in cognitive development, as children's thoughts are now comparable with that of adults, in that they are more logical, flexible and organised, showing advanced understanding of the self, mortality and friendship (Berk, 2013:5, 249). This age group is classified as being in the concrete operational stage (Piaget, 1971), in which their actions are based on objects and not hypotheses (Meyer & Van Ede, 2002:82), making their reasoning concrete. Most of the shortcomings of the pre-operational stage have been overcome with the start of the concrete operational stage, which includes egocentrism, centring, transdeductive reasoning, animism and classifications (Meyer & Van Ede, 2002:82). The most evident shortfall still present is the absence of abstract thinking, as children of this age only reason in terms of the observable realities in front of them (Meyer & Van Ede, 2002:82).

#### **2.10.1.5 Adolescence**

Adolescence is the period in which the child reaches sexual maturity and grows into an adult body, and has more abstract and idealistic thoughts, attitudes and opinions of their own (Berk, 2013:6; Rousseau, 2003:383). Based on Piaget's theory, adolescents are in the formal operational stage of development, demonstrating adult-like complex, abstract reasoning (Berk, 2013:21). With their advanced cognitive ability, adolescents are capable of hypothetico-deductive reasoning and propositional thought (Berk, 2013:254). With this

reasoning, adolescents solve problems by starting with a general theory of all possible factors that could affect the outcome and deduce specific hypotheses during testing (Berk, 2013:254).

The thought pattern of the adolescent can be explained using similar elements of scientific reasoning (Inhelder & Piaget, 1958): the formulation of a hypothesis, the collection of alternatives, the systematic testing of alternatives and the arrival at a conclusion. Inductive thinking is also present in this phase, which is to reason from the specific to the general (Inhelder & Piaget, 1958). In propositional thoughts, adolescents are able to evaluate the logic of verbal statements without referring to real-world circumstances (Berk, 2013:254). In general, this ability indicates that adolescents are able to reason about thoughts ('what if/may'), a process known as reflective abstraction (Piaget, 1971), while younger counterparts reason about events in the environment ('this/now') (Meyer & Van Ede, 2002:82).

#### **2.10.2 Consumer socialisation developmental stages by John**

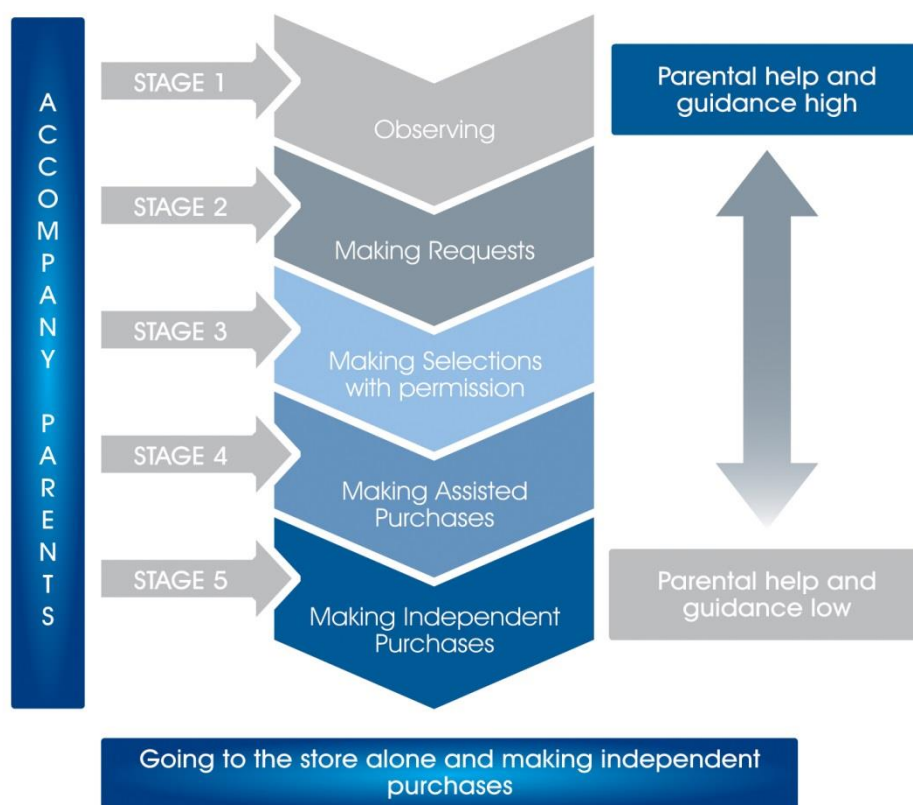
It is clear that no positive consumer socialisation *outcome* such as informed decision making would be reached if sound cognitive development did not take place. Children are consequently dependant on others in their learning (Shneidman & Woodward, 2015:1). John (1999:185) realised this interdependent relationship between cognitive development and consumer socialisation, and based her consumer socialisation stages on the cognitive development theory of Piaget and the discussions of children's social development in Selman and Byrne (1974) and Barenboim (1981). In this approach, consumer socialisation is viewed as a developmental process that proceeds through three different stages, which indicate important shifts in child consumers' knowledge development, decision making skills and purchase-influence strategies (John, 1999:186). These stages are called perceptual, analytical and reflective.

Children in the *perceptual stage* (three to seven years) demonstrate a general orientation towards perceptions around them; therefore, their consumer knowledge is based on single attributes and their consumer decisions on limited information, such as the colour and graphics on food labels (John, 1999:187). During the *analytical stage* (seven to 11 years), children have an increased ability to process information and develop perspectives that go beyond their own small-world feelings and perceptions. This stage allows them to evaluate alternatives based on an analysis and discrimination of more than one product attribute (John, 1999:187), such as the nutritional value and taste. A *reflective* way of reasoning (11 to 16 years) suggests that children are more focused on the social meanings and foundations of the marketplace, enabling them to make more adaptive and strategic decisions (John,

1999:187). Food products might therefore be chosen based on, for instance, longer term effects, such as diet plans.

### 2.10.3 Consumer behaviour development by McNeal

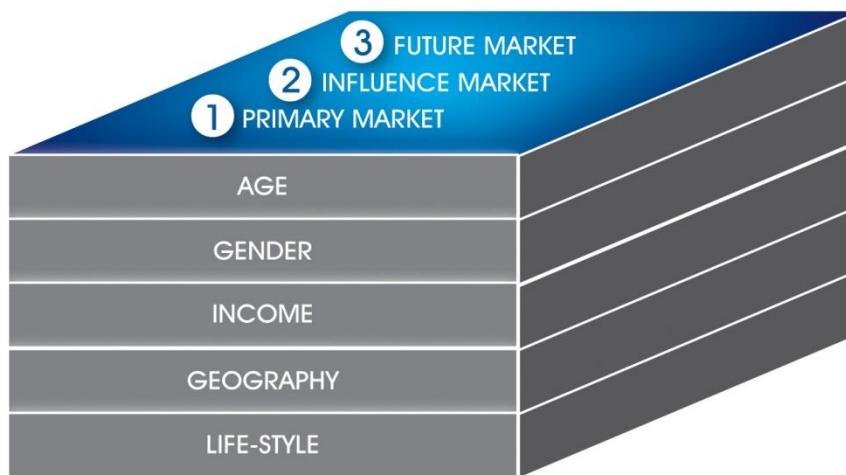
Progression through the combined stages identified by Piaget (1971) and reworked into consumer socialisation stages by John (1999:186) has resulted in enhanced cognitive and social skills that equip a child with ever-improving consumer behaviour skills. McNeal (1999:17) distinguishes five *stages* of a child's development related to consumer behaviour patterns, which are depicted in Figure 2.2 in conjunction with those of Blythe (2008:239).



**Figure 2.2** The stages of a child consumer's development of consumer behaviour patterns as combined from Blythe (2008:239) and McNeal (1999:17).

Stage one begins at a median age of two months (McNeal, 1999:17), where according to McNeal *et al.* (1998:50) children accompany their parents to stores, riding in shopping carts, observing and listening. At this stage, children have no understanding of money as an infinite source; they only understand that needs can be fulfilled at a store (Blythe, 2008:238). At around 24 months, stage two is entered when children start to make requests for goods and services by reaching for or pointing to products that may result in pester power and tantrums

(McNeal *et al.*, 1998:50). The third, fourth and fifth stages occur when the child progresses from making selections and learning that products are subject to an exchange process, through buying something with an accompanying parent, to making their own purchase, and occur between the ages of about three-and-a-half years and eight years (Blythe, 2008:238-243; McNeal *et al.*, 1998:50). By the time children participate in the final stage of consumer development, they can be seen as a primary market, an influence market and a future market – three markets in one (McNeal, 1999:18). The model of the three markets is presented in Figure 2.3. Here, the vertical layers illustrate the three-markets-in-one, which will be discussed below in more detail. The horizontal layers show that child consumers from each market also constitute different ages, genders, incomes, geography and life-styles.



**Figure 2.3** Children as a multidimensional market (McNeal, 1999:17).

#### **2.10.3.1 Primary consumers**

Children as primary consumers have their own needs, go to the marketplace to satisfy those needs and spend their own money (McNeal *et al.*, 1998:49). At age four or five, children enter the consumer role, where within the range of five to nine years, they become increasingly aware of differences in retail store quality and retail store price (McNeal & McDaniel, 1981), until, by age nine or ten, they perform the role of consumer with relative confidence and expertise (McNeal, 1978:49). A study with Chinese children brought to light that on average 2.8 independent shopping trips have been made per week by the time they reach the age of 10 years. (McNeal & Yeh, 1997). Children in general would therefore be

capable of making informed decisions based on food label information, if there were not any limiting factors on their childhood consumer socialisation.

#### **2.10.3.2 Influence consumers**

The child consumer as primary market also has an important role, influencing the market (McNeal, 1992; McNeal & Yeh, 1997) and forming an integral part of household decisions (Pettersson *et al.*, 2004; Schiffman & Kanuk, 2010:340), including those based on food label information. Indeed, adolescents' role and influence in family decision making is seen worldwide as a topic of continuing importance (Wang *et al.*, 2007:1117).

Child consumer's influential behaviour varies across the different stages of the consumer decision making process (Shoham & Dalakas, 2003:243; Wang *et al.*, 2007), and little consensus has been reached among researchers in this regard. Earlier research has found that children exhibit a lower level of influence on decisions about where and how much to spend (Belch *et al.*, 1985), having a greater influence during the problem recognition and information search stages of the decision making process (Beatty & Talpade, 1994). Later research, however, shows that children have more influence in the alternative evaluation, choice and purchase stages than during the problem recognition stage (Holdert & Antonides, 1997).

More recent studies indicate a decline in adolescent influence as the decision stages progress to the final choice (Lee & Beatty, 2002:32; Shoham & Dalakas, 2003:243). Nevertheless, adolescents' influence during the final choice is seen as equal to that of their parents, making them equally powerful (Lee & Beatty, 2002:32).

#### **2.10.3.3 Future consumers**

The last of the three-markets-in-one is described by McNeal (1992) as the future market. This market indicates that the same child consumer that is part of the active primary and influence markets will grow up to become the adult consumers of the future, thus being the future market. Consumer knowledge and skills that are obtained throughout childhood consumer experiences are valuable resources used by adult consumers to make informed decisions.

### **2.11 CONCLUSION**

Age-related cognitive abilities affect knowledge and experience acquisition, influencing the way children interpret and organise their consumer experiences and information accumulated over time (John & Whitney, 1986:406) during childhood consumer socialisation.

Cognitive development facilitates the process of evaluating products, comparing alternatives and making informed buying decisions (John, 1999:184). The skills and knowledge attained during consumer socialisation can be seen as necessary when they expected to make informed decisions as future adult consumers. Accordingly the theories of John (1999) and Piaget (1971), which is also embedded in the social cognitive theory will be further applied in the following chapters and resulting articles.

In light of the persistent hardships that many South Africans face, as well as mounting global problems such as food shortages and economic recession, it is important to ensure that future adult consumers are able to make informed and healthy food choices. Consumer socialisation with a focus on food label information provides children with the opportunity to receive important food label information that ultimately results in knowledge that can enable them to make informed and healthy food choices when they are adult consumers. However, limited consumer socialisation during childhood can result in future adult consumers having limited food label knowledge. An intervention in the form of consumer education may, in this case, be needed for current adult consumers as well.

This background literature provides the basis for the present study to embark on empirical research to develop an educational model focused on food label information that can be implemented as a preventative tool during childhood consumer socialisation or as an intervention during adult consumer socialisation.

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CHAPTER 3  
METHODOLOGY

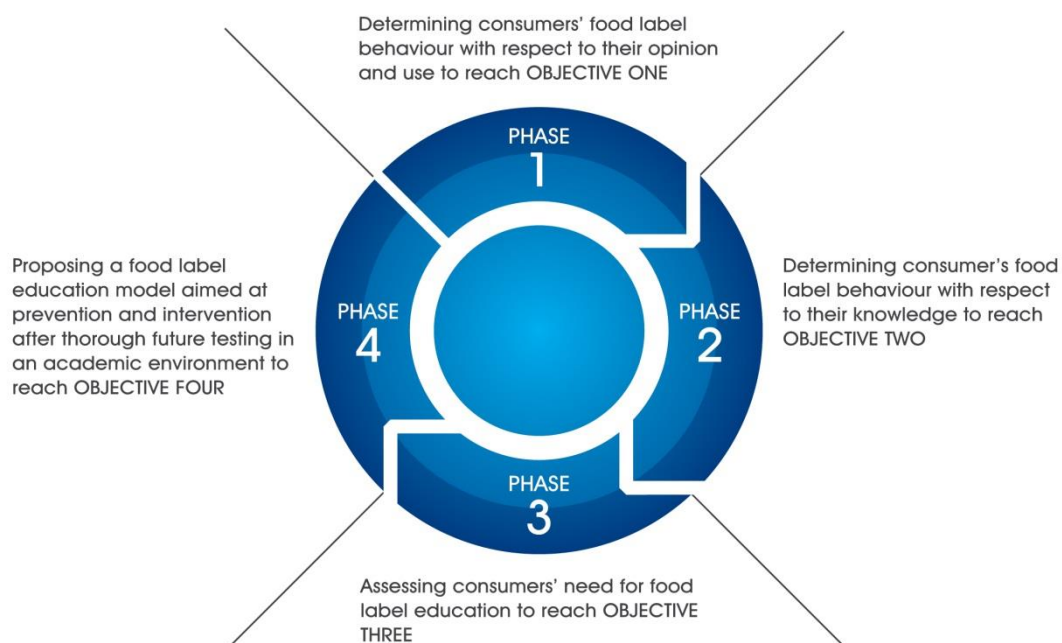
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### 3.1 INTRODUCTION

In order to develop a food label educational model, it was first necessary to establish an appropriate methodology with which to reach the main aim and research objectives. This chapter explains the chosen multi-phased interpretive design that was applied to collect and combine the needed data to compile the model. A brief discussion on the reasons for including specific existing datasets and the unique combination of the different results presented in three separate articles is also included. The research design that used existing datasets to compile the educational model will be discussed first, followed by an explanation of the methodology used to obtain to existing datasets.

### 3.2 OVERARCHING STUDY DESIGN

According to the multi-phased research design, four phases were planned in accordance with the four objectives set out in Chapter 1. Each phase employed a quantitative descriptive cross sectional survey design. The study phases are presented in Figure 3.1.



**Figure 3.1** A multi-phased study on consumers' food label behaviour.

To reach each objective through the four phases, five different datasets that were collected over a period of five years (2009 – 2013) were used. The two datasets that utilised the same questionnaire and followed the same research design in 2010 and 2013 are labelled 'data set

three 2010' and 'data set three 2013' respectively, and will be discussed in one section. The four phases, together with their objectives, datasets applied to reach these objectives, and the resultant articles are discussed below:

- **Phase one** of the study aimed to reach objective one, where the food label opinion, use and understanding of the young adults (at the end of childhood consumer socialisation) and an older consumer group were described. Opinion-, use-, and understanding-related barriers and shortcomings in children's consumer socialisation were categorised, and differences between the food label opinion and use of two groups were identified. Datasets one and two were used, and the results are reported in Article 1, titled *Young adult and older consumers' self-reported food label behaviour: Identifying barriers to informed decision making* (Chapter 4).

- *Dataset one* – General food label opinion and use of consumers from the North West Province.
- *Dataset two* – The use and understanding of food label information to support dataset one, with a specific focus on student consumers as young adults, who have just entered their adult consumer role and socialisation.

- **Phase two** aimed to reach objective two. As such, the food label knowledge of two groups, young adults and older consumers, were studied in order to identify gaps in the consumers' food label knowledge. Shortcomings in children's consumer socialisation in this regard were categorised, and differences between food label knowledge gaps of the two groups were identified. Dataset three was used during this phase, and the results are reported in Article 2: *Consumers' food label knowledge: Identifying gaps* (Chapter 5).

- *Dataset three* – During 2010, young adults and older consumers' general food label knowledge was studied. A follow-up was done in 2013, using different respondents and applying the same questionnaire. The aim was to determine whether or not there was a change in the pattern in these two groups of consumers' food label knowledge, as the country's current labelling regulation (South Africa, 2010) was promulgated after the 2010 data collection.

- **Phase three** aimed to reach objective three. A young adult group and an older consumer group were analysed in terms of their need for food label education in order to plan the intended educational model. Differences between the two groups' educational needs were identified. Dataset four was used to reach this objective, and

the results are reported in Article 3: *A proposed food label educational model for consumers* (Chapter 6).

- *Dataset four* – An assessment of the need for food label education of young adults and older consumers.
- **Phase four** aimed to reach objective four. The results of the precluding three phases were thus combined with relevant theories of childhood development (John, 1999:186; Inhelder & Piaget, 1958) in order to develop a food label educational model. The proposed model is also presented in Article 3: *A proposed food label educational model for consumers* (Chapter 6).

### 3.3 ORIGIN OF EXISTING DATASETS

The different existing datasets that were used in this study were obtained from an ongoing research project from the subject group, Consumer Sciences at the North-West University. As part of a larger project, some basic elements regarding methodology were planned and executed in the same manner across the studies. These similarities in research design, sampling and data collection will be discussed below under one heading. Then, the differences in study locations and questionnaires will be outlined under separate headings. Table 3.1 provides a summary of the research methodologies of these existing data sets.

**Table 3.1** A summary of the existing research methodologies of each dataset

|                                                                              | DATASET ONE                                                                                                                               | DATASET TWO                                               | DATASET THREE 2010                                                                                                                                                                           | DATASET THREE 2013                                 | DATASET FOUR                            |
|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------------------|
| Phases                                                                       | 1<br>Food label opinion- and use-related barriers                                                                                         |                                                           | 2<br>Food label knowledge gaps                                                                                                                                                               |                                                    | 3<br>Educational need                   |
| Research approach                                                            | Quantitative approach<br>Cross-sectional and descriptive designs<br>Survey type                                                           |                                                           |                                                                                                                                                                                              |                                                    |                                         |
| Study population                                                             | North West Province: Small towns<br>Medium towns<br>Large cities                                                                          | North West Province: NWU Potchefstroom and Mafikeng Sites | North West Province: Potchefstroom Public areas                                                                                                                                              |                                                    |                                         |
| Sample (n):<br><br>Young adult (YA) vs Older respondents (OR)<br><br>(years) | YA: 18-19 (n=61) and 20-29 (n=353)<br><br>OR: 40+ (n=298)                                                                                 | YA: 18-21 (n=164) and 22-24 (n=67)<br><br>OR: None        | YA: 2010 18-25 (n=78)<br><br>OR: 2010 35+ (n=105)                                                                                                                                            | YA: 2013 18-25 (n=105)<br><br>OR: 2013 35+ (n=195) | YA: 18-25 (n=144)<br><br>OR: 36+ (n=64) |
| Sampling                                                                     | Non-probability purposive sampling<br>18+ years; English; No formal food or nutrition education; Own and/or households' main food shopper |                                                           |                                                                                                                                                                                              |                                                    |                                         |
| Questionnaire                                                                | Developed by consumer sciences experts                                                                                                    |                                                           | Existing structured nutrition-labelling knowledge questionnaire from USA (Alfieri & Byrd-Bredbenner, 2000).<br><br>Adapted by consumer science experts (Van der Merwe <i>et al.</i> , 2012). |                                                    | Developed by consumer sciences experts  |
| Pilot study                                                                  | Potchefstroom                                                                                                                             |                                                           |                                                                                                                                                                                              |                                                    |                                         |
| Data collection                                                              | Interviewer-administered face-to-face contact sessions with fieldworkers                                                                  |                                                           |                                                                                                                                                                                              |                                                    |                                         |
| Analysis                                                                     | Cross-tabulations<br>Exploratory factor analysis<br>Mean factor scores<br>Confirmatory factor analysis<br>T-tests                         |                                                           | Cross-tabulations<br>Exploratory factor analysis<br>T-tests                                                                                                                                  |                                                    | Frequency analysis                      |

### 3.3.1 Research approach

The over-all research approach of the present study was based on a quantitative approach (phases one to three) in combination with a theoretical approach (phase four). The quantitative data allowed for the statistical analyses of systematic and objective numerical information (Creswell, 2013:12), resulting in accurate and precise information (Babbie, 2015). Datasets were based on cross-sectional and descriptive research designs that followed the

survey type. This seemed most fitting as surveys are generally used to describe and explore research topics (Maree & Pietersen, 2016:171), such as those on consumer behaviour.

### **3.3.2 Study population**

The population of the study consisted of both young adult and older respondent consumer groups. The inclusion of the data obtained from the young adult group not only aided in compiling the food label educational model as a possible future intervention tool for this group, but also assisted in identifying shortcomings during the consumer socialisation of children – a process these consumers recently underwent. Identified shortcomings were addressed in the educational model as a possible future preventive aid that could be implemented during childhood. This young adult population group was the most fitting that could be used to identify shortcomings in the childhood consumer socialisation. The group comprised individuals at the beginning of their adulthood years and on-wards, making independent consumer choices and taking on responsibilities – subsequently, they have most likely completed childhood consumer socialisation and entered adulthood socialisation. The individuals are further able to reason about their thoughts ('what if/may') (Inhelder & Piaget, 1958), equipping them with the ability to argue about the results and effects of their decisions, thus assisting them in informed decision making.

### **3.3.3 Sampling**

All the datasets were originally obtained via a non-probability purposive sampling method through which recruitment took place. This sampling method was appropriate owing to strict inclusion criteria set with a specific purpose (Leedy & Ormrod, 2013:215). Potential respondents were therefore purposively selected based on the stipulations of the set inclusion criteria. Inclusion criteria for all the original data sets were: respondents were of legal age (18 years or older), they understood English (since most South African food labels are provided in English) and they read food labels (in order to be familiar with the set questions). Exclusion criteria included respondents with any prior formal nutrition or food education that might influence their likelihood to use and understand food labels.

Since the data originated from exiting datasets, age group demarcations for the different datasets were somewhat different, but corresponded sufficiently to serve the purpose of the study of investigating both younger adult consumers and older consumers and met the set inclusion criteria. Data extracted from the original datasets from the larger study for the purpose of the current study had to adhere to the following inclusion criteria:

- Consumers were between 18 to 29 years of age, and were labelled **young adults**. For dataset one this entailed 18 to 29 year olds; for dataset two 18-24 year olds; for the two dataset threes and dataset four it entailed 18-25 year olds (Table 3.1).
- Consumers were 35 years and older, and were known as the **older consumer group**. For dataset one this entailed 40+ year olds; for dataset two no older consumers were included; for the two dataset threes 35+ year olds and dataset four it entailed 36+ year olds (Table 3.1).

### 3.3.4 Study locations

The original data collection took place in different locations on different dates and at different times:

- **Dataset one** was collected in the North West Province in small to medium towns (6 000 to 10 000 inhabitants), namely Lichtenburg, Wolmaransstad, Vryburg and Zeerust; large towns (100 000 to 350 000 inhabitants), namely Potchefstroom and Mafikeng; and large cities (350 000 to 1 000 000 inhabitants), including Klerksdorp and Rustenburg. Respondents were recruited in public areas such as educational institutions, and at government service departments, shopping centres and office buildings (Van der Merwe *et al.*, 2014).
- **Dataset two** was collected at the North-West University's Potchefstroom, Vaal Triangle and Mafikeng Campuses with the permission from the relevant university authorities. However, for the purpose of the present study, only the data from the Potchefstroom and Mafikeng Campuses (situated in the North West Province) were included, which nevertheless ensured the inclusion of a variety in demographic characteristics, including different genders and ethnicities. Students sitting around on campus or using the Student Centre's cafeteria between classes were approached by the fieldworkers as potential respondents for this study (Jacobs *et al.*, 2010).
- **Dataset three** (both 2010 and 2013) was collected in public locations, such as post offices, health-care centres or municipal offices, in Potchefstroom in the North West Province. Respondents in these areas were approached (Van der Merwe *et al.*, 2012).
- **Dataset four** was collected in Potchefstroom at a variety of retail stores at the Mooirivier, Riverwalk and Green Acres Malls from respondents who happened to encounter the fieldworkers.

### 3.3.5 Data collection method

The structured interviewer-administrated questionnaires were completed during face-to-face sessions within the North West Province of South Africa. This manner of data collection resulted in a better response rate and enabled the fieldworkers to assist respondents with any uncertainties regarding the questionnaire (Babbie, 2015).

### 3.3.6 Pilot test

All the pilot studies were conducted in Potchefstroom prior to each of the main studies in which the different datasets were used. The purpose of the pilot studies was to adapt questions that were not applicable or easily comprehensible; to ensure that the methodology, sampling, instruments and analysis were suitable; and to estimate the time it took to complete the questionnaire (Malhotra, 2010:312). Only minor adaptations were needed.

### 3.3.7 Questionnaires

Different questionnaires from various sources were used for each of the datasets, since different outcomes were required.

- **Dataset one:** The questionnaire was developed by consumer science professionals with experience in the field of consumer behaviour regarding food labels after thoroughly reviewing relevant literature on the research topic (Van der Merwe *et al.*, 2014). The questionnaire is included in Appendix A.
- **Dataset two:** The questionnaire focusing on consumers' food label use and understanding from Jacobs *et al.* (2010) was used. The focus of the questionnaire was adapted by consumer science professionals with experience in the field of consumer behaviour regarding food labels to emphasise student consumers. The questionnaire is included in Appendix B.
- **Dataset three:** An existing structured nutrition-labelling knowledge questionnaire from the USA (Alfieri & Byrd-Bredbenner, 2000; Byrd-Bredbenner *et al.*, 2001) that was adapted to include questions about food labels in general (Van der Merwe *et al.*, 2012) was used. This newly adapted questionnaire that was employed as an instrument during 2010, took approximately 15 minutes to fill out and is provided in Appendix C. During 2013, the questionnaire was slightly expanded, but these expanded sections were not utilised for the purpose of the study in order to allow for comparisons between the data collected during 2010 and 2013. This questionnaire is provided in Appendix D.
- **Dataset four:** The questionnaire was developed by consumer science professionals with experience in the field of consumer behaviour regarding food labels after

reviewing relevant literature on the research topic. The questionnaire is included in Appendix E.

### 3.4 DATA ANALYSIS FOR THE PRESENT STUDY

The analysis of all quantitative data was done by a statistical consultant from the Statistical Consultation Services of the North-West University. The IBM SPSS Statistics package version 20, release 20.0 was used, except for the confirmatory factor analysis (CFA), which was done with IBM SPSS AMOS 22.0. The analysis of the different phases will be discussed separately below. In all instances, only medium and large effect sizes were reported, as these indicate practical significance and tendencies, respectively.

**Phase one** identified the food label opinion- and use-related barriers reported by respondents. Frequencies were determined for the demographic data, and in order to determine the food label opinion-, use-, and understanding-related barriers, descriptive statistics were used. To ease interpretation, the categories of the five-point Likert scale were combined into three overall categories, namely 'disagree/strongly disagree' (1 and 2), 'undecided' (3) and 'agree/strongly agree' (4 and 5). Additionally, to determine the use- and understanding-related barriers, an exploratory factor analysis (EFA) using principal axis factoring was performed to reduce data and, after Chronbach's coefficient alpha indicated acceptable internal reliability, mean factor scores were computed as the average of all items contributing to a factor on the five-point Likert scale.

To investigate differences between the two age groups of dataset one, cross-tabulations were first used to determine associations between individual items and the two identified age groups using a Chi-square test and Cramer's V indicating small (0.1), medium (0.3) and large (0.5) effect sizes (Ellis and Steyn, 2003). Secondly, a 'bi-group' analysis in AMOS was performed to determine if the two age groups had the same factor structure for the extracted EFA opinion and use factors. Thereafter a t-test was used to identify possible differences in the opinion and use factors between the two age groups, considering Cohen's *d*-values effect sizes as small ( $d=0.2$ ), medium ( $d=0.5$ ) and large ( $d=0.8$ ).

**Phase two** identified respondents' food label knowledge gaps. Descriptive statistics for both datasets (2010 and 2013 data) were done, and frequencies were determined for the demographic data. To determine construct validity and to ease interpretation, the data were reduced with EFA using principal axis factoring with Oblimin rotation. Internal reliability was confirmed by Chronbach's alpha values. Cross-tabulations were used to determine differences between the two age groups (young adults and older respondents), and the

different food label knowledge factors, assisted by Cramer's V effect sizes, were interpreted as in phase one. A t-test was also used to investigate possible differences between the knowledge factors of two age groups as well as between the 2010 and 2013 knowledge factors, considering Cohen's *d*-values as effect sizes indicated above.

**Phase three** investigated the respondents' need for food label education. Descriptive statistics were done for the need assessment questionnaire data. Frequencies were determined for the demographic data and all other educational need assessment questions. Cross-tabulations were used to determine associations between the two age groups (young adults and older respondents) and the different food label questions, again using Cramer's V as effect sizes stated above.

**Phase four** combined an extraction of the results from the previous three phases with authoritative theories and the most recent research results on consumer education.

- The identified opinion-, use- and understanding-related barriers (phase 1) and knowledge gaps (phase 2) were theoretically categorised and condensed to ease inclusion in the model as ideal outcomes of the educational model.
- The educational needs were arranged under different questions and incorporated into the model as follows:
  - Who should be responsible for the education on food labels?
  - Why would they like to receive food label education?
  - What is the best way of providing, or source to use, for food label education?
- Consumer socialisation behaviour development stages (John, 1999:186) and other fundamentals of consumer socialisation were collectively used as a framework to group the educational outcomes in age and developmental categories.
- Lastly, based on a recent literature search on 'consumer education', the most relevant and applicable research results and recommendations were also included.

### **3.5 RELIABILITY AND VALIDITY FOR THE PRESENT STUDY**

A thorough literature review was conducted beforehand to ensure that there is a need for this research. The existing data used during the quantitative part of the study already adhered to both reliability and validity demands – some of which are reported in Jacobs *et al.* (2010), Van der Merwe *et al.* (2012) and Van der Merwe *et al.* (2014). Construct validity for the purpose of the present study was ensured by means of EFA using principal axis factoring with Oblimin rotation. Chronbach alpha values were used to determine the internal

consistency reliability of the scale items (Malhotra, 2010:807). More detail on the validity and reliability of the different datasets is provided in Chapters 4, 5 and 6.

### **3.6 ETHICAL CONSIDERATIONS**

This study focused on the ethical use of the existing datasets, since data collection had already taken place. All ethical norms applicable to the use of existing datasets were consequently adhered to. Ethical approval for this study was obtained from the Health Research Committee (Humans) of the North-West University, with the reference number NWU-00136-14-A1. The studies, from which the existing datasets originated, that were used in this study, were also previously ethically approved by the Univeristy's Ethics Committee with reference code NWU-00024-09-A1.

### **3.7 CONCLUSION**

The multi-phased interpretive approach was ideal in that it generated the wide spectrum of results needed to compile the educational model. It was beneficial to use datasets from an ongoing project in the department, since the methodologies were similar and could therefore be combined. However, in the planning and execution of this study, it was crucial to ensure that all relevant areas were thoroughly covered and represented. The surveys further helped ensure reliable, valid and applicable information.

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CHAPTER 4  
ARTICLE ONE

Young adult and older consumers' self-reported food label behaviour: identifying barriers to  
informed decision making

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## **Young adult and older consumers' self-reported food label behaviour: identifying barriers to informed decision making**

### **Abstract**

Consumers need to make informed decisions using food label information in order to optimize their often-limited financial resources. However, because barriers to consumers' ability to make informed decisions using these labels remain undefined, an intervention to assist consumers in this regard is still lacking. This study therefore aimed to investigate the barriers to positive food label opinions, optimum label use and a thorough understanding among consumers that may ultimately hinder informed decision making regarding food. The opinion and use of food labels among young adults (18-29 years) and older consumers (40+ years) were investigated for the purposes of identifying possible differences in perceived barriers between these groups. Two quantitative datasets from different questionnaires were used. Dataset one included responses from a young adult group and an older consumer group, while dataset two focussed only on young adult respondents' behaviour regarding food labels. Despite the indication that most respondents from both datasets did read food labels, further analysis revealed opinion- and use-related barriers to informed decision making. Moreover, respondents found food labels to be confusing and neglected some of its beneficial uses, including guiding dietary-based decisions and serving as a food preparation and shopping aid, thus indicating less than optimum use. Personal inabilities and preferences were the most prominent reasons for not using label information. Although young adults were able to choose the healthiest option, only half were able to identify the ingredient and nutrient in the highest quantities. No statistical significant differences between the two age groups were found. These results can be applied in consumer education initiatives in consumer socialization to work towards positive opinions, optimum use and the adequate understanding of food label information in order to assist consumers in making informed decisions.

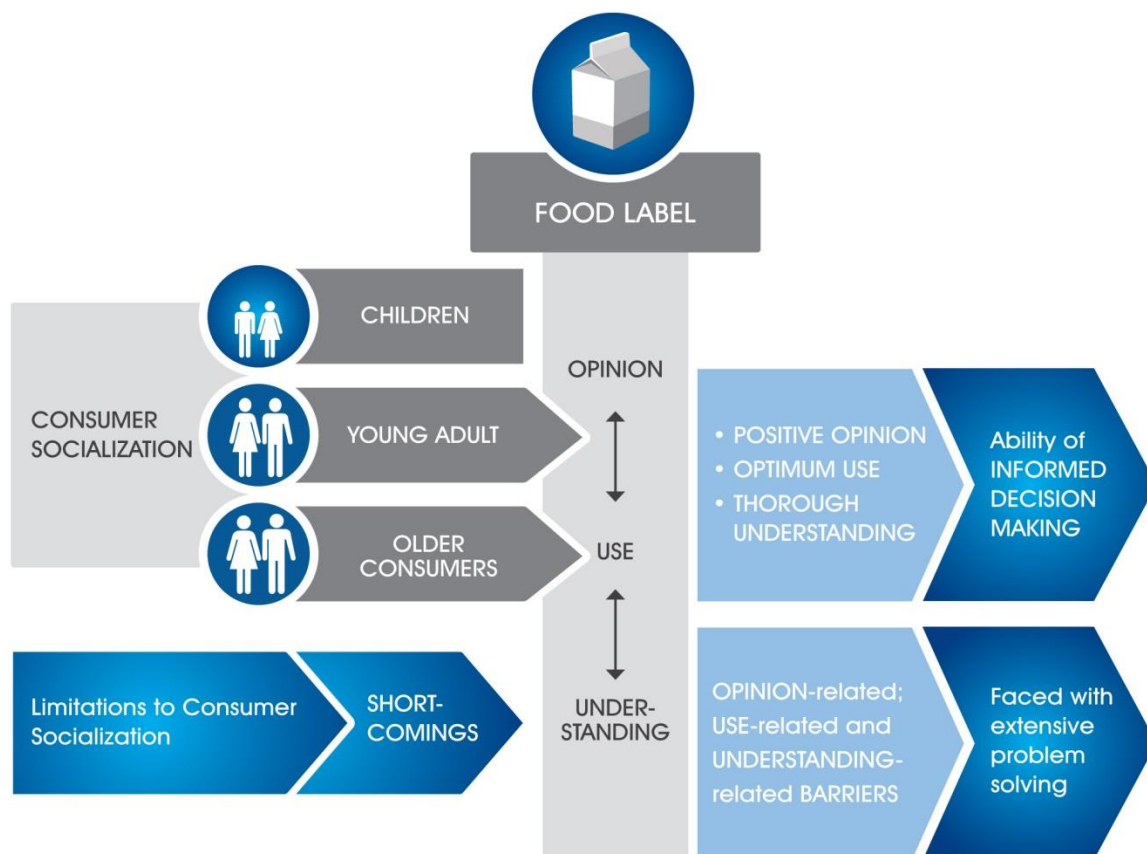
**Keywords:** Food label, Opinion, Consumer socialization, Understanding, Label use, Young adults

### **Introduction**

Consumer socialization provides children with the chance to participate in a consumer society and to learn how to make informed choices (Wærdahl *et al.*, 2011). With regards to food label use, consumers are exposed to stimuli that enter the brain as sensations, and then are encoded and stored (as food label knowledge) in schemata and cognitive structures (Berk, 2013). The more children are exposed to food label information,

the more sophisticated their food label-related schemata and cognitive structures become, thus enhancing their food label knowledge and forming their opinion (Berk, 2013). Positive food label opinions, optimum food label use and a thorough understanding of food label information can be seen as the desired outcomes of the consumer socialization process, which may ultimately result in the ability to make informed decisions.

Young adults and older consumers also repeatedly go through the consumer socialization process (Schiffman and Kanuk, 2010). However, limitations to this process may cause opinion-, use- and understanding-related barriers that challenge consumers with extensive problem-solving situations (Cant *et al.*, 2006; Schiffman and Kanuk, 2010). These barriers include, for example, a negative opinion of food labels, limited food label use and a lack of understanding. The theoretical framework in Figure 1 provides an outline clarifying the relationships among these concepts.



**Figure 1** Theoretical framework for investigating consumers' food label behaviour

Consumer opinions, seen as consumers' beliefs, views, thoughts or intentions, play an important role during final decisions when buying food, providing the rationale for or even guiding consumer behaviour (Bareham, 1995; Hornby, 2005). This phenomenon is illustrated in studies demonstrating that consumers' choices are influenced by opinions posted online (Moon *et al.*, 2010; Zhu and Zhang, 2010) and that the use of food labels is associated with their opinions of these labels (Van der Merwe *et al.*, 2014). For instance, a consumer may have the opinion that food label information is difficult to use, and therefore prefers to base their decisions on alternative sources of information, or heuristics. Such barriers to the use of food labels may stem from shortcomings in consumer socialization.

Although optimum food label use is important for informed decision making, incompatibilities between consumers' preferences in food label design and their actual food label use are often found (Graham and Jeffery, 2011) and can present use-related barriers. Such barriers include, for instance, being untroubled by the information, being habitual purchasers, having time and/or price concerns (Kempen *et al.*, 2011; Bosman *et al.*, 2012) and having difficulties reading the small font size (Mannell *et al.*, 2006; Singla, 2010). Some consumers may also attach a higher value to variables, such as taste and cravings, rather than to food label information (Grunert *et al.*, 2010). They may even distrust the information, regarding it purely as marketing information (Parker and Penfield, 2005; Annunziata *et al.*, 2011). When these barriers have been identified, consumers may be assisted in overcoming the related negative effects.

Having a positive opinion and use of food labels are, however, not enough to ensure informed decision making; consumers should also be able to understand the information (Annunziata *et al.*, 2011). Technical terminology on food labels thus may prevent informed decision making (Singla, 2010; Van der Merwe and Venter, 2010), as consumers' ability to interpret the information decreases with an increase in its complexity (Cowburn and Stockley, 2005). Complex or confusing food label information may be ignored rather than used, thus causing understanding-related barriers.

The food label opinion-, use- and understanding-related barriers that consumers may experience inhibit consumers' access to information that is accurate and easily accessible in order to make healthy and informed food choices (Annunziata *et al.*, 2011; Schönfeldt and Hall, 2012; Zepeda *et al.*, 2013). However, to the best of our knowledge research focussing on the barriers that consumers may experience in the context of their food label behaviour is lacking. The present study contributes to existing research on food labels and consumer

behaviour by employing a focus on young adults and older consumers' food label opinion-, use- and understanding-related barriers that may hinder informed decision making.

Young adults, who are on the verge of adulthood and at the end of childhood consumer socialization, make independent consumer choices. They are therefore the most fitting age group to indicate possible shortcomings in childhood consumer socialization regarding food labels that may result in use-, opinion- and understanding-related barriers to informed decision making. These identified barriers could be addressed in a preventative initiative that aims to limit food label-related shortcomings during childhood socialization. Young adults were consequently one focal point of this study. However, adult consumers should also be informed and educated on the advantages of using food labels in order to make informed decisions (Prinsloo *et al.*, 2012). Therefore, an older consumer group was also included in the study. Information regarding the barriers identified here may assist in developing an intervention initiative during consumer socialization in the course of adulthood. A South African perspective, with research questions demonstrating both first- and third-world characteristics, may also benefit the international research domain by highlighting commonalities in consumers' food label opinions, uses and understanding.

This study therefore addressed the following research questions (RQs):

**RQ1:** What food label opinions serve as barriers that may hinder consumers from making informed food-related decisions?

**RQ2:** What food label use-related barriers do consumers experience that may hinder them from making informed food-related decisions?

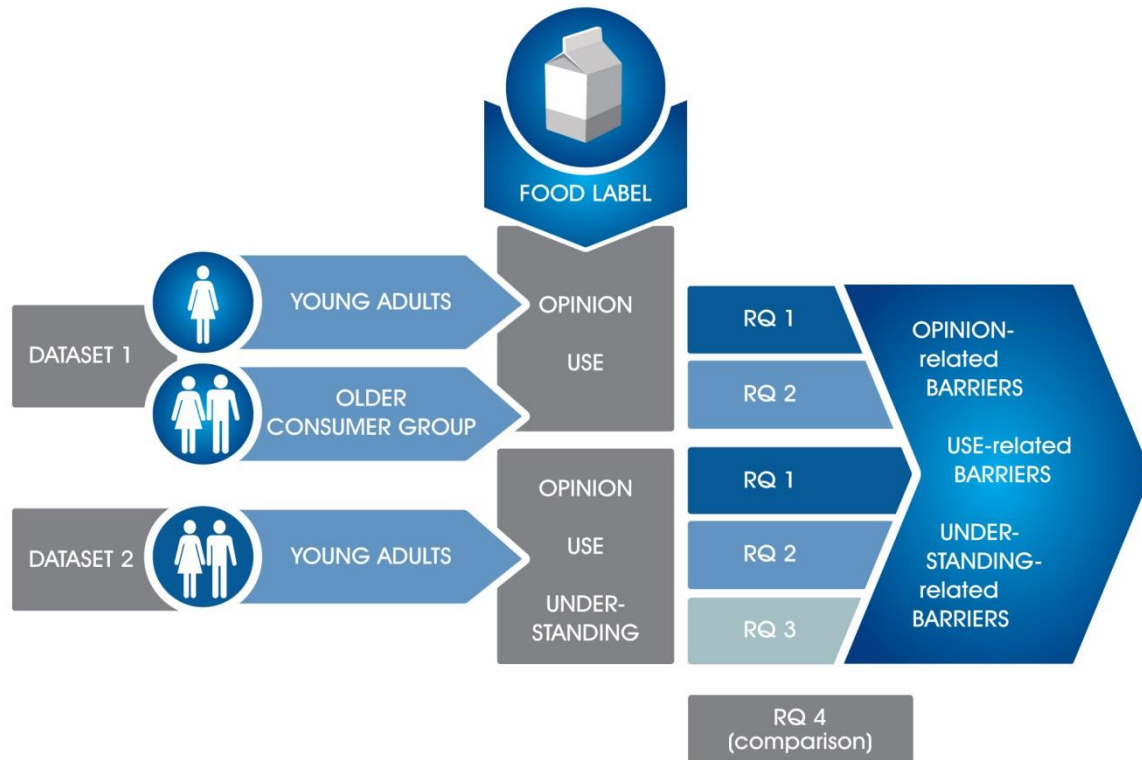
**RQ3:** What food label understanding-related barriers do consumers experience that may hinder them from making informed food-related decisions?

**RQ4:** Do the opinion-related and use-related barriers of food labels differ among young adults and older consumers?

## **Methodology**

In order to address the research questions, two datasets were used. Both datasets were obtained using a quantitative approach following a descriptive cross-sectional survey design. Dataset one included responses from a young adult group (18–29 years old) and an older consumer group (40+ years old), while dataset two allowed for more in-depth investigation into young adult (18–24 years old) respondents' food label behaviour. All respondents gave informed consent, and the research process complied with set ethical standards for research with humans. The Ethics Committee of the North-West University approved the execution of

the study (reference number: NWU-00136-14-A1). Figure 2 provides a summary of the data sets' application in answering the research questions.



**Figure 2** Research design: datasets, research questions and barriers.

A purposive sampling method was employed for both datasets since respondents had to adhere to specific inclusion criteria. Dataset one was collected in select public locations in eight cities and towns in the North West Province of South Africa, as described in Van der Merwe *et al.* (2014). Dataset two was collected from young adults at the Potchefstroom and Mahikeng sites of the North-West University. Because South African food labels are printed in English, respondents for both datasets had to be 18 years or older and understand English. Individuals with prior formal nutrition or food education were excluded as respondents.

The questionnaire used to collect dataset one was taken from Van der Merwe *et al.* (2014). It was developed by professionals with experience in the areas of consumer behaviour and food labelling and was largely comprised of five-point Likert scales. For dataset two, a questionnaire that was mainly comprised of four- and five-point Likert scales with a focus on food label use and understanding was used. This questionnaire was adapted

from Jacobs *et al.* (2010), and addressed the need to focus on young adult respondents. Both questionnaires were pilot tested, from which minor adaptations resulted. Trained fieldworkers recruited the respondents for both datasets and administered the questionnaires during 10 to 15 minute face-to-face interviews.

All statistical analyses were done using IBM SPSS Statistics Version 22, except for confirmatory factor analysis (CFA), which was done with IBM SPSS AMOS 22.0. For RQ1 to RQ3, descriptive statistics are reported. For ease of interpretation, the categories of the 5-point Likert scale have been combined into three overall categories, namely 'disagree/strongly disagree' (1 and 2), 'undecided' (3) and 'agree/strongly agree' (4 and 5), while the 4-point Likert scale categories have been combined into two overall categories, i.e. 'never/seldom' (1 and 2) and 'often/always' (3 and 4). Additionally, for RQ2 and RQ3 a principal axis exploratory factor analysis (EFA) was performed to reduce data and, after Cronbach's coefficient alpha indicated acceptable reliability, factor scores were computed as the average of all items contributing to a factor on the 5-point Likert scale.

For RQ4, cross-tabulations determined associations between individual items and the two identified age groups of dataset one using a Chi-square test and Cramer's V indicating small (0.1), medium (0.3) and large (0.5) effect sizes (Ellis and Steyn, 2003). Then, a 'by group' analysis in AMOS was performed to determine if the two age groups had the same factor structure for the extracted EFA opinion and use factors. Thereafter, a t-test was used to investigate possible differences in the identified factors of opinion and use between the two age groups, considering Cohen's *d*-values effect sizes as small ( $d = 0.2$ ), medium ( $d = 0.5$ ) and large ( $d = 0.8$ ).

## **Results**

### **Demographic information**

The majority of the respondents included in dataset one was young, Afrikaans-speaking females with a tertiary education (Table 1). Dataset two included similar numbers of respondents from both genders, who were mostly African with a grade 12 qualification. The results and discussion of both datasets are presented according to the RQs.

**Table 1** Demographic information

|                                                | Dataset 1                    |                                    | Dataset 2                    |
|------------------------------------------------|------------------------------|------------------------------------|------------------------------|
|                                                | Young adults<br>(n=414)<br>% | Older<br>consumers<br>(n=298)<br>% | Young adults<br>(n=231)<br>% |
| <b>Age group in years</b>                      | 18-29                        | ≥40                                | 18-24                        |
| <b>Gender:</b>                                 |                              |                                    |                              |
| Male                                           | 41                           | 21                                 | 52                           |
| Female                                         | 59                           | 79                                 | 48                           |
| <b>Home language:</b>                          |                              |                                    |                              |
| Afrikaans                                      | 47                           | 76                                 | -                            |
| Sesotho                                        | 8                            | 9                                  | -                            |
| English                                        | 39                           | 11                                 | -                            |
| Nguni (isiZulu, isiXhosa, siSwati, isiNdebele) | 5                            | -                                  | -                            |
| <b>Ethnicity:</b>                              |                              |                                    |                              |
| African                                        | -                            | -                                  | 51                           |
| Caucasian                                      | -                            | -                                  | 41                           |
| Coloured                                       | -                            | -                                  | 6                            |
| Indian                                         | -                            | -                                  | 3                            |
| <b>Level of education:</b>                     |                              |                                    |                              |
| Grade 12                                       | 37                           | 30                                 | 72                           |
| Tertiary degree or diploma                     | 56                           | 50                                 | 24                           |
| Postgraduate                                   | -                            | -                                  | 3                            |

**RQ1: Opinion-related barriers**

Table 2 presents the results according to the EFA for opinion-related items and use-related items respectively for dataset one. Two factors regarding the respondents' food label opinion were found using EFA, namely 'positive about information' and 'negative about information'. The statements yielded acceptable communality ( $> 0.3$ ), and Kaiser-Meyer-Olkin (KMO = 0.71) values that indicated an adequate sample for the analysis (KMO  $> 0.5$ ) (Field, 2009). Factor loadings are reported in Table 2.

The mean factor scores showed that the respondents were, on average, 'positive about information' on food labels, agreeing that they are a good information source for products (Table 2). However, for the items within the factor 'negative about information', about half of the respondents agreed/strongly agreed that food label information confuses them. Also, more than half disagreed that they find food label information difficult to understand. Internal reliability was confirmed by general Cronbach's alpha values being  $\geq 0.6$  (Field, 2009), while those of the opinion factors were  $\geq 0.5$  (Table 2), which can also be accepted, since opinion factors are classified as psychological constructs (Kline, 2000).

**Table 2** Food label opinion and use according to the Likert scale (Dataset one)

| Factor and opinion statements                                   | Opinion factors |                   |     | Cross-tabulation (%)                     |                              |           |                        |
|-----------------------------------------------------------------|-----------------|-------------------|-----|------------------------------------------|------------------------------|-----------|------------------------|
|                                                                 | Cronbach Alpha  | Mean factor score | SD  | Factor loading                           | Disagree / Strongly disagree | Undecided | Agree / Strongly agree |
| <b>Positive about information</b>                               | 0.63            | 3.85              | 0.6 |                                          |                              |           |                        |
| Food label print should be large enough to read.                |                 |                   |     | 0.48                                     | 10                           | 12        | 78                     |
| Food labels serve as a way to sell the product                  |                 |                   |     | 0.53                                     | 11                           | 11        | 78                     |
| A food label is a good source of information                    |                 |                   |     | 0.76                                     | 7                            | 11        | 83                     |
| It is easy to understand food label information                 |                 |                   |     | 0.56                                     | 16                           | 18        | 66                     |
| Labels give food product information                            |                 |                   |     | 0.69                                     | 9                            | 11        | 81                     |
| Food labels contain sufficient information                      |                 |                   |     | 0.51                                     | 19                           | 25        | 56                     |
| <b>Negative about information:</b>                              | 0.54#           | 2.92              | 0.9 |                                          |                              |           |                        |
| Food labels contain insufficient information                    |                 |                   |     | 0.59                                     | 39                           | 30        | 31                     |
| Food label information is difficult to understand               |                 |                   |     | 0.73                                     | 55                           | 20        | 25                     |
| Information on some food labels confuses me                     |                 |                   |     | 0.74                                     | 30                           | 17        | 51                     |
| <b>Use factors and statements</b>                               |                 |                   |     | <b>Cross-tabulation total scores (%)</b> |                              |           |                        |
| <b>Preparation aid:</b>                                         | 0.81            | 3.20              | 1.0 |                                          |                              |           |                        |
| I consult food label when preparing product                     |                 |                   |     | - 0.76                                   | 30                           | 16        | 54                     |
| I consult food label information when using product             |                 |                   |     | - 0.51                                   | 24                           | 17        | 59                     |
| I use food label information to plan meals                      |                 |                   |     | - 0.84                                   | 44                           | 16        | 41                     |
| I use food label information to prepare meals                   |                 |                   |     | - 0.88                                   | 37                           | 17        | 46                     |
| <b>Shopping aid:</b>                                            | 0.73            | 3.62              | 0.9 |                                          |                              |           |                        |
| I consult food label when buying food products                  |                 |                   |     | 0.82                                     | 21                           | 17        | 62                     |
| I follow food label information to keep item fresher for longer |                 |                   |     | 0.43                                     | 16                           | 12        | 72                     |
| I consult food label information when shopping                  |                 |                   |     | 0.89                                     | 22                           | 12        | 66                     |
| I consult food label information when buying product            |                 |                   |     | 0.74                                     | 24                           | 17        | 58                     |

Likert scale: 1 = strongly disagree; 2 = disagree; 3 = undecided; 4 = agree; 5 = strongly agree

Cronbach alpha values:  $\geq 0.6$  = acceptable to good

#Cronbach alpha value acceptable for opinion factor.

The frequency results of dataset two (where the focus was on young adults in order to identify shortcomings of childhood consumer socialization regarding food labels) revealed that most respondents agreed/somewhat agreed that it is easy to locate nutrients and that the label information is easy to use (Table 3). Similarly, less than half disagreed that the nutrition information is difficult to understand and that the ingredient list terms are confusing.

**Table 3** Young adults' food label information opinion according to the Likert scale (Dataset two)

| Opinion statements                                                           | FREQUENCIES %                        |               |                                           |
|------------------------------------------------------------------------------|--------------------------------------|---------------|-------------------------------------------|
|                                                                              | Completely disagree (1)/Disagree (2) | Undecided (3) | Somewhat Agree (4) / Completely Agree (5) |
| It is difficult to understand the nutrition information table on food labels | 48                                   | 17            | 35                                        |
| The terms used in the ingredient list are confusing                          | 43                                   | 19            | 38                                        |
| The font/letter size of the print on food labels is too small to read        | 48                                   | 15            | 37                                        |
| It is easy to locate a nutrient from the nutrition information table         | 11                                   | 21            | 68                                        |
| The information on the food label is easy to use                             | 14                                   | 26            | 60                                        |

Likert scale: 1 = completely disagree; 2 = disagree; 3 = undecided; 4 = somewhat agree; 5 = completely agree

## RQ2: Use-related barriers

The majority of the respondents from dataset one (70%) reported that they do indeed read food labels (data not shown). However, only 14% of the young adult respondents (dataset two) indicated that they always read food labels, while similar numbers reported that they 'often' (34%) and 'sometimes' (37%) read them, with 15% never reading the labels. From dataset one, two factors for food label use were extracted, namely 'shopping aid' and 'preparation aid' (Table 2). The statements yielded acceptable communalities ( $> 0.3$ ) and KMO values (KMO = 0.86). The mean factor scores showed 'shopping aid' as the most prominent reason for label use ('agree'). The individual items within this factor confirmed that most respondents agreed/strongly agreed that they follow/consult the food label and the label information during shopping and buying, and in keeping the item fresh. However, use-related barriers such as 'preparation aid' were noted as the respondents were mostly divided in opinion, especially during meal planning and preparation.

In dataset two (focussing on young adults), the inquiry pertaining to barriers to food label use was broadened to include reasons for both using and not using food labels. The EFA of the food label use statements from dataset two provided two reliable factors each for food label use, namely 'to ease shopping' and 'dietary reasons' (Table 4). The EFA for

reasons for not using food labels produced the factors ‘personal preference’ and ‘personal inability’ (Table 5). The statements included in both EFAs all yielded acceptable communality values ( $> 0.3$ ). The KMO values indicated that the sample adequacy for reasons for using (KMO = 0.80) and reasons for not using (KMO = 0.83) food labels were acceptable.

Both the factors ‘to ease shopping’ and ‘dietary reasons’ were revealed as reasons for using food labels (Table 4). The mean factor score ‘to ease shopping’ ‘often to always’ applied to young adult respondents, and was particularly relevant for the item ‘when buying food products for the first time’. The items within the factor ‘dietary reasons’ included ‘special diets’ and the ‘checking of claims’, and most respondents indicated using food labels ‘often to always’. However, only approximately half of the respondents indicated that they ‘often to always’ use them to determine nutrient content.

**Table 4** Reasons for using food labels (Dataset two)

| Use factors and scores  |                |                   |      |                |                                                                                                         |                          |                          |
|-------------------------|----------------|-------------------|------|----------------|---------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|
| Factor                  | Cronbach Alpha | Mean factor score | SD   | Factor loading | Use statement                                                                                           | Never (1)/ Seldom(2) (%) | Often(3)/ Always (4) (%) |
| <b>To ease shopping</b> | 0.74           | 2.59              | 0.72 | 0.86           | I use food labels while doing grocery shopping                                                          | 48                       | 52                       |
|                         |                |                   |      | 0.84           | I use food labels to assist with purchasing decisions                                                   | 56                       | 44                       |
|                         |                |                   |      | 0.63           | I use food labels when buying a food product for the first time                                         | 27                       | 73                       |
|                         |                |                   |      | 0.48           | I use food labels when planning meals at home                                                           | 51                       | 49                       |
| <b>Dietary reasons</b>  | 0.68           | 2.68              | 0.79 | 0.75           | I use food labels to determine the nutrient content of a specific food product                          | 48                       | 52                       |
|                         |                |                   |      | 0.81           | I use food labels when checking nutrition claims made on the front of the package, such as ‘low in fat’ | 39                       | 61                       |
|                         |                |                   |      | 0.74           | I use food labels when I follow a special diet for medical/other reasons                                | 39                       | 61                       |

Likert scale: 1 = never; 2 = seldom; 3 = often; 4 = always

Cronbach alpha values:  $\geq 0.6$  = acceptable to good

The young adult group was collectively undecided about the factors ‘personal preferences’ and ‘personal inability’ as reasons for not using food labels, as indicated by the mean factor scores (Table 5). However, more respondents agreed than disagreed on all the

items within 'personal preference' as reasons for not using food labels, namely being habitual buyers; that taste and price are more important; that they do not make comparisons; and that reading food label information is too time consuming. 'Personal preferences' were therefore more important for most respondents than the possible benefits of using the food label information. With regard to the 'personal inabilities' factor, the respondents were divided as to whether or not their own knowledge background and confusing ingredient list terms were reasons for not using food label information.

**Table 5** Reasons for not using food labels (Dataset two)

| Factor and use statement                                                                 | Use factors and scores |                   |      | Frequencies    |                  |               |               |
|------------------------------------------------------------------------------------------|------------------------|-------------------|------|----------------|------------------|---------------|---------------|
|                                                                                          | Cronbach Alpha         | Mean Factor Score | SD   | Factor loading | Disagree (1 & 2) | Undecided (3) | Agree (4 & 5) |
| <b>Personal preference:</b>                                                              | 0.78                   | 3.29              | 0.95 |                |                  |               |               |
| Food label information is too time consuming to read                                     |                        |                   |      | 0.66           | 33               | 25            | 43            |
| I choose food products on the basis of price only                                        |                        |                   |      | 0.79           | 28               | 24            | 49            |
| I do not compare the nutrition content of different food products                        |                        |                   |      | 0.76           | 28               | 23            | 49            |
| The taste of the product is more important than the nutritional content of the product   |                        |                   |      | 0.60           | 30               | 20            | 50            |
| I purchase food items as a habit, without reading the nutrition information on the label |                        |                   |      | 0.81           | 26               | 24            | 50            |
| <b>Personal inability:</b>                                                               | 0.65                   | 2.84              | 0.92 |                |                  |               |               |
| I have insufficient background knowledge to use label information                        |                        |                   |      | 0.35           | 41               | 19            | 40            |
| The terms used in the ingredient list are confusing                                      |                        |                   |      | 0.68           | 42               | 16            | 42            |
| The letter size of the print on the food labels is too small to read                     |                        |                   |      | 0.90           | 52               | 17            | 32            |
| Nutrition information is not trustworthy                                                 |                        |                   |      | 0.42           | 45               | 27            | 29            |

Likert scale: 1 = completely disagree; 2 = disagree; 3 = undecided; 4 = somewhat agree; 5 = completely agree  
Cronbach alpha values:  $\geq 0.6$  = acceptable to good

### RQ 3: Understanding-related barriers

To answer research question 3, dataset two was used in a frequency analysis to determine the young adults' understanding of food label information (results not presented in a table). The three tasks regarding food label use included: to determine the highest quantity ingredient and nutrient, to identify the amount of fat, and to evaluate two alternative products

in order to identify the healthiest. Only 50% of the young adults correctly identified the ingredient in the highest quantity, while only 43% were able to correctly identify the nutrient in the highest quantity. Although 49% of the respondents previously indicated that they do not make comparisons between different food products, during these tasks most respondents were able to correctly evaluate the alternatives, as 71% correctly chose the healthier product. Moreover, 66% were able to correctly indicate the amount of fat in the given product.

#### **RQ 4: Difference in the opinion and use of food labels between young adults and older consumers**

No statistical or practical significant differences between the two age groups from dataset one concerning their opinions or use of food label information were shown by cross-tabulations of corresponding items. To further explore possible differences, a bi group analysis was performed on the CFA of the factors extracted through EFA of dataset one (Table 2). The CFA revealed a suitability of fit for the opinion factors, with the minimum discrepancy divided by its degrees of freedom (CMIN/DF) = 3.307, comparative fit index (CFI) = 0.808 and root mean error of approximation (RMSEA) = 0.057 (Field, 2009), and for the use factors, with CMIN/DF = 4.33, CFI = 0.92 and RMSEA = 0.065. An acceptable CFI value is proposed to be  $> 0.9$  (Mueller, 1996), while the RMSEA values should be  $< 0.1$  (Blunch, 2008) and the CMIN/DF  $< 5.0$  (Field, 2009). Since two of the three fit indices used were acceptable, there is no difference between the factor structures of the two age groups' opinion factors. A t-test on the opinion and use factors between the two age groups indicated only small effect sizes ( $d \leq 0.2$ ). Thus, no practical significant differences between the opinion and use factors of the younger adult and older respondent groups were found.

#### **Discussion**

**RQ 1** revealed a generally positive opinion about food labels among respondents in both datasets; however, respondents included in dataset one did indicate that food label information is confusing and difficult to understand. Numerous studies have shown that consumers find it fairly difficult to impossible to understand food labels, which often results in a lack of understanding and misinterpretation (McIlveen and Semple, 2002; Cowburn and Stockley, 2005; Singla, 2010; Van der Merwe *et al.*, 2010; Prieto-Castillo *et al.*, 2015). The young adults in dataset two revealed a generally positive opinion towards food labels, finding it relatively easy to navigate themselves around a food label. However, a negative opinion on the nutrition information and ingredient lists was revealed, and should be addressed as a barrier. These findings could indicate that respondents look for, identify and use general label information habitually, most likely without understanding the detail or purpose of the specific nutrient or ingredient. Because the ingredient list and nutrition information can be classified

as ‘primary label information’ of importance to the consumer (Van der Colff *et al.*, 2016) and impacts consumer choices (Kempen *et al.*, 2011), these specific aspects should be addressed as possible barriers to informed decision making.

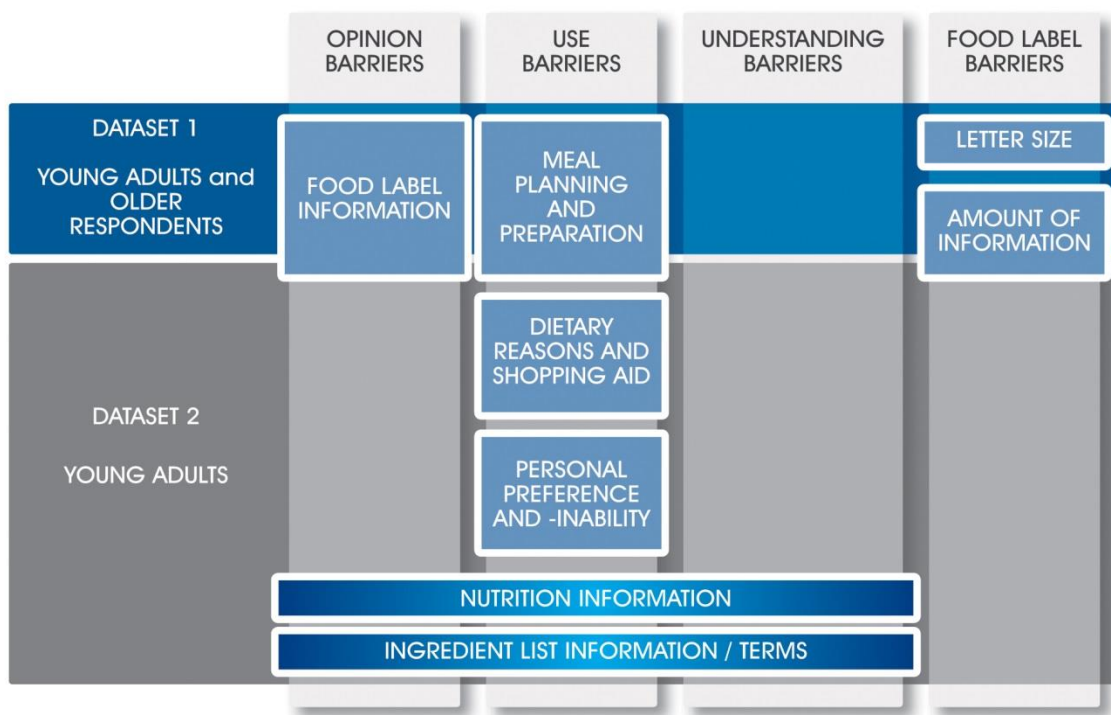
Findings from dataset one were inconclusive as to whether or not the amount of information provided on food labels was sufficient. We recommend that consumers be educated on the limitations and regulations of food labels, since a better understanding could also limit (unnecessary) negative opinions. Although the respondents from both datasets were undecided as to whether or not the letter size used on food labels is too small to read, it should be indicated as a barrier that might hinder informed decision making. Consumer education is needed, because information with which consumers are dissatisfied can significantly affect their willingness to engage in an information search and, consequently, informed decision making.

In line with the results of **RQ 2**, both national and international research confirm that not all consumers will necessarily read/use the food label information provided (Ranilovic and Baric, 2011; Bosman *et al.*, 2012). The relatively low number of label readers among younger respondents in the present study should be addressed as a barrier in order to enhance the consumers’ interest in reading and using food labels. A general disregard by respondents from both datasets, where beneficial uses of food labels are concerned, was revealed. Those from dataset one showed less than optimum food label use as an aid during meal planning and preparation, while the young adults in dataset two neglected its uses for dietary reasons and as a shopping aid. It is proposed that the respondents from both datasets as possible habitual purchasers feel that they do not need to determine nutrient content or read claims. The young adults’ reasons for not using food labels included both personal preferences and personal disabilities. Specific barriers include habits, taste preferences, price and time. Previous research has also found time, habitual purchasing and more value attached to taste than food label information to be common reasons for not reading food labels (Kempen *et al.*, 2011; Bosman *et al.*, 2012; Prieto-Castillo *et al.*, 2015, Grunert *et al.*, 2010). ‘Personal preferences’ were therefore more important for most respondents than the possible benefits of using the food label information.

With regard to ‘personal disabilities’, the respondents were divided as to whether or not their own knowledge and confusing ingredient list terms were reasons for not using food label information. Miller and Cassady (2015) have found a positive association between prior knowledge and the actual use of food label information. Since food labels contain information that can be applied from evaluating alternatives in-store, purchasing and storing, to using the

item at home in various capacities, it has the potential to be of considerable value during consumer decision making. The underutilization of food label information should therefore be considered as a use-related barrier. Another recent study has also described food labels as ‘underutilized’ (Miller and Cassady, 2015).

During the three understanding tasks that were presented to the young adults to answer **RQ3**, the respondents were unable to identify the ingredient and nutrient in the highest quantities. The ingredient list and nutrition information were therefore identified as opinion-, use- and understanding-related barriers. Figure 3 provides a summary of the identified barriers.



**Figure 3** Opinion-, use- and understanding-related barriers to informed decision making

No statistical or practical significant differences between the two age groups in dataset one concerning their opinions or use of food label information were found in answering **RQ 4**. A recent South African study confirms the results of the present study in finding no significant age differences in consumers’ food label expectations (Van der Colff et al., 2016), in contrast to other, older, international studies (Ali and Kapoor, 2009; Miller and Cassady, 2012). The barriers to food label opinion and use resulting from suspected

shortcomings in childhood consumer socialization therefore seem to persist throughout adulthood. It can therefore be assumed that, regardless of their age, respondents are in need of food label education on the advantages of optimum food label use and a thorough understanding of food label information.

## **Conclusions**

Consumers need to be able to make informed food decisions owing to global increases in food prices and health benefits. Since food labels provide the needed information to aid informed decision making, it is important that consumers have a positive opinion about food labels, use them to their full potential and understand them. The identified barriers from this study should be addressed during childhood consumer socialization to ensure that fully equipped young adults enter the consumer market. Since no differences were found between the young adults' and older consumers' opinion and use of food labels, the persistence of the effects of these barriers during adulthood is confirmed. Our findings therefore show that respondents are in need of food label education, regardless of their age. It is thus recommended that educational initiatives be aimed at children as a preventative and adults as intervention during consumer socialization.

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CHAPTER 5  
ARTICLE TWO

Consumers' food label knowledge: Identifying gaps

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**TITLE**

Consumers' food label knowledge: Identifying gaps

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## Abstract

**Purpose** - Consumers should have food label knowledge to help ensure informed decision making. While sound consumer socialization should result in adequate food label knowledge among consumers, shortcomings in consumer socialization could produce knowledge gaps. Therefore, the objectives of this study were to: identify consumers' food label knowledge gaps; determine differences between young adults' and older respondents' food label knowledge; and determine any differences in the food label knowledge of these consumer groups over time, with respondents recruited in 2010 and again in 2013.

**Design/methodology/approach** - A quantitative approach with a descriptive design was used for the data collection on both occasions, using respondents from Potchefstroom, South Africa. Interviewer-administered face-to-face contact sessions (N=483) were held to complete the questionnaires.

**Findings** - Results showed the most prominent knowledge gaps in the *persuasion knowledge: health claims* and *consumption knowledge* categories. The young adults were practically significantly more knowledgeable in the *shopping skills*, *consumption knowledge* and *persuasion knowledge: symbols* categories. However, a clear lack of topic knowledge was revealed and should be addressed. Large effect sizes over time in the *persuasion knowledge: health claims* and *persuasion knowledge: nutrient claims* categories indicated that the 2013 respondents were practically significantly more knowledgeable than the 2010 respondents. It is, however, still unclear whether the 2010 food label regulations, which are currently still applicable in South Africa, have had any positive effects on enhancing these respondents' food label knowledge.

**Value** - Consumer education could be focused on the identified knowledge categories in an attempt to minimize knowledge gaps and their effects on informed decision making.

**Keywords** - Consumer socialization, Consumption knowledge, Food label, Informed decision making, Persuasion knowledge, Shopping skills.

**Paper type** - Research paper.

## Introduction

Knowledge, as one of the most important outcomes of the consumer socialization process, generally results in the development of new behavioural, cognitive and/or affective consumer characteristics (Ahmad *et al.*, 2011:9; Lachance *et al.*, 2000:129). However, for information to be stored and used as consumer knowledge, it needs to be interpreted and organized during cognitive processes that are based on the formation of schemata and cognitive structures (Berk, 2013:221). Various environmental factors, such as the absence of a parent as the main socialization agent or restricted exposure to the consumer market, sometimes impede the childhood consumer socialization process, and may result in adult consumers with limited

food label knowledge, who find information on food labels confusing and difficult to understand (Aday and Yener, 2014; Prieto-Castillo *et al.*, 2015). These adult consumers might even avoid food labels despite the possible benefits of using them, and instead, make their food choices with the aid of heuristics.

Food label legislation was endorsed by the South African Department of Health in regulation R146 in 2010 (South Africa, 2010), and the Department is currently working on amendments, with a new draft (R429) in the review process (and has been for some time) (South Africa, 2014). One of the aims of the R146 is to protect consumers from exposure to faulty or misleading food label information by requiring national standards and norms (South Africa, 2010). These regulations also aim to promote responsible consumer behaviour (such as informed decision making) by providing consumers with improved information and standards (South Africa, 2010). These efforts to continuously improve food labels could help to ensure positive consumer socialization outcomes.

### **Focus of the study**

Academic research that focuses on consumers' food label knowledge and studies that address consumer socialization are abundant. However, none of these studies have attempted to determine existing food label knowledge gaps in order to embark on a more practical intervention during consumer socialization to improve informed decision making. This study will therefore focus on three consumer knowledge categories (*persuasion knowledge, consumption knowledge and shopping skills*) that are closely involved with the practical use of food label information in an effort to identify the food label knowledge gaps.

Firstly, *persuasion knowledge* was included because it is essential in practically all marketer-related interactions (Friedstad and Wright, 1994). Persuasion knowledge involves consumers' understanding of the goals and tactics applied by industry that aim to persuade consumers to buy something. These attempts usually enable the industry to attain their own goals through the consumer's adaptive response (Campbell and Kirmani, 2000; Friedstad and Wright, 1994). Persuasion attempts are usually concealed (De Pelsmacker and Neijens, 2012; Kachersky, 2011) to look natural, innocent, pleasurable, flow-inducing and less intrusive, similar to brand placements in movies, television programmes, games, websites and social network sites (Cauberghe and De Pelsmacker, 2010; De Pelsmacker and Neijens, 2012; Van Reijmersdal *et al.*, 2009; Wouters and De Pelsmacker, 2011). Messages on packaging and food labels that are meant for consumers are also persuasion attempts. Health claims are often used as persuasion attempts, although not all health claims can be labelled as persuasion attempts.

In our study, persuasion knowledge was tested in the form of general food label health and nutrient (content) claims that are often used by manufacturers, such as 'high in vitamin A' and 'trans-fat free'. Health claims are often used in persuasion attempts. These claims and symbols can be classified as topic knowledge, which is one of the three knowledge structures generally applied by consumers that shape and determine the outcome of a persuasion attempt. The other two knowledge structures, namely agent knowledge (to know and understand the source of the message, i.e. the specific product/manufacture) and an awareness of the persuasion attempt, were not included in this study (Friedstad and Wright, 1994). Having topic knowledge is to have insight into and an understanding of the content of the persuasion attempt (Lorenzo & Russell, 2012:58).

Consumers' *consumption knowledge*, the second category, usually includes how to use and dispose of products, and the risks involved in using them (Blythe, 2008). Questions regarding the identification of the manufacturer and how the product should be stored, for example, were included in the present study to address this category. *Shopping skills* was the third knowledge category. Consumers use important skills during product evaluation before the final purchase decision is made (John, 1999). Practically, this implies that a consumer in a shopping scenario should be able to locate certain types of food label information, understand such information and then apply it to make an informed choice between alternatives. Shopping skills tested in this study included the identification and manipulation of information, such as the number of kilojoules, fat content and preservatives printed on the food label of a given food product (Van der Merwe *et al.*, 2012). Consequently, consumers also need basic numeracy skills in addition to sound shopping skills. It can be argued that reading skills are also essential, although this was not tested in the specific questionnaire.

Both young adults (18-25 years of age) and an older consumer group ( $\geq 35$  years of age) were incorporated in our study. The first group comprising young adults, who have just entered the adult market and commenced with adulthood consumer socialization, was included with the aim of obtaining information in a food label context on the possible knowledge gaps that are owing to limited childhood consumer socialization. In order to identify the possible food label knowledge gaps of older consumers, the second group, comprising older adults, was included. Since the interest of this study was to distinguish between these two groups of consumers, consumers 26-34 years were not included in this study. Further attempts were made to investigate whether or not food label knowledge fluctuated between the 2010 and the 2013 phases of the study. Therefore, a dataset from 2010 (young adults:  $n = 78$ ; older respondents:  $n = 105$ ), the year of the promulgation of the

current label regulations, and one from 2013 (young adults: n = 105; older respondents: n = 195), two years after the promulgation of the labelling regulations, both using the same questionnaire, were included to allow for comparisons in this regard.

The focus of this study was threefold: *firstly*, to identify and categorise gaps in the food label knowledge of the two age groups; *secondly*, to determine differences between the food label knowledge of the young adults and older respondents; and *finally*, to identify differences between the food label knowledge of the 2010 respondent groups and the 2013 groups. The unique focus of this study of including both age groups and the identification of possible food label knowledge gaps between them may serve as a significant foundation from which to attempt to educate consumers, in both developing and developed countries, helping them become informed decision makers regarding food products through the use of food labels.

## **Methods**

A quantitative approach with a descriptive design was used for collecting the data in 2010 and again in 2013. Purposive sampling, used in both cases, was based on the inclusion criteria, which were: respondents were 18 years or older; understood English (the main language used on labels in South Africa); did not have any form of formal food or nutrition education; and were their own and/or their household's main food shopper. The Ethics Committee of the North-West University approved the main study, which included the collection of data for both datasets used in this article (reference number: NWU-00024-09-A1), as well as the execution of the present study (reference number: NWU-00136-14-A1).

An existing nutrition-labelling knowledge questionnaire from the USA (Alfieri and Byrd-Bredbenner, 2000; Byrd-Bredbenner *et al.*, 2000) was adapted by Van der Merwe *et al.* (2012) to include questions about food labels in general. This newly adapted questionnaire took approximately 15 minutes to complete. A pilot test was undertaken in Potchefstroom in the North West Province of South Africa before the data collection commenced in 2010. Only minor adaptations from the original questionnaire were needed. The questionnaires were interviewer-administered during face-to-face sessions with trained fieldworkers. Different time schedules were used for data collection at various public locations in Potchefstroom, during both 2010 and 2013.

Descriptive statistics for both datasets were done using IBM SPSS Statistics Version 22. Frequencies were determined for the demographic data and all other knowledge questions. To determine construct validity of the knowledge questions and to further ease

interpretation of the 2010, the 2013, and the combined data of the two years, this data were reduced with exploratory factor analysis (EFA) using principal axis factoring with Oblimin rotation. Internal reliability was confirmed by Kuder Richardson 20 coefficient alpha values greater than 0.7 (presented in the results), which, according to Field (2009), is acceptable. Kline (2000) adds that with psychological constructs, values of 0.6 are also acceptable, and this study incorporated a variety of different constructs. Cross-tabulations were used to determine differences between the two age groups (young adults and older respondents) and the different food label knowledge factors, with Cramer's V indicating small (0.1), medium (0.3) and large (0.5) effect sizes (Ellis and Steyn, 2003). A t-test was used to further investigate possible differences between the knowledge factors of the two age groups, and also between the 2010 and 2013 groups, considering Cohen's *d*-values as small ( $d = 0.2$ ), medium ( $d = 0.5$ ) and large ( $d = 0.8$ ) effects. In all cases, only medium and large effect sizes are reported, as these indicate tendencies and practical significance respectively.

## Results and discussion

### *Demographic characteristics of respondents*

Both the young adult (18-25 years) and older respondents ( $\geq 35$  years) from 2010 were mostly Afrikaans-speaking females. In 2013, equal numbers in terms of gender in both age groups were found, and slightly more than half were Afrikaans-speaking. Detailed demographic information is provided in Table 1.

**Table 1** Demographic information

|          |           | 2010                       |                                  | 2013                        |                                  |
|----------|-----------|----------------------------|----------------------------------|-----------------------------|----------------------------------|
|          |           | Young adults (%)<br>n = 78 | Older respondents (%)<br>n = 105 | Young adults (%)<br>n = 105 | Older respondents (%)<br>n = 195 |
|          |           |                            |                                  |                             |                                  |
| Gender   | Male      | 39                         | 28                               | 50                          | 49                               |
|          | Female    | 62                         | 72                               | 50                          | 51                               |
| Language | Afrikaans | 86                         | 64                               | 51                          | 51                               |
|          | Setswana  | 9                          | 24                               | 24                          | 24                               |
|          | English   | 5                          | 13                               | 13                          | 8                                |

*Objective 1 – Food label knowledge gaps*

In order to identify possible food label knowledge gaps across both age groups, the relevant food label questions from both datasets were combined and then reduced into factors with EFA. Five factors for respondents' food label knowledge were extracted (Table 2) and theoretically labelled as *shopping skills*; *consumption knowledge*; *persuasion knowledge: nutrient claims*; *persuasion knowledge: symbols*; and *persuasion knowledge: health claims*. The statements yielded acceptable communality values  $> 0.3$ , and a Kaiser-Meyer-Olkin (KMO) value of 0.92, which indicated an adequate sample for the analysis (KMO  $> 0.5$ ) (Field, 2009). Construct validity and internal reliability was achieved, as all five factors had acceptable Kuder Richardson 20 values (Table 2).

**Table 2** Factor analysis and cross-tabulations on the combined data of 2010 and 2013

| Factors and questions                        | Kuder Richardson 20 | Mean factor score (% correct) | SD   | Factor loading | Age group | Incorrect (%) | Effect size (Cramer's V) |
|----------------------------------------------|---------------------|-------------------------------|------|----------------|-----------|---------------|--------------------------|
| <b>Shopping skills</b>                       | 0.83                | 67                            | 0.33 |                |           |               |                          |
| Kilojoules in 100g product                   |                     |                               |      | -0.41          | YA        | 13            |                          |
|                                              |                     |                               |      |                | OR        | 43            | <b>0.312</b>             |
| Protein in 100g product                      |                     |                               |      | -0.33          | YA        | 7             |                          |
|                                              |                     |                               |      |                | OR        | 28            | <b>0.250</b>             |
| Saturated fat in product                     |                     |                               |      | -0.46          | YA        | 11            |                          |
|                                              |                     |                               |      |                | OR        | 39            | <b>0.302</b>             |
| Carbohydrates in 100g of product             |                     |                               |      | -0.30          | YA        | 9             |                          |
|                                              |                     |                               |      |                | OR        | 30            | <b>0.246</b>             |
| Fibre in one serving of this food            |                     |                               |      | -0.70          | YA        | 23            |                          |
|                                              |                     |                               |      |                | OR        | 54            | <b>0.305</b>             |
|                                              |                     |                               |      | -0.74          | YA        | 39            |                          |
|                                              |                     |                               |      |                | OR        | 67            | <b>0.267</b>             |
| Total servings                               |                     |                               |      |                |           |               |                          |
| <b>Consumption knowledge</b>                 | 0.90                | 75                            | 0.33 |                |           |               |                          |
| Manufacturer                                 |                     |                               |      | 0.63           | YA        | 4             |                          |
|                                              |                     |                               |      |                | OR        | 22            | 0.234                    |
| Main ingredient                              |                     |                               |      | 0.65           | YA        | 18            |                          |
|                                              |                     |                               |      |                | OR        | 42            | <b>0.253</b>             |
| Type of allergy should avoid this product    |                     |                               |      | 0.74           | YA        | 14            |                          |
|                                              |                     |                               |      |                | OR        | 36            | 0.239                    |
| 'Best before/by date'                        |                     |                               |      | 0.84           | YA        | 9             |                          |
|                                              |                     |                               |      |                | OR        | 27            | 0.214                    |
| Product storage                              |                     |                               |      | 0.81           | YA        | 14            |                          |
|                                              |                     |                               |      |                | OR        | 28            | 0.166                    |
| Phone number to complain                     |                     |                               |      | 0.86           | YA        | 8             |                          |
|                                              |                     |                               |      |                | OR        | 21            | 0.165                    |
| Preservatives in product                     |                     |                               |      | 0.54           | YA        | 32            |                          |
|                                              |                     |                               |      |                | OR        | 47            | 0.154                    |
| <b>Persuasion knowledge: Nutrient claims</b> | 0.68                | 68                            | 0.30 |                |           |               |                          |
| Product 'high in vitamin A'                  |                     |                               |      | -0.57          | YA        | 5             |                          |
|                                              |                     |                               |      |                | OR        | 15            | 0.155                    |
| Product 'high in vitamin E'                  |                     |                               |      | -0.48          | YA        | 57            |                          |
|                                              |                     |                               |      |                | OR        | 54            | 0.033                    |
| Product 'trans-fat free'                     |                     |                               |      | -0.63          | YA        | 14            |                          |
|                                              |                     |                               |      |                | OR        | 17            | 0.037                    |
| Product 'low in saturated fat'               |                     |                               |      | -0.48          | YA        | 52            |                          |
|                                              |                     |                               |      |                | OR        | 50            | 0.019                    |
| <b>Persuasion knowledge: Symbols</b>         | 0.81                | 83                            | 0.30 |                |           |               |                          |
| Identify 'Halaal' symbol                     |                     |                               |      | 0.87           | YA        | 8             |                          |
|                                              |                     |                               |      |                | OR        | 27            | 0.239                    |
| Identify 'Heart foundation' symbol'          |                     |                               |      | 0.78           | YA        | 5             |                          |
|                                              |                     |                               |      |                | OR        | 17            | 0.181                    |
| Identify 'suitable for vegetarians' symbol   |                     |                               |      | 0.63           | YA        | 11            |                          |
|                                              |                     |                               |      |                | OR        | 34            | <b>0.255</b>             |
| Identify 'recycled' symbol                   |                     |                               |      | 0.85           | YA        | 2             |                          |
|                                              |                     |                               |      |                | OR        | 20            | <b>0.252</b>             |
| <b>Persuasion knowledge: Health claims</b>   | 0.71                | 50                            | 0.40 |                |           |               |                          |
| Is claim 'healthy' allowed                   |                     |                               |      | 0.78           | YA        | 53            |                          |
|                                              |                     |                               |      |                | OR        | 45            | 0.069                    |
| Is claim 'wholesome' allowed                 |                     |                               |      | 0.84           | YA        | 61            |                          |
|                                              |                     |                               |      |                | OR        | 50            | 0.106                    |
| Is claim '95% fat free' allowed              |                     |                               |      | 0.68           | YA        | 59            |                          |
|                                              |                     |                               |      |                | OR        | 51            | 0.073                    |

YA = Young adult respondents; OR = Older respondents

Cramer's V = small (0.1), medium (0.3) and large (0.5) effect sizes – medium-sized values in boldface

The mean factor scores indicated that the most prominent gap in the respondents' food label knowledge was *persuasion knowledge: health claims*, as only half of the respondents correctly answered questions relating to this factor. It could be argued that respondents found this information as part of nutrient information confusing and were thus unable to correctly answer these questions. Previous research confirms that consumers find claims on labels confusing and misleading (Hasler, 2008), further highlighting a prominent topic knowledge gap in persuasion knowledge (Friedstad and Wright, 1994). These respondents are evidently unfamiliar with the current label regulations, since the questions pertained to permissible health claims. Consumers in such a scenario (with insufficient topic knowledge) are forced to rely on their agent knowledge (trust in the manufacturer) (Friedstad and Wright, 1994). However, since no specific manufacturer was presented to the respondents, Friedstad and Wright (1994) suggest that consumers in this situation would have used heuristics to help them complete the decision tasks at hand, affecting informed decision making based on the careful scrutiny of facts.

According to the mean factor score, the second most prominent knowledge gap was *shopping skills*, as more than a third of respondents were not able to perform these tasks correctly. It is suggested that these respondents may possibly have been habitual purchasers who do not regularly check the number of servings and were consequently unable to successfully locate and manipulate this information. Several previous studies have identified food label-using consumers as habitual purchasers (Bosman *et al.*, 2012; Kempen *et al.*, 2011). However, this knowledge gap with respect to *shopping skills* could also be attributed to the respondents' possibly poor numeracy skills, which would also affect ability to locate and manipulate food label information. Research confirms that literacy and/or numeracy skills needed to understand and utilise food label information are indeed sometimes lacking (Swartz *et al.*, 2013).

The third most prominent gap based on the mean factor score was *persuasion knowledge: nutrient claims*, as almost 30% of the respondents incorrectly answered the questions in this category. In particular, more than 50% of the respondents incorrectly answered the questions on 'high in vitamin E' and 'low in saturated fat', confirming that there is a lack of topic knowledge and a difficulty in understanding and interpreting the terms of the nutrient claims terms among consumers. The health claims, frequently used as a clear persuasion attempt in combination with the respondents' lack of topic knowledge, highlight their vulnerability to innocent and natural-looking claims, which affects the respondents' potential to make informed decisions.

The respondents' *consumption knowledge* was one of the least prominent knowledge gaps, with a quarter of the respondents incorrectly answering the relevant questions (Table 2). The fact that this type of knowledge does not seem to be lacking as much as the others might be owing to well-set positive habits or the use of good heuristics in the everyday routine of food shopping. Yet almost a third to half of the respondents were unable to indicate whether or not the product contained preservatives. Here, the problem may be a lack of understanding of nutrients, ingredient list terms and general terminology among consumers, as supported by other studies (Singla, 2010; Van der Merwe and Venter, 2010).

Respondents performed the best in the *persuasion knowledge: symbols* category, as only under a fifth was unable to answer these questions. Symbols are visual cues known to enhance consumers' memory and elicit a better response, which could explain the respondents' fairly positive results, despite their generally lower persuasion knowledge regarding health and nutrient claims. Other research shows that typical consumers from the younger age group favour a visual learning style to enhance memory and recall (Mokoena, 2015:6), which could be why this age group was more familiar with the individual symbols (visual cues). Other relevant research also focuses on investigations into the use and success of more colour in nutrition labelling (Arrúa *et al.*, 2017; Crosetto *et al.*, 2016).

*Objective 2 – Differences between the young adults' and older respondents' food label knowledge.*

Cross-tabulations for the combined data of 2010 and 2013 revealed medium effect sizes between young adults and older respondents for all six of the knowledge questions from the *shopping skills* category (Table 2). Young adults seemed to know more about how much sugar, kilojoules and protein would be consumed with 100g, how much fibre would be consumed in one serving, total percentage of saturated fat and the total number of servings than older respondents. The young adults therefore tended to be more knowledgeable than the older respondents in the *shopping skills* category, possibly because they were exposed to numerical skills and shopping experiences at an earlier age, as research indicates that parents have used shopping as a means to socialize with their children since the turn of the century (Pettersson *et al.*, 2004:319; Schiffman and Kanuk, 2010:334). The young adults, who are constantly in contact with information technology (Mokoena, 2015), might also be technologically more literate than the older respondents, enabling them to use technology more effectively during their information search and decision making in shopping scenarios. Lastly, these attributes may also result from this generation being labelled as "high achievers" and "hard workers" (Howe and Strauss, 2000).

Only one medium effect size was revealed in the *consumption knowledge* category, where more young adults than older consumers were able to name the main ingredient in the given product. Despite only showing small effect sizes, a pattern was seen for the young adults, who also seemed to fare better in answering all the other questions in this category. In the *persuasion knowledge: symbols* category, young adults were better able to identify the 'suitable for vegetarians' and 'recycled' symbols than the older respondents. This finding might indicate that younger age groups are more interested in 'good health' and 'good/green causes', as they are more actively taught about these issues (Honig and Mennerich, 2013) and therefore know these symbols. Table 3 outlines the results of a t-test that confirmed the results of the cross-tabulations. A line chart of the reported differences also illustrates the young adults' tendency of being practically significantly more knowledgeable regarding shopping skills, with the only exceptions being *persuasion knowledge: health claims* and *persuasion knowledge: nutrient claims* (Figure 2).

**Table 3** T-test of the respondents' food label knowledge

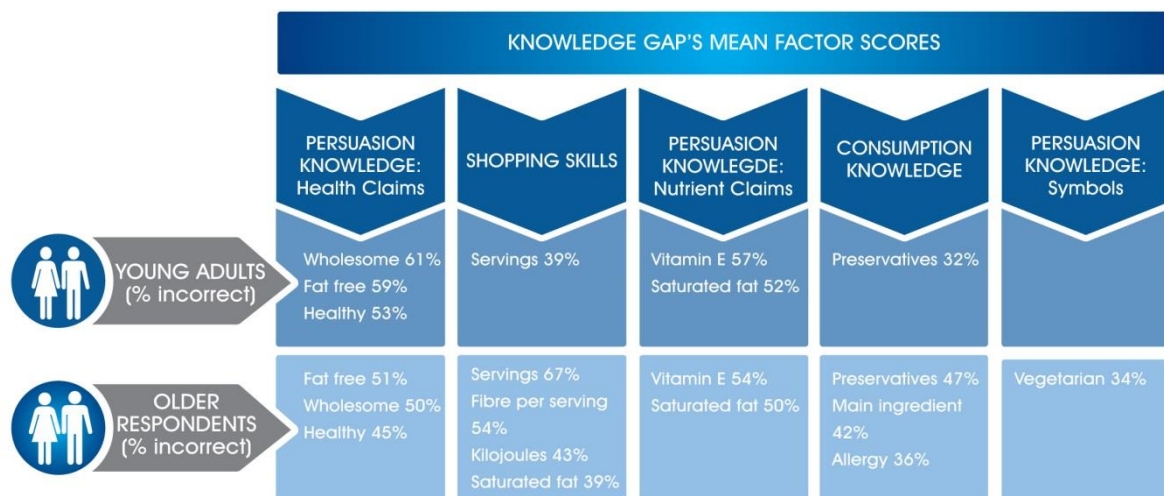
| Factor                                | Young Adults and Older Respondents |                |    |                        | 2010 and 2013 |                |      |                        |
|---------------------------------------|------------------------------------|----------------|----|------------------------|---------------|----------------|------|------------------------|
|                                       |                                    | Mean % correct | SD | Effect size (d-values) | Year          | Mean % correct | SD   | Effect size (d-values) |
| Shopping skills                       | YA                                 | 83             | 24 | 0.74                   | 2010          | 74             | 0.27 | 0.33                   |
|                                       | OR                                 | 57             | 36 |                        | 2013          | 63             | 0.36 |                        |
| Consumption knowledge                 | YA                                 | 86             | 25 | 0.49                   | 2010          | 88             | 0.18 | 0.53                   |
|                                       | OR                                 | 68             | 36 |                        | 2013          | 68             | 0.38 |                        |
| Persuasion knowledge: Nutrient claims | YA                                 | 68             | 27 | 0.06                   | 2010          | 51             | 0.06 | 0.81                   |
|                                       | OR                                 | 66             | 33 |                        | 2013          | 78             | 0.34 |                        |
| Persuasion knowledge: Symbols         | YA                                 | 94             | 18 | 0.52                   | 2010          | 97             | 0.13 | 0.65                   |
|                                       | OR                                 | 76             | 35 |                        | 2013          | 75             | 0.34 |                        |
| Persuasion knowledge: Health claims   | YA                                 | 43             | 39 | 0.21                   | 2010          | 19             | 0.28 | 1.42                   |
|                                       | OR                                 | 51             | 41 |                        | 2013          | 67             | 0.34 |                        |

YA = Young adults; OR = Older respondents

Cohen's d-values effect sizes: small (0.2), medium (0.5) and large (0.8)

Only the most prominent knowledge gaps in knowledge will be discussed (Table 2) here. The young adults' most prominent gaps were seen within the *persuasion knowledge: health claim* category, in that respondents struggled with all questions stated within this factor – namely, whether or not a label may contain claims such as 'wholesome', '95% fat free' and 'healthy'. More than half also struggled with the 'vitamin E' and 'saturated fat' questions in *persuasion knowledge: nutrient claims*. These young adults were therefore

unfamiliar with the basic government regulation of permitted claims on food labels. It may be that they do not feel the need to know these regulations, nor be able to apply such knowledge during healthy decision making as they are not yet concerned about their general health. Otherwise, it can indicate a lack of understanding of the nutrient information and a consequent ignorance. The young adults' childhood consumer socialization in these respects was probably insufficient. A future intervention to improve general topic knowledge is thus needed to help consumers, such as these, reach their own buying goals (Friedstad and Wright, 1994). Figure 1 provides a summary of the most pertinent knowledge problem areas.



Percentage indicate % incorrect responses to questions

**Figure 1** A summary of the most prominent knowledge gaps based on mean scores and cross tabulations.

The older respondents' most prominent knowledge gaps were divided between four of the five categories, as indicated in Figure 1. The two most challenging questions for them were from the *shopping skills* knowledge category regarding serving size, where more than two thirds were unable to determine the 'number of servings', while more than half struggled to determine the 'amount of fibre in one serving'. It is possible that older consumers are more likely to be habitual purchasers and users, and are consequently not accustomed to searching for, interpreting and applying important label information. Time constraints during shopping may also explain this finding (Bosman *et al.*, 2012; Kempen *et al.*, 2011).

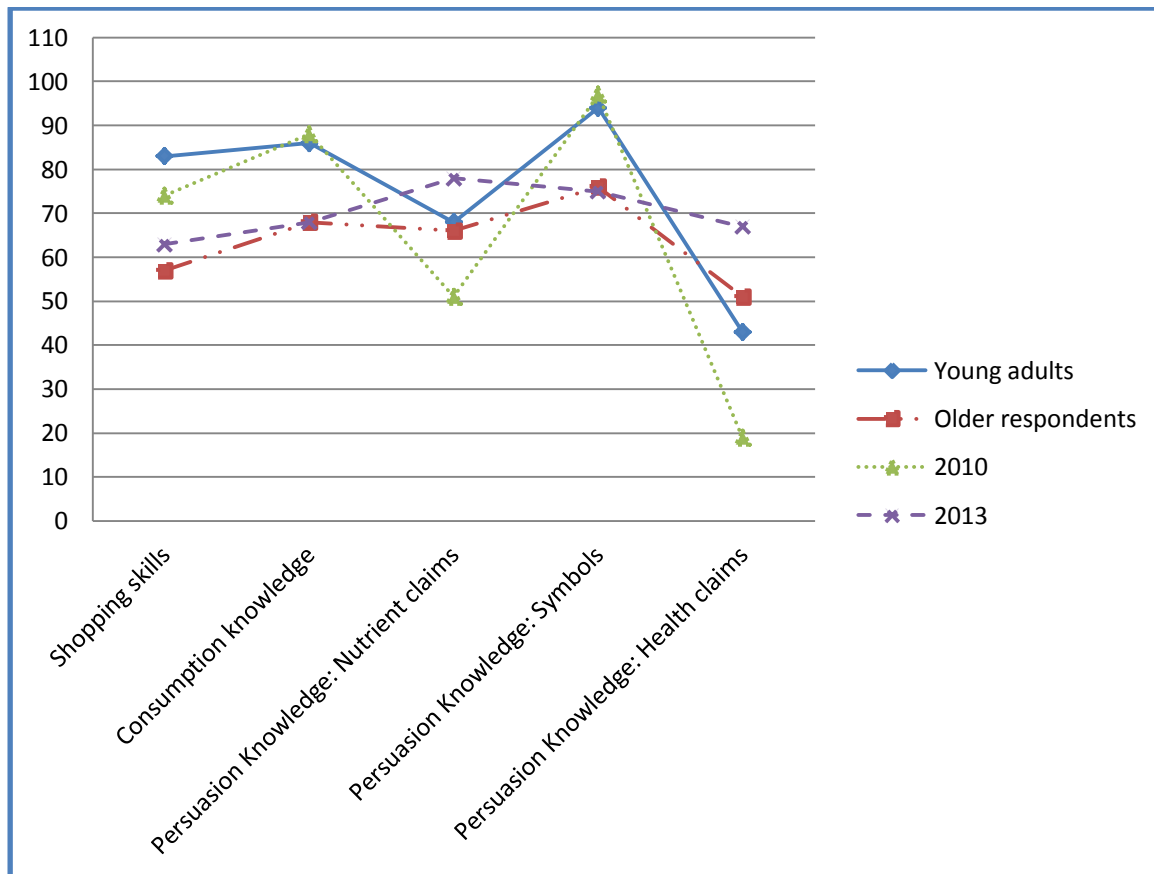
Older respondents also struggled with the *persuasion knowledge: nutrient claims* and *persuasion knowledge: health claims* categories. Over half could not correctly indicate

whether or not the nutrient claims 'high in vitamin E' and 'saturated fat' as well as the health claims '95% fat free' and 'wholesome' were permitted. This finding not only indicates probable shortcomings in childhood consumer socialization, but also a possible resistance to adulthood consumer socialization with regard to food labels, or even a lack of exposure to adult consumer socialization in this regard.

*Objective 3 – Comparison of the 2010 and 2013 respondents' food label information knowledge*

As shown in the results of the t-test presented in Table 3, the respondents from 2013 were practically significantly more knowledgeable than those from 2010 in the *persuasion knowledge: nutrient claims* and *persuasion knowledge: health claims* categories. However, the respondents from 2010 tended to be more knowledgeable than those from 2013 in the *persuasion knowledge: symbols* and the *consumption knowledge* categories.

Figure 2 illustrates less *persuasion knowledge: symbols* and *consumption knowledge* among respondents in 2013 as compared to those in 2010, and in contrast, to the practically significant better *persuasion knowledge: health claims* and *persuasion knowledge: nutrient claims* among the 2013 respondents than those in 2010. It is, however, interesting to note that the 2013 respondents' knowledge was more consistent and above 60% in all categories when compared to those of the 2010 respondents, who were notably less knowledgeable in the *persuasion knowledge: health claims* and *persuasion knowledge: nutrient claims* categories in relation to the other knowledge categories (Table 3). Although the comparison based on different respondent groups during 2010 and 2013 should be interpreted with caution, it seems that the persuasion knowledge of respondents with respect to health and nutrient claims, in particular, might have benefitted from the revised labelling regulations in 2010.



**Figure 2** Line chart of the mean factor scores % correct for the differences between young adults and older respondents, as well as the 2010 and 2013 respondents' food label knowledge.

## Conclusion

Respondents' need for more food label knowledge to help ensure informed decision making was clearly indicated in this study. The older consumer groups' knowledge gaps included the categories of *shopping skills* and *consumption*, while both the older consumer group and the young adults had knowledge gaps in the *persuasion knowledge: nutrient claims* and *persuasion knowledge: health claims* categories. It is therefore evident that the respondents in this study have a significant need for food label education, especially in the category of *persuasion knowledge*. Consumers should be able to make their decisions based on facts (topic knowledge), and not need to rely on their impressions of the manufacturers (agent knowledge), persuasion attempts or heuristics. It is therefore recommended that consumers be educated on current label regulations and pending draft regulations, which, when they come into effect, will include rules on permitted nutrient and health claims. This knowledge will empower them by reducing their vulnerability when they are confronted with persuasion attempts such as those claimed on labels.

Practical experience in the use and manipulation of provided food label information is also needed and should be included in education efforts. A renewed effort to focus on the development of and assistance with numerical skills in food label use should be a priority. This area will remain important for proper food label use even though food labelling regulations are being improved, since the acquiring of the ability to manipulate the given information is still the consumers' responsibility. The use of colour and graphics to ease the interpretation and application of food label information should also not be underestimated. *Persuasion knowledge: symbols* as the least prominent knowledge gap highlighted the potential of colour and graphs, especially among younger age groups, and is supported by educational research. It is therefore recommended that the use of more colour and graphics be investigated for use and inclusion on food labels.

Consumer socialization provides an important means through which the needed knowledge can be obtained. However, owing to various environmental and social constraints, the consumer socialization process is sometimes limited, resulting in these identified knowledge gaps that could hinder informed decision making. Whatever the individual consumer's situation, each consumer enters adulthood with a certain extent of prior food label knowledge at their disposal. From that point, adult consumers further manage their exposure to consumer socialization. The consumers' own approach and 'openness' to consumer socialization consequently plays a much larger role than previously acknowledged, and should especially be taken into consideration when educational efforts to minimize food label knowledge gaps are planned.

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CHAPTER 6  
ARTICLE THREE

A proposed food label educational model for consumers  
MANUSCRIPT PREPARED ACCORDING TO EDITORIAL PRESCRIPTIONS OF AND TO  
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**TITLE**

A proposed food label educational model for consumers

**SHORT TITLE**

A food label educational model

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**Abstract**

*Objective:* Consumers need more food label education to assist them in making informed food choices. Consumer socialization provides a platform to learn about food label information during childhood in a preventive manner, or during adulthood as an intervention. However, despite numerous calls for consumer education on food labels, an educational model or practical attempt in this regard is still lacking in South Africa. The purpose of this article is therefore to propose a food label educational model to fill this lacuna.

*Design:* The research design entailed two distinct steps. Firstly, a clear view of consumers' educational needs was required. Primary research with a quantitative survey type was therefore used to establish basic data on the adult respondents' food label education needs. Secondly, a food label educational model was compiled by incorporating relevant information from a well-known developmental theory and previous research findings from the larger project that this article forms a part of.

*Results:* The proposed model addresses six important aspects to guide the planning and implementation of any food label education initiative: the target group, who is responsible, why is it needed, how should it be done, what should be taught, and when should it be done. These six aspects can either be applied during the childhood consumer socialization process as prevention or during the adulthood consumer socialization process as an intervention.

*Conclusions:* After testing in an academic environment, this proposed food label education model can be practically applied to help improve informed food decision making with the assistance of food labels.

**Introduction**

Several countries use consumer education to improve nutritional well-being, as it is seen as an essential requirement for individuals and families.<sup>1,2</sup> A lack in consumer education – for instance, regarding food labels – might lead to gaps in consumer knowledge and cause several potential problems regarding unhealthy food choices. These could contribute to numerous issues regarding general physical, emotional, cultural and social well-being.<sup>3</sup> Knowledge gained from consumer education is therefore imperative to improve informed decision making<sup>1</sup> regarding food choices. Indeed, recent research confirms

associations between nutrition knowledge and food label use, and reveals the influence of prior knowledge on attitudes towards claims.<sup>4,5</sup>

Consumers form their own **opinions** when they are exposed to different socialization agents, such as the media, parents, and food labels as influencers that communicate information to the consumer.<sup>6</sup> Different stimuli from the food label enters consumers' brains as sensations, are encoded (interpreted) and are stored as food label **knowledge** in schemata and cognitive structures for label information.<sup>7</sup> In a shopping environment, children may, for instance, observe their parents making a buying decision based on label information on behalf of the family. If the child pays attention to this scenario, is interested in what the parent is reading on the label and is motivated to learn (realises the importance), this may result in new (food label) **knowledge**.<sup>8,9</sup> At the same time, in consulting the food label, the parents are also going through the consumer socialization process with associated outcomes.

Consumer socialization thus provides consumers with the opportunity to acquire needed knowledge, since consumer socialization develops children into consumers.<sup>10,11</sup> The consumer socialization process repeats itself throughout an individual's entire life span – from childhood through adulthood – with each process exhibiting positive and/or negative outcome(s).<sup>12</sup> Food label knowledge can be seen as a positive outcome of the consumer socialization process.

However, consumer education initiatives specifically aimed at addressing lacunae in these customer socialization processes and improving food label use or understanding and knowledge in any manner could not be found. The only recent work that is somewhat related to food labels are the studies of McAlister and Cornwell, and Nelson, both in school settings that aimed to improve children's persuasion knowledge.<sup>13,14</sup> Indeed, some of the most popular childhood consumer education research topics are on advertising and on financial literacy.<sup>15,16</sup> Since consumer education in South Africa regarding food labels is still lacking and no published international research focussing on a consumer educational model regarding food labels could be found, this study aimed to propose an educational model that focuses on child consumers, young adults and older consumers.

### **Study focus**

Food label education can either be implemented in a preventive manner as a part of childhood consumer socialization or as an intervention during adult consumer socialization. To be used as a preventive aid, gaps in young adult consumers' food label knowledge need

to be identified so that they can be addressed in the educational model for children. A specific focus on the young adult consumer (18-25 years of age) is therefore needed to address food label knowledge gaps that they might experience when entering the food marketing environment. The young adult population group seems to be the most appropriate to include in this study, since these consumers are at the end of their childhood consumer socialization and on the verge of adulthood where they will be making independent consumer choices and have responsibilities as adult consumers. However, adult consumers should also be informed (educated) on the advantages of using food labels to help them make informed decisions, and thus ultimately take control of their own health status.<sup>3,17</sup> An older consumer group ( $\geq 36$  years of age) was therefore also included in the study. Because literature indicates that a credible and trustworthy education campaign should be built on the latest results from continuous studies,<sup>1</sup> the aim of this study was to present a food education model compiled from data from an ongoing project on consumer behaviour and food labels.<sup>18,19</sup>

## **Method**

This research was conducted in two distinct steps. During step 1, primary data were collected to identify the educational needs of adult respondents. In step 2, the model was compiled to achieve the envisioned outcome of informed decision making.

### **Step 1: *Primary research on food label education need***

A quantitative research approach with a descriptive, cross-sectional survey design was followed. Non-probability, purposive sampling of consumers older than 18 years and conversant in English (which is the language generally used on South African food labels) was applied. Data were collected in a variety of retail stores in one city. The questionnaire, which mostly comprised Likert scales, was developed by consumer science professionals with experience in the field of consumer food label behavior. The research questions (RQs) that were addressed included:

RQ 1: What label information do they want to learn more about?

RQ 2: What label information is most important to the respondents?

RQ 3: Who should be responsible for the education on food labels?

RQ 4: Why would they like to receive food label education?

RQ 5: What is the best source of food label education?

Descriptive statistics were done with IBM SPSS Statistics Version 24. Frequencies were determined for the demographic information and all other educational need questions. Cohen's *d*-values were used to determine if there was a difference in the percentages

between older and younger respondents; *d*-values of 0.2 were considered small; 0.3 medium and 0.5 large. Cross-tabulations were used to determine associations between the two age groups (young adults of 18-25 years and older respondents of 36 years and older) and the importance of the different food label questions, with Cramer's *V* indicating small (0.1), medium (0.3) and large (0.5) effect sizes.<sup>20</sup> Only medium and large effect sizes are reported, as these indicate tendencies and practical significance respectively.

**Step 2: *Compiling the proposed model***

Based on a combination of the results from step 1, together with well-known theories on childhood development and socialization, previously published research findings and other published literature on consumer education, a proposed food label educational model was compiled.<sup>18,19,20</sup> The following stages were followed:

- The respondents' educational needs that were identified in answering RQ 3, 4 and 5 in step 1 of this study were analyzed, and the first three most popular answers of each research question were incorporated into the model to indicate:
  - Who should be responsible for the education on food labels?
  - Why would they like to receive food label education?
  - What is the best source of food label education?
- The food label opinion-, use- and understanding-related barriers and the food label knowledge gaps, both from different studies by Van Zyl *et al.* were theoretically categorised and condensed to ease inclusion as objectives for this model.<sup>18,19</sup>
- Consumer socialization behaviour development stages – the perceptual, analytic and reflective stages – and other fundamentals of consumer socialization were collectively used as framework to group the educational objectives into age and developmental categories.<sup>20</sup>
- Lastly, based on a literature search on consumer education, the most relevant and applicable research results and recommendations were included.

## Results and discussion

### Step 1: Primary research on food label education need

The young adults in this phase were mostly Caucasian females with a grade 12 qualification. The older respondents were also mostly females, with an almost equal distribution in the number of Caucasian and African respondents, as well as in terms of education, comprising those with 'a less than grade 12', 'grade 12' or 'diploma and graduate' (Table 1).

**Table 1** Respondents' demographic information

|                            | Young adults (%)<br>(n = 144) | Older respondents (%)<br>(n = 64) |
|----------------------------|-------------------------------|-----------------------------------|
| Age group in years         | 18-25                         | ≥ 36                              |
| <i>Gender:</i>             |                               |                                   |
| Male                       | 29                            | 27                                |
| Female                     | 71                            | 73                                |
| <i>Ethnicity:</i>          |                               |                                   |
| African                    | 32                            | 47                                |
| Caucasian                  | 65                            | 42                                |
| Coloured                   | 1                             | 8                                 |
| Asian                      | 0                             | 3                                 |
| <i>Level of education:</i> |                               |                                   |
| Less than grade 12         | 4                             | 30                                |
| Grade 12                   | 55                            | 40                                |
| Tertiary degree or diploma | 32                            | 25                                |
| Postgraduate               | 8                             | 5                                 |

**RQ 1** - Questioning regarding the respondents' interest to learn about food label information revealed that both the young adults and the older respondents were more interested to learn about allergens, nutrient claims and nutrition information (Table 2) than about other types of information. This specific interest in these three types of information, which may be regarded as primary food label information and have been confirmed to impact consumer choices, is encouraging, since studies show that consumers find this specific food label information confusing and difficult to understand.<sup>18,21,22,23</sup> According to Cohen's *d*-values, there are no differences between the interest of the younger and older respondents to learn about specific food label information (Table 2).

**Table 2** Respondents' interest to learn and the importance they attach to specific food label information

| Statement                                        | Age group | Importance Scale |            |           |            | Interest to learn        |         |                         |
|--------------------------------------------------|-----------|------------------|------------|-----------|------------|--------------------------|---------|-------------------------|
|                                                  |           | Never (%)        | Seldom (%) | Often (%) | Always (%) | Effect size (Cramer's V) | Yes (%) | Effect size (Cohen's d) |
| Expiry date                                      | YA        | 2                | 3          | 14        | 81         | 0.10                     | 52      | 0.12                    |
|                                                  | OR        | 3                | 0          | 16        | 81         |                          | 65      |                         |
| List of ingredients                              | YA        | 18               | 28         | 34        | 20         | 0.22                     | 66      | 0.04                    |
|                                                  | OR        | 17               | 11         | 36        | 36         |                          | 70      |                         |
| Nutrition information / table                    | YA        | 15               | 22         | 32        | 31         | 0.08                     | 75      | 0.00                    |
|                                                  | OR        | 16               | 22         | 25        | 38         |                          | 75      |                         |
| Usage instructions                               | YA        | 11               | 26         | 38        | 26         | 0.22                     | 43      | 0.18                    |
|                                                  | OR        | 20               | 14         | 27        | 39         |                          | 62      |                         |
| Symbols (e.g. heart foundation)                  | YA        | 26               | 34         | 24        | 16         | 0.28                     | 50      | 0.18                    |
|                                                  | OR        | 25               | 13         | 25        | 38         |                          | 70      |                         |
| Storage instructions                             | YA        | 16               | 32         | 29        | 23         | 0.31                     | 46      | 0.19                    |
|                                                  | OR        | 16               | 6          | 34        | 44         |                          | 67      |                         |
| Contact information of manufacturer              | YA        | 54               | 27         | 12        | 7          | 0.36                     | 30      | 0.27                    |
|                                                  | OR        | 29               | 22         | 19        | 30         |                          | 58      |                         |
| Allergen information                             | YA        | 28               | 17         | 23        | 32         | 0.06                     | 68      | 0.12                    |
|                                                  | OR        | 29               | 13         | 25        | 33         |                          | 80      |                         |
| Weight/mass of total product                     | YA        | 29               | 19         | 31        | 21         | 0.13                     | 45      | 0.23                    |
|                                                  | OR        | 20               | 14         | 41        | 25         |                          | 70      |                         |
| Portion size information                         | YA        | 28               | 21         | 32        | 18         | 0.06                     | 47      | 0.16                    |
|                                                  | OR        | 25               | 19         | 34        | 22         |                          | 65      |                         |
| Nutrient claims (e.g. low in sodium; low in fat) | YA        | 18               | 18         | 29        | 34         | 0.17                     | 68      | 0.11                    |
|                                                  | OR        | 13               | 13         | 23        | 52         |                          | 78      |                         |

YA = Young adults; OR = Older respondents

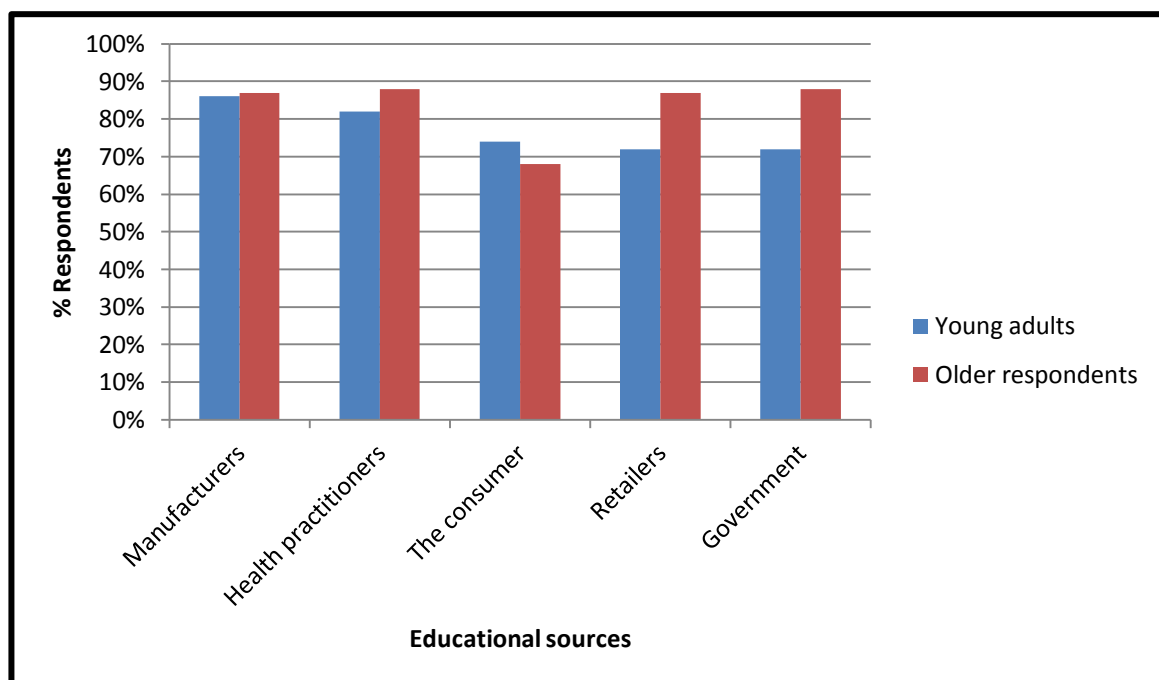
Cramer's V = small (0.1), medium (0.3) and large (0.5) effect sizes

Cohen's d = Yes/No: small (0.2), medium (0.5) and large (0.8)

**RQ 2** - The respondents were questioned on the importance of specific food label information to them in order to help prioritize the content of food label education (Table 2). Associations with medium effect sizes were found between age and attaching importance to specific information such as symbols, storage instructions and contact information of manufacturer, which were regarded as more important by older respondents. Most of the young adults indicated the expiry date always to be important information on food labels, followed by almost a third finding nutrient claims, allergens and nutrition information always to be important. This finding supports the young adults' responses of which food label information that they are interested in learning about. Likewise, most of the older respondents selected the expiry date as always being important, but about half of them also

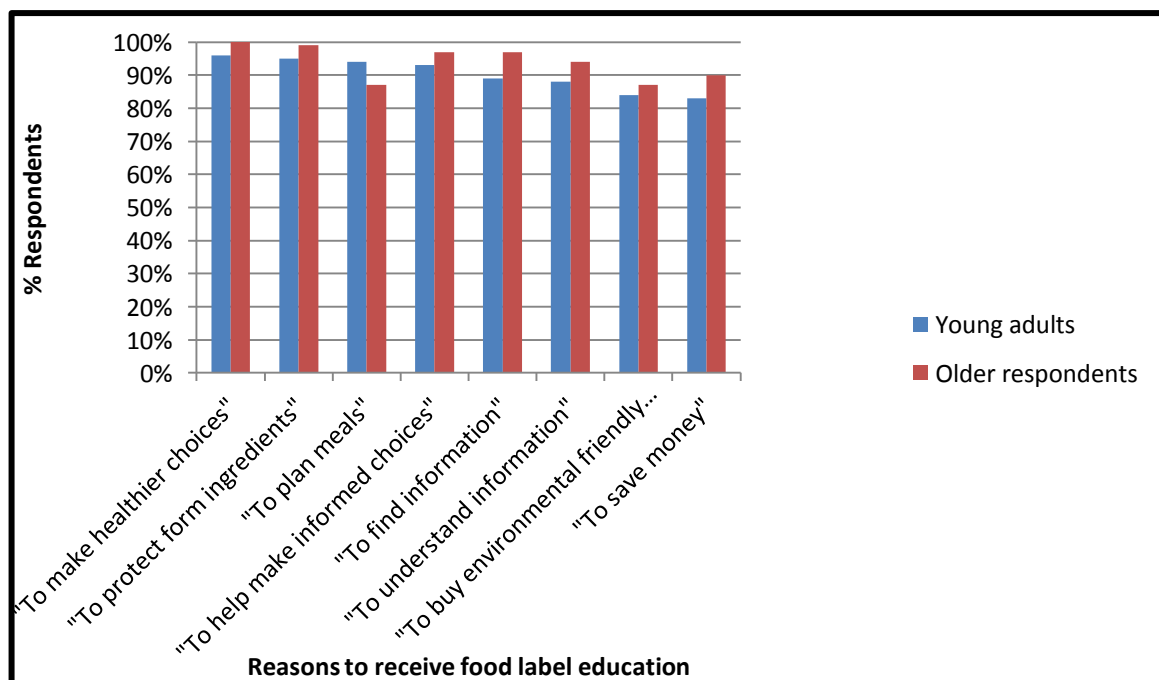
indicated storage instructions and nutrient claims as important. The older respondents' selection of practical use food label information pieces, such as the instructions and expiry date, can be explained by this generation groups' need for autonomy and self-reliance.<sup>24,25</sup> Both age groups prioritised practical use and their personal health when they rated the importance of the given food label information.

**RQ 3** - The respondents were asked who should be responsible for the food label education of consumers (Figure 1). Associations with medium effect sizes were found between age (older respondents) and a preference to receive education from retailers and the government (Cramer's  $V = 0.20$  and  $0.27$ , respectively). The young adults favoured manufacturers, implying a preference for receiving educational efforts from a primary source, such as each product's manufacturer, then a secondary source, such as a health practitioner. Only three quarters of the young adult respondents were willing to take responsibility for their own educational needs. This finding might be explained by this generation being used to having every day of their lives filled and structured by others in, for instance, day-care, pre-school and school.<sup>26</sup> In answering this question, the older respondents preferred secondary sources such as the government, health practitioners and retailers, followed by parties that primarily influence product ingredients, such as manufacturers. Lastly, they were willing to take responsibility for their own knowledge acquisition.



**Fig 1** Respondents' indication of who should be responsible for food label education.

**RQ 4** - Respondents were asked to indicate why they needed food label education. No significant associations with age were found for this section. Both age groups indicated all the available options as reasons to receive food label education, and both favoured reasons pertaining to personal well-being and aids (Figure 2). The most favoured response among young adults was *to make healthier choices*, which supports recent work done by Van Zyl *et al.*<sup>18</sup> in favour of consumers being able to make informed choices. The young adults most often selected reasons pertaining to providing personal aid and well-being, followed by practical reasons, and only then environmental and financial benefits. Mokoena<sup>27</sup> explains that people from this generation are made ‘to feel special’ and might therefore focus first on their own well-being. They are also characterised by being both financially astute and “spenders” of money, which explains why the financial benefits that the outcome of food label education might hold are not as important to them as their personal well-being.<sup>27</sup> All the older respondents also indicated *to make healthier choices* as the main reason for food label education. In general, personal health and means to support it was a strong theme in the older respondents’ choices, followed by practical use, finances and environmental concerns. The older respondents’ selections of *to make healthier choices* and *to save money* are supported by the idea that this generation strives for good health and financial security.<sup>25</sup> Similar to the young adults, the older respondents favoured personal well-being and aid as reasons for food label education.

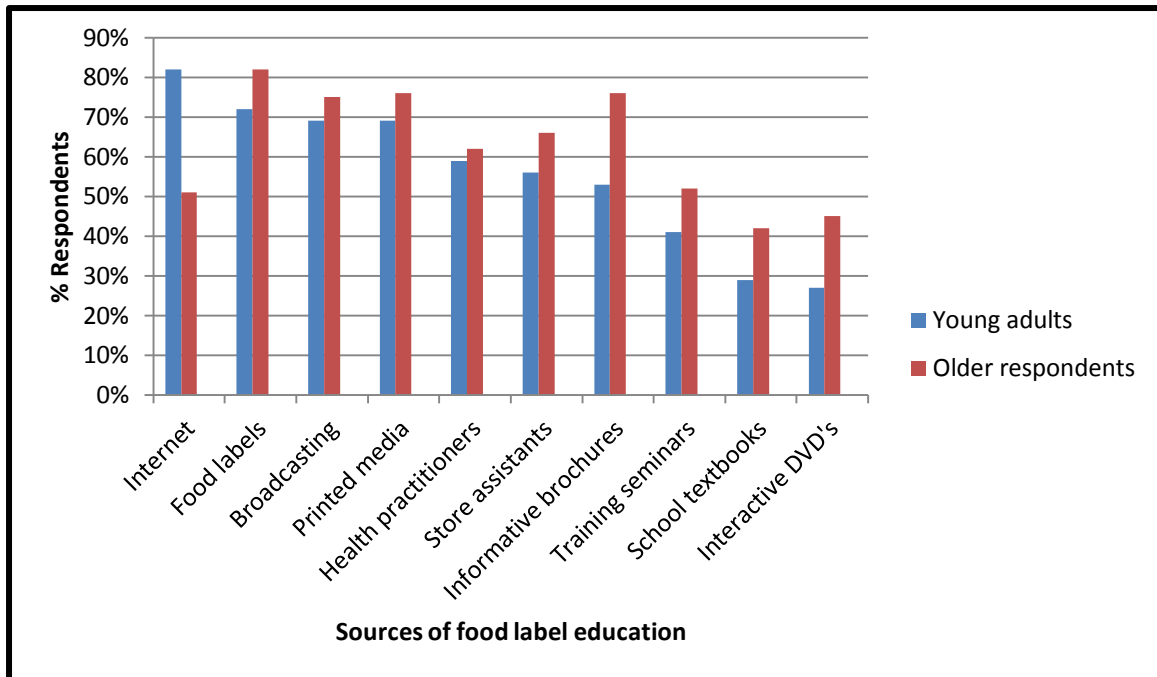


**Fig. 2** Respondents’ reasons for receiving food label education.

**RQ 5** - The respondents were asked to indicate their preferred sources for food label education. These results are presented in Figure 3. A medium association was found between age (young adults) and a preference to receive education from the internet (Cramer's  $V = 0.32$ ). A medium effect size was also found for the association of age (older respondents) and a preference to receive education from informative brochures (Cramer's  $V = 0.22$ ).

The young adults indicated the internet, which is a personal, non-marketer controlled source, as their favourite source for potential consumer education, since they grew up with it and are comfortable with its use and application.<sup>26,27</sup> A recent study by Remley *et al.*<sup>28</sup> also shows that websites are one of the most preferred formats of educational material. The young adults in our study also favoured the indirect and impersonal methods that include both marketer-controlled (food labels) and non-marketer-controlled (broadcasting) sources.<sup>27</sup> They did not indicate formal education to be an alternative, such as school textbooks and training seminars, even though these methods are widely favoured effective educational initiatives.<sup>14,29</sup>

The older respondents favoured food labels and other physical material, such as printed media and informative brochures, with less than half selecting interactive digital video disks and school textbooks. This result might indicate that this group favours educational initiatives that they can control and participate in during their own time, such as reading the brochure when they are ready, since this generation is known to be self-reliant.<sup>24</sup> Only half of this group indicated that the internet is a good source for providing food label education. The older respondents therefore also favoured indirect and impersonal sources.



**Fig. 3** Respondents' preferred source of food label education.

**Step 2: *Compiling the proposed model***

The food label opinion-, use- understanding- and knowledge-related barriers and gaps identified in the two studies by Van Zyl *et al.*<sup>18,19</sup> are summarized in Table 3 and combined into objectives for the proposed educational efforts.

**Table 3** The original food label use- and understanding-related barriers and food label knowledge gaps reworked into objectives for the food label educational model (Adapted from the two studies by Van Zyl *et al.* <sup>18,19</sup>)

| Source                                                | Respondents scored less than 60% correct in: | Young Adults                   |                                                           | Older Consumers                  |                                                           |
|-------------------------------------------------------|----------------------------------------------|--------------------------------|-----------------------------------------------------------|----------------------------------|-----------------------------------------------------------|
|                                                       |                                              | Barriers and Gaps              | Objectives for education                                  | Barriers and Gaps                | Objectives for education                                  |
| Use- and understanding-related barriers <sup>18</sup> | Preparation aid                              | Prepare the product            | Advantages of use:<br>- Ingredient list<br>- Instructions | Prepare the product              | Advantages of use:<br>- Ingredient list<br>- Instructions |
|                                                       |                                              | Use the product                |                                                           | Use the product                  |                                                           |
|                                                       |                                              | Plan the meals                 |                                                           | Plan the meals                   |                                                           |
|                                                       |                                              | Prepare the meals              |                                                           | Prepare the meals                |                                                           |
|                                                       | Shopping aid/<br>To ease shopping            | When buying the product        | Advantages of use:<br>- Ingredient list<br>- Instructions | When buying the product          | Advantages of use:<br>- Ingredient list<br>- Instructions |
|                                                       |                                              | Use while shopping             |                                                           |                                  |                                                           |
|                                                       |                                              | To assist in purchase decision |                                                           |                                  |                                                           |
|                                                       |                                              | To plan meals                  |                                                           |                                  |                                                           |
|                                                       | Dietary reasons                              | To determine nutrient content  | - Nutrients<br>- Benefits to health                       |                                  |                                                           |
|                                                       |                                              |                                | - Advantages of use<br>- Benefits to health               |                                  |                                                           |
|                                                       | Personal preferences                         |                                |                                                           |                                  |                                                           |
| Knowledge gaps <sup>19</sup>                          | Shopping skills                              |                                |                                                           | kJ (energy) or fibre per serving | - Ingredients<br>- General food label information         |
|                                                       |                                              |                                |                                                           | Total servings                   | - Instructions                                            |
|                                                       | Consumption skills                           |                                |                                                           | Main ingredient                  | - Practical application and manipulation                  |
|                                                       |                                              |                                |                                                           | Preservatives                    |                                                           |
|                                                       | Persuasion knowledge: Nutrient claims        | High in Vitamin E              | - Nutrients<br>- Claims                                   | High in vitamin E                | - Nutrients<br>- Claims                                   |
|                                                       |                                              | Low in saturated fat           | - South African food label regulations and standards      | Low in saturated fat             | - South African food label regulations and standards      |
|                                                       | Persuasion knowledge: Health claims          | Healthy                        |                                                           | Healthy                          |                                                           |
|                                                       |                                              | Wholesome                      |                                                           | Wholesome                        |                                                           |
|                                                       |                                              | 95% fat free                   |                                                           | 95% fat free                     |                                                           |

#### *Food label educational model for consumers*

The model was arranged so that it could be applied as both a preventive and an intervention. Six important aspects are used to guide the planning and implementation of any food label educational initiative: the target group, who should be responsible, why education

is needed, how education should be done, what should be taught during education (objectives) and when the education should be done. These six aspects are all outlined for application either during the childhood phase of the consumer socialization process or the adulthood phase of the consumer socialization process. Each of these aspects, which are illustrated as horizontal sections in the model (Figure 4), will be discussed separately.

*Target groups:* The first important aspect of any planned educational effort is to define the target group that needs to be reached by the effort. The educational content should be aligned with the consumers' abilities and decisions they are willing to make.<sup>30,31</sup> Since this model was planned as both a prevention and intervention aid, the consumers were divided according to different developmental phases. During childhood consumer socialization, three developmental phases, as outlined by Berk, were included: infancy to early childhood (zero to six years of age), children (six to 12 years of age) and adolescents (13 to 18 years of age).<sup>7</sup> These three groups can be educated in an effort of prevention, while young adults ( $\geq 18$  years of age) and older consumers ( $\geq 35$  years of age) can be reached in an intervention during adulthood consumer socialization. For both these target groups, important variables, such as the children's consumer socialization development stages, social locations (such as schools and shopping malls that are used as consumer education settings) and general age-specific needs and wants, should be taken into consideration when planning an educational initiative.<sup>20,25,26,29,32</sup>

*Why is food label education needed?* Consumers need more food label education. Research shows a less-than-optimum use of food, which includes barriers to food label use such as personal preferences and inabilities.<sup>18,33,34,35</sup> Inadequate food label knowledge in various respects may even result in food label knowledge gaps, as indicated by Van Zyl *et al.*<sup>19</sup> among others.<sup>3,21,33</sup> These problems lead to confusion and difficulty in understanding food label information.<sup>34,36</sup> Consequently, there is a need for food label education to help ensure informed and healthier decision making. Both the young adults' and older respondents' reasons for needing food label education in the present study, including *to make healthier (and informed) choices* and *to protect from ingredients*, also supported the research findings and recommendations from previous research as outlined previously. Childhood consumer socialization prevention should therefore be focused on ensuring that the skills and knowledge needed to make informed decisions, with the assistance of food labels when entering adulthood consumer socialization, are received.

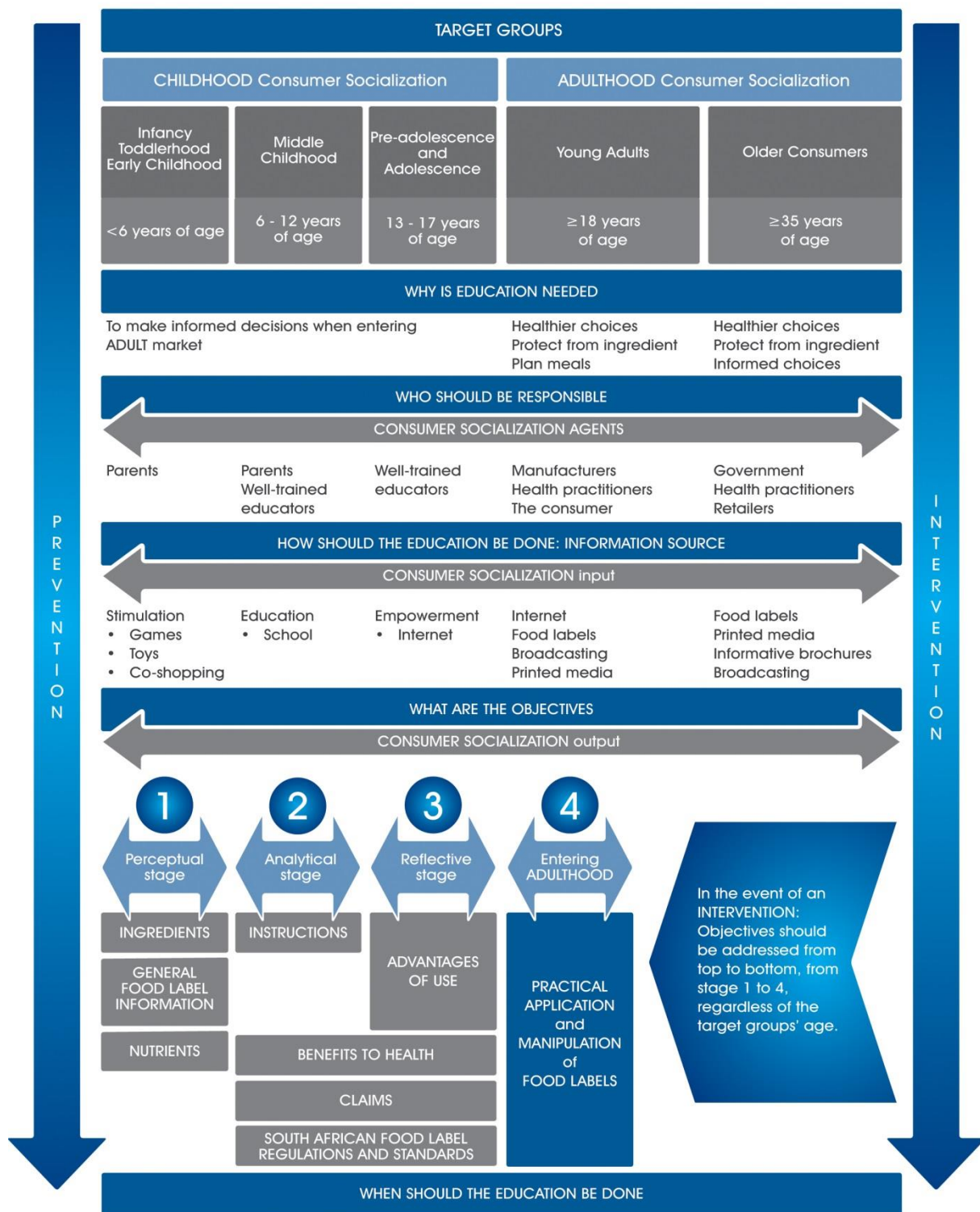


Fig. 4 Food label education model.

*Who should be responsible?* This section of the model portrays the person or organization (socialization agent) that should primarily be responsible for the educational effort, which is seen as one of the important decisions when planning an educational

initiative.<sup>15</sup> From infancy onwards, children learn language, behaviour and effective interaction with their environment from others.<sup>37</sup> During the childhood consumer socialization phase, the first important role player is (are) the parent(s). Parents influence their children's perceptions, guide their decision making and are considered one of their main socialization agents.<sup>11,27,38,39</sup> Parents' role during consumer education is also most likely on-going, since they may also promote or restrict their children's consumption autonomy and media exposure.<sup>9,12,15</sup>

The role of parents as consumer socializers to their children becomes less important when early to middle childhood is reached, as school friends/peers often become the more important product influencers.<sup>8</sup> This influence grows to the extent that some researchers argue it to be the most important socialization agent by the time that children reach adolescence.<sup>6,40</sup> Preadolescents also acquire their consumer behaviour norms by not only observing their parents but also their older siblings, who act as one another's advisers and care takers.<sup>12,27</sup> However, researchers warn that confidence, competence and knowledge on child development and participation are also needed to ensure successful consumer socialization outcomes.<sup>41,42</sup> Therefore, despite the fact that some parents (as well as peers and siblings) may offer excellent advice, many are less competent and are not good examples.<sup>42</sup> Nevertheless, the influence of parents on children and children on each other should be kept in mind and used to further benefit the educational initiative.

Recent consumer educational initiatives indicated well-trained educators to be the most appropriately equipped socialization agents for children and essential to children's learning in ensuring positive outcomes of informed consumer behaviour.<sup>42</sup> It is therefore recommended that educational initiatives use well-trained educators or that parents be thoroughly trained and equipped as consumer socialization agents in order to ensure that the set objectives are reached. Both trained educators and parents are therefore listed in the food label education model. Kangas *et al.* suggest 'participation' as one of the most successful teaching methods to support childhood learning, which can be attained with an enabling environment and atmosphere as well as support for the children's perspectives.<sup>41</sup> Participatory education can consequently also be applied in the food label education initiatives during childhood consumer socialization.

In the adulthood consumer socialization phase of the model, the focus moves to external primary and secondary sources of socialization in the educational efforts. For the young adults, primary information sources, such as direct educational efforts from each product's manufacturer, and secondary sources, such as health practitioners, are listed in the

model. Some respondents were also willing to take responsibility for their own education needs in the present study. For the older respondents, secondary sources, such as the government, health practitioners and retailers, are listed. Hensley also recommends a collaboration between concerned parties to advance the outcome of an educational initiative.<sup>42</sup> Collaboration could, for instance, include financial support by government of health practitioners working on food label education. For the young adults and older consumer groups, active, participatory approaches are recommended for the best learning results.<sup>43,44,45</sup>

*How should the education be done?* The European Union Consumer Summit of 2011 recommended that multiple channels should be implemented to deliver consumer education.<sup>29</sup> Three overall delivery methods were therefore included in the educational model to be used during childhood consumer socialization, namely stimulation, education and empowerment. Recent research has focused on two *stimulation* methods that can be applied to educate children from infancy to middle childhood during childhood consumer socialization:

- The first method is using games. A study has found that even a brief intervention of 15 minutes of playing a computer game significantly impacted children's recognition of an advertisement in the game.<sup>46</sup> When younger children are the educational target, supported play (toys) is advised.<sup>41</sup>
- Another easy, informal and indirect way to educate children on food labels is through co-shopping with parents. This activity provides a rich stimulating environment,<sup>32</sup> as well as valuable opportunities of interaction during which the children gain experiences that can contribute during decision making as adult consumers.<sup>27,47,48</sup> Experiences provide valuable practical skills and theoretical knowledge, and include a consciousness about product information such as brands, prices and other economic aspects of food, as well as information on handling and storage.<sup>49,50</sup>

Another popular method to successfully introduce food label education, as revealed by a meta-analysis of 201 peer-reviewed financial literacy and education studies, is to incorporate it into the school system as *education*.<sup>51</sup> Schools are important socialization agents.<sup>6</sup> In a South African context, the subjects of Mathematics and Life Orientation can particularly contribute to the skills that aid in consumer decision making, providing the child with numerical skills and guidelines for responsible citizenship, respectively.<sup>52,53</sup> Consumer Studies, as a school subject, focuses on developing knowledge, skills, values and attitudes, and is designed to enable learners to become responsible and informed consumers of food,

clothing, housing, furnishing and household equipment with the result being optimal resource utilization.<sup>54</sup> However, elements of food label education need to be incorporated.

*Empowerment* is an important tool to support consumers in making informed choices by offering them the ability to choose between products and providing them with education and information in order to make an effective choice.<sup>55,56,57</sup> Because the internet has become one of the most important means of consumer education by providing information and advice, it can therefore be labelled as a modern tool to empower the consumer,<sup>29</sup> and ideal in the education of adolescents and young teenagers.<sup>26</sup> However, research does suggest that internet sources should be updated regularly to ensure timely and relevant information.<sup>29</sup>

Based on the results from the primary research, the most appropriate ways to present food label education to young adults are indirect and impersonal methods, such as the internet. Moreover, the consumers should be allowed to review the educational material autonomously in their own time. It should, however, be noted that not all consumers have easy access to the internet, especially the most vulnerable consumers.<sup>58</sup> Moreover, although the older respondents also favoured indirect and impersonal sources, the internet was not a favoured option. Instead, food labels, printed media and informative brochures were preferred.

*What should the objectives be?* Ideally, consumers should optimally use food labels, have a thorough understanding of the label information, plus an adequate food label knowledge base in order to make informed decisions.<sup>18</sup> These issues should thus be addressed in educational efforts. As such, the aim of the model is to construct a basic consumer knowledge base that allows for general understanding and application, as well as sophisticated information application and manipulation.

In the model, four phases are recommended for **prevention**. Since the developmental levels of children play an important role in their ability to grasp certain elements, the four phases of consumer socialization behaviour development provided by John were used to structure the identified objectives.<sup>20</sup> Phase one should ideally take place during the *perceptual phase* of children's development.<sup>20</sup> In this phase in which children only perceive stimuli, they should be introduced to food label elements such as ingredients, nutrients, allergens and other general food label information (manufacturer and expiry date) at a very basic level in a pictorial format. The *analytical phase* follows, in which middle childhood children are starting to reason about and analyse the benefits of the objectives.<sup>20</sup> The model consequently recommends that this time should be spent on the analysis of the

instructions of food labels, the benefits of food label use to health, food label claims and the general application of food label standards as enforced by government. Next is the *reflective phase* in development, in which children are able to reflect on the result of their decisions, on their health and general well-being.<sup>20</sup> Phase four should provide young adult consumers with the abilities of practical application and manipulation of food labels. A thorough understanding and practical application of the food label standards and regulations are an ongoing process, and are therefore indicated as such in the model.

During an *interventive* educational initiative, advancement takes place from the top to the bottom of the model through the food label topics as set objectives, and from left to right through the consumer socialization developmental phases. Once one phase is reached, the next set of topics and skills can be approached and mastered.

*When should the education be done?* In considering exactly when food label education should commence, some important aspects should be mentioned. Van Zyl *et al.*<sup>19</sup> conclude that not only does the average consumer have food label knowledge gaps possibly owing to childhood consumer socialization shortcomings, but also the outcome (whether positive or negative) of consumer socialization influences from childhood (such as food labels) persists and could therefore affect the effectiveness of adulthood consumer socialization. Researchers further argue that consumers do not change their behaviour easily, and the association between better knowledge and behavior change is still widely debated.<sup>29,42,51,59</sup> Fernandes *et al.*, who worked in financial educational efforts, warn that the timing of educational efforts have an equivalent effect on consumer's behaviour.<sup>51</sup> Educational efforts should consequently be implemented as preventatives, or as early as possible in one of the developmental phases outlined in the preceding paragraph in an effort to prevent negative food label behaviour.

### **Concluding thoughts**

Before any educational initiative is undertaken, a few practical aspects should be taken into consideration. From the start, it is recommended that a network of consumer professionals should collaborate in a combined effort to benefit from the specialties of all those involved. Next, before any educational initiatives are undertaken, a clear evaluation scale should be developed. In order to monitor and improve on the outcome of an educational effort, both the impact and the scale should be noted.<sup>42</sup>

The main contribution of this study is of an academic nature. Upon further testing, consumer science, nutrition and public health academicians and professionals can apply the

proposed model during consumer education in order to facilitate and educate South African children and adult consumers in an effort to enhance their informed consumer decision making ability with regard to healthy food choices. After this model has been tested in an academic environment, it can also greatly contribute on a more practical level as an educational instrument for any educational aim related to the application of food label information. Lastly, it can also be adapted, tested and implemented in other developing countries, having similar food label behaviour challenges to South Africa, in order to aid in educating consumers in this regard.

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CHAPTER 7  
CONCLUDING CHAPTER

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## 7.1 INTRODUCTION

The opinion that consumers need more food label education has been debated by numerous national and international researchers (such as Bosman *et al.*, 2012:40; Lubman *et al.*, 2012:398; Ranilovic & Baric, 2011:119; Van der Merwe & Venter, 2010:418). Studies on different aspects of food labels are also numerous (Miller & Cassady, 2015; Prieto-Castillo *et al.*, 2015). However, the present study on designing a preventive and interventive educational model for consumers to ensure informed decision making shows that consumers still experience many problems with food labels. Firstly, food labels are sometimes presented in unfamiliar formats, with confusing terminology in often hard-to-read small font sizes. These problems that are experienced with food labels limit the transformation of stimuli into meaningful information that can be stored during cognitive processes. This results in unnecessary, negative opinions that, in turn, inhibit optimum use and limit understanding of food labels. Consequently, this study proposed a food label educational model that can be applied in consumer education initiatives during consumer socialisation that should result in adequate knowledge being stored in consumers' schemata for food label information, helping to ensure informed decision making. In further testing and ultimately applying this model during consumer education interventions, positive opinions, optimum use and thorough understanding of food labels will ideally result. This chapter aims to provide concluding arguments on the findings, recommendations, limitations and implications of the study.

## 7.2 DISCUSSION

This discussion will be structured around the objectives of the study as presented in Chapter 1.

**Objective 1.1** *To describe young adults and older respondents' food label opinion-, use- and understanding-related barriers.*

Results of this study indicated a general positive opinion towards food labels from the young adults and older respondents. However, a general confusion and even a struggle to understand food label information, especially the ingredient list and nutrient information, were found. This important primary label information consequently poses as a barrier to informed decision making as consumers struggle to make sense of it and to process it into the food label schemata. As such, this primary food label information should be prioritised during education efforts. The consumers were also undecided in their opinion as to whether or not the letter size used on food labels and the amount of information used on the labels were sufficient. Despite the possible barriers that these two negative opinions of the consumers might entail, for practical reasons, the letter size and amount of information cannot be

changed. It is therefore recommended that consumers be educated on the structural limitations of food labels, and taught how to quickly and efficiently locate, make sense of, process and implement the provided food label information during their decision making processes despite these limitations. Doing so will also help to overcome personal factors, including inadequate knowledge and time-constraints, as reasons for not using food labels, since a well-informed consumer will be empowered to timely process and make informed decisions based on food labels despite time pressure.

Although most of the respondents read food labels on a regular basis, a negligence regarding the beneficial uses of food labels was still noted. Since food labels can be a valuable source of information in every aspect and phase of food product use, more should be done to educate consumers on the benefits of label use, such as being a shopping, preparation, planning and storage aid. Since personal preferences, such as taste preferences or being a habitual purchaser, still play a major part in consumer food decisions rather than label information, it is recommended that consumers be taught a personal planning system that increases informed planning. This personal planning system should include means to balance personal preferences and more healthy choices. The identified understanding-related barriers also highlighted the primary label information as a priority during food label education efforts.

**Objective 1.2** *To conclude whether or not there are any shortcomings in childhood consumer socialisation based on the food label opinion, use and understanding of young adults who have recently undergone childhood consumer socialisation.*

The results indicated that the young adult respondents had an over-all positive opinion of food labels. However, definite use-, and understanding-related barriers that could result in more negative outcomes, such as unhealthy food choices, were evident. These barriers included neglecting the beneficial uses of food labels as a preparation and shopping aid. Their personal preferences, which included habitual purchasing and taste preferences, can also be barriers to informed decision making. Based on these results, it can be concluded that there are possible shortcomings in the childhood consumer socialisation of these young adult respondents regarding food label use. It is therefore recommended that consumer education efforts during childhood consumer socialisation should include initiatives to improve food label use.

**Objective 2.1** *To determine the difference in young adults' and older consumers' food label knowledge gaps.*

The young adults were practically and significantly more knowledgeable in the *shopping skills*, *consumption knowledge* and *persuasion knowledge: symbols* categories than the participants in the older consumer group, which might indicate more elaborate food label schemata among the former. The young adults' most prominent knowledge gaps were the *persuasion knowledge: health claims* and the *persuasion knowledge: nutrient claims* categories. It is therefore clear that a specific focus on nutrient terms and health claims in educational efforts are needed to limit the effect of persuasion attempts based on such claims, which include as an outcome being persuaded to buy products rather than buying them out of personal need.

The older respondents' most prominent knowledge gaps were divided between four of the five knowledge categories. The most prominent gaps were the *shopping skills*, *persuasion knowledge: nutrient claims* and *persuasion knowledge: health claims* categories. As in the case of the young adults, more should be done for older consumers to protect them from and inform them about persuasion attempts. Their lack in *shopping skills* should also be addressed in educational efforts to help elaborate these specific schemata.

**Objective 2.2** *To determine the difference in young adults' and older consumers' food label knowledge during 2010 and 2013.*

The 2010 respondent group was more knowledgeable than the 2013 group in the *persuasion knowledge: symbols* and *consumption knowledge* categories. However, in the *persuasion knowledge: nutrient claims* and *persuasion knowledge: health claims* categories, the 2013 respondents were more knowledgeable than the 2010 respondents. Although these results should be interpreted with caution, it seems that the respondents' persuasion knowledge of health and nutrient claims might have benefitted from the revised labelling regulations in 2010. Consequently, the public awareness of governmental activity can be beneficial to consumer knowledge and informed decision making by improving consumers' awareness of food label information.

**Objective 2.3** *To determine whether there are any shortcomings in children's consumer socialisation with regard to their food label knowledge.*

Two prominent food label knowledge gaps were identified, both in the persuasion knowledge category, which indicates a definite shortcoming in children's consumer socialisation that should be addressed. However, these shortcomings may result from a lack of topic knowledge, since the respondents were not able to correctly indicate whether or not certain

health and nutrition claims on food labels are permitted. This shortcoming can be addressed with food label education on some important aspects of South African food label regulations and standards in order to ensure informed decision making in the future.

**Objective 3.1** *To assess young adults' and older consumers' food label education needs (why, who, how).*

*Why is food label education needed?* Both age groups strongly indicated all the available options as reasons to receive food label education, although they both favoured personal well-being and personal aid (to make healthier choices). The young adults' second preference included practical reasons (to plan meals) with emphasis on environmental (to buy environmental friendly) and financial benefits (to save money). All the older respondents firstly indicated to be able 'to make healthier choices' as their main reason to receive food label education. Personal health and the means to support their health (to make healthier choices) was a strong theme in the older respondents' choices, while practical use (to understand information), finances (to save money) and environmental concern (to buy environmental friendly) were of lesser importance to them.

*Who should be responsible?* The young adult respondents desired food label education directly from each product's manufacturer, and indirectly from a third party such as health practitioners and the government. Only two thirds took responsibility for educating themselves. The older respondents preferred indirect parties, such as the government, health practitioners and retailers, rather than parties that directly influence product ingredients, such as manufacturers. Lastly, they were more willing to take responsibility for their own knowledge acquisition than were the young adults.

*How should the education be done?* The young adults favoured the indirect and impersonal methods, such as the internet, which require little from their side as a way to be educated on food labels. Their favoured options did not include formal educational alternatives such as school textbooks and training seminars. The older respondents also prioritised indirect and impersonal sources, though they preferred food labels, printed media, informative brochures and broadcasting. A few older respondents preferred interactive DVDs and school textbooks. In contrast to the young adult respondents, only half of the older respondents indicated that the internet is a good source for food label education. Apart from indirect and impersonal sources as their preferred ways of receiving education on food labels, older respondents also chose more direct and personal educational sources.

**Objective 3.2** *To theoretically investigate consumers' food label educational needs during childhood consumer socialisation (who, why, how) from literature.*

*Why is food label education needed?* Food label education is needed because consumers do not optimally use food labels (Bosman *et al.*, 2012:31; Prieto-Castillo *et al.*, 2015:226; Ranilovic & Baric, 2011:110). There are also food label use-related barriers, such as personal preferences and inabilities (Van Zyl *et al.*, 2017a), that need to be overcome with food label educational efforts. Food label knowledge in various respects is also inadequate (Bosman *et al.*, 2012:40; Prinsloo *et al.*, 2012; Van der Colff *et al.*, 2016:227), which can even result in the food label knowledge gaps categorised by Van Zyl *et al.*, (2017b), owing to limited food label schemata and inhibited cognitive processing. Problems such as the consumers' poor food label use, knowledge gaps and even personal preferences that influence informed decision making might lead to confusion and difficulties in understanding food label information as outcomes (Prieto-Castillo *et al.*, 2015; Aday & Yener, 2014). A need for food label education to help ensure informed and healthier decision making is highlighted and needs to be addressed.

*Who should be responsible?* Educational initiatives should implement well-trained educators, or parents should be thoroughly trained and equipped as consumer socialisation agents. Although parents are childrens' main socialisation agent (Jorgensen & Savla, 2010:467; Mikeska *et al.*, 2016:245; Yang *et al.*, 2014), they sometimes lack the competence and childhood developmental knowledge to ensure successful consumer socialisation outcomes (Hensley, 2015:95; Kangas *et al.*, 2016:91).

*How should the education be done?* Research suggests numerous methods to educate child consumers. The first is games and toys (An *et al.*, 2014) and co-shopping with parents, which provides a stimulating learning environment (Keller & Ruus, 2014). Another popular method is to incorporate this education into the school system as part of the curriculum (Ahmad *et al.*, 2011:9; Fernandes *et al.*, 2014). The internet has also become one of the most important means of consumer education by providing information and advice (Brennan *et al.*, 2017:148); therefore, being seen as a modern tool to empower the consumer.

**Objective 4.1** *To ascertain whether or not the young adults and the older consumers would be able to participate in informed decisions based on the results of objectives one, two and three.*

The results from objectives one, two and three revealed prominent use- and understanding-related barriers and knowledge gaps. Both young adults and older respondents were inclined towards habitual purchasing. Personal preferences and personal inability were the prevailing

reasons for not using food labels. Persuasion knowledge, with specific reference to the topic knowledge categories of 'nutrient claims' and 'health claims', was the most evident knowledge gap and, thus, should be addressed. It might be concluded that some respondents do not have the means to make informed decisions, while others are indifferent to informed decision making.

**Objective 4.2** *To propose an educational model aimed at children for future prevention of negative food label behaviour, as well as at young adults and older consumers for future intervention in food label behaviour based on the results of objectives one, two and three.*

The proposed model can be applied in both a preventive and an interventive manner with guidelines in six areas:

- The target group:

The consumers were divided under different developmental phases during childhood and adulthood consumer socialisation. Three childhood developmental phases were: infancy to early childhood (zero to six years of age), children (six to 12 years of age) and adolescents (13 to 18 years of age), as well as two adulthood phases: young adults ( $\geq 18$  years of age) and older consumers ( $\geq 35$  years of age).

- Who should be responsible:

During childhood consumer socialisation, mainly parents and well-trained educators were indicated as being responsible. Manufacturers, health practitioners and the respondents themselves were listed for the young adults, while the government, health practitioners and retailers were preferred by the older respondents.

- Why education is needed:

Based on prominent food label behaviour-related barriers and food label knowledge gaps, as well as young adults and older respondent's opinions, it was concluded in objective 4.1 that consumers are seemingly not able to make informed decisions and are consequently in need of food label education.

- How education should be done:

Stimulation (interactive toys and games), education (school curriculums) and empowerment (internet) were recommended as means to reach children during childhood education initiatives (objective 3.2). The young adults can be reached through the internet, food labels, broadcasting and printed media, while for the older respondents, food labels, printed media, informative brochures and broadcasting were preferred.

- When the education should be done:

In order to try and prevent the negative results of shortcomings in childhood consumer socialisation, such as inadequate food label knowledge, negative food label opinions and

less-than-optimum food label use, education initiatives should ideally be started as soon as possible during childhood consumer socialisation.

- What the educational objectives should be:

*During a preventive educational initiative:*

Four phases are recommended based on the consumer socialisation behaviour developmental stages presented by John (1999). Phase one, which occurs in the *perceptual stage* of children's development, should focus on introducing food label elements such as ingredients, nutrients, allergens and other general food label information (manufacturer and expiry date) to children aged birth to six years at a very basic level in a pictorial format. The *analytical stage* follows, and in phase two the socialisation time of six to 12 year olds regarding food labels should be spent on the analysis of the instructions of food labels, the benefits of food label use to health, food label claims and the general application of food label standards as enforced by government. In the *reflective stage*, or phase three, children between 13 and 17 years of age should reflect on the results of their decisions, health and general well-being. Phase four should produce young adult consumers who have the ability to practically apply and manipulate food labels. A thorough understanding and practical application of the food label standards and regulations are ongoing processes.

*During an interventive educational initiative:*

The same outcomes should be reached during an interventive educational initiative as in the preventive initiative, but in this case the developmental stages should be ignored. Once one phase is reached, the next set of topics and skills can be approached and mastered.

### **7.3 RECOMMENDATIONS FOR PRACTICAL IMPLEMENTATION**

When an educational initiative is planned, some important recommendations should be considered:

- Multiple channels should be implemented to deliver consumer education, such as the internet in combination with an interactive game, in order to reach a broader audience and improve retention and storage of new information pieces (Brennan *et al.*, 2017).
- Educational efforts should be ongoing in order to help prevent the natural fading of new food label knowledge over time (Hensley, 2015:97).
- During any consumer education initiative, a network of consumer professionals should be formed which would include both people in academics and food industry. This combined effort could not only ensure the application of a wide variety of skills and knowledge sources, but also provide benefits for all professionals involved, such as possible financial sponsorships and richer data.

- Clear evaluation scales are critical to any educational initiative's ongoing success and should thus report on both the impact and scale of impact of the effort (Hensley, 2015:97).
- The time of commencement for food label education initiatives is also very important. A consumer's outlook (whether positive or negative) upon consumer socialisation from childhood persists and could therefore influence the effectiveness of adulthood consumer socialisation initiatives (Van Zyl *et al.*, 2017b). Early efforts to ensure that consumers receive positive inputs could therefore greatly influence future adulthood consumer socialisation efforts. Doing so is especially important since research shows that consumers do not easily change their food label behaviour (Brennan *et al.*, 2017; Fernandes *et al.*, 2014; Guion and Free, 2010; Hensley, 2015:94). Educational efforts should thus ideally be implemented as early as possible.
- Lastly, consumers' resistance to behaviour change should be kept in mind during the planning and implementation of education initiatives so that the outcomes set for the initiatives are reached.

#### **7.4 LIMITATIONS OF THE STUDY**

Some limitations need to be mentioned:

- The data that were used in this study were self-reported by the participating consumers. It is recommended that in the future other, more objective research methods be included and investigated to help enrich the research outcomes.
- The results, proposed model and consequent recommendations of this study did not take consumers' food label behaviour change into account, which is an important factor that is also an indication of success. As such, it should be included in future research.
- Although the research results and proposed model can be tested in an academic field and even be elaborated upon, it cannot be generalised to an entire population.
- The proposed food label educational model still needs thorough testing and possible adaption; therefore, it is not yet ready for application.

#### **7.5 RECOMMENDATIONS FOR FUTURE RESEARCH**

Recommendations for future research:

- It is clear, based on the results of this study, that consumers are in need of persuasion knowledge. However, this study only focused on the topic knowledge of persuasion knowledge. A need therefore exists for further research on persuasion attempts to investigate whether or not consumers are aware of this phenomenon and how it affects their food label behaviour.

- This study included young adults at the beginning of the adult consumer socialisation in an attempt to identify childhood consumer socialisation shortcomings. It is, however, recommended that more direct work with child consumers in the study field of food labels be done.
- An investigation into the interactive effect of children and adults in combined teacher-learner roles and how they consequently learn from each other about food labels is recommended.

## **7.6 CONCLUSION**

Based on the respondents' food label opinions, it can be concluded that they were mostly positive. However, numerous unnecessary negative food label opinions were still voiced. These need to be addressed by using thorough food label education and elaborate food label schemata. Based on the respondents' self-reported food label use, it can be concluded they indeed read/used food labels; however, numerous beneficial uses of food labels were neglected and personal preferences during buying decisions were favoured instead of engaging in an information search to allow better processing of food label information and informed food decision making. Food label knowledge gaps were also found, specifically in the topic knowledge category, which included 'nutrient and health claims'. In this era of limited resources and pressing financial circumstances, there can be no doubt that consumers need to make informed decisions, and are consequently in need of continuous and timely food label education. This study offers the first step towards realising a solution to this problem. The application prospects of this food label educational model are numerous and open doors for potentially more research initiatives.

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**APPENDIX A**

DATASET ONE

OPINION AND USE QUESTIONNAIRE APPLICABLE FOR THE PRESENT STUDY  
2009

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NORTH-WEST UNIVERSITY  
YUNIBESITI YA BOKONE-BOPHIRIMA  
NOORDWES-UNIVERSITEIT

## **Consumers' opinion and use of food label information**

**September 2009**

**Administered by: B.Honours Consumer Sciences students**  
**Honours coordinator: Ms Sonna van Zyl**  
**Project leader: Professor Daleen van der Merwe**

**SECTION A**  
**Demographics**

Please complete this section by ticking the appropriate box.

|                                |   |                |        |                |   |
|--------------------------------|---|----------------|--------|----------------|---|
| <b>1) How old are you?</b>     |   |                |        |                |   |
| Younger than 19                | 1 | 20 to 29 years | 2      | 30 to 39 years | 3 |
| 40 to 49 years                 | 4 | 50 to 59 years | 5      | 60 to 69 years | 6 |
| 70 and older                   | 7 |                |        |                |   |
| <b>2) What is your gender?</b> |   |                |        |                |   |
| Male                           | 1 |                | Female | 2              |   |

**SECTION B**  
**Food labels**

Please answer this question by indicating your general impression of food labels. Indicate to which degree you agree or disagree with each of the following statements by ticking the appropriate box.

|                   |          |           |       |                |
|-------------------|----------|-----------|-------|----------------|
| 1                 | 2        | 3         | 4     | 5              |
| Strongly disagree | Disagree | Undecided | Agree | Strongly agree |

| Statement number | Statement                                                                                 | 1 | 2 | 3 | 4 | 5 |
|------------------|-------------------------------------------------------------------------------------------|---|---|---|---|---|
| 3                | I read labels on food products.                                                           |   |   |   |   |   |
| 6                | Food labels contain insufficient information.                                             |   |   |   |   |   |
| 27               | I consult the food label when I prepare the product.                                      |   |   |   |   |   |
| 28               | I consult the food label when I buy food products.                                        |   |   |   |   |   |
| 30               | I follow the food label information to keep the item fresher for longer.                  |   |   |   |   |   |
| 34               | I consult label information on a product when shopping.                                   |   |   |   |   |   |
| 35               | I consult the food label information when I buy the product.                              |   |   |   |   |   |
| 36               | I consult the food label information when I use the product.                              |   |   |   |   |   |
| 42               | I use the information on food labels to plan meals.                                       |   |   |   |   |   |
| 43               | I use the information on the label to prepare meals.                                      |   |   |   |   |   |
| 46               | It is essential that the print on the food label should be large enough so I can read it. |   |   |   |   |   |
| 52               | Food label information is difficult to understand.                                        |   |   |   |   |   |
| 54               | Food labels serve as a way to sell the product.                                           |   |   |   |   |   |
| 56               | A food label is a good source of information.                                             |   |   |   |   |   |
| 57               | It is easy to understand the information on food labels.                                  |   |   |   |   |   |
| 61               | Labels give me information about the                                                      |   |   |   |   |   |

|           |                                                 |  |  |  |  |  |
|-----------|-------------------------------------------------|--|--|--|--|--|
|           | food product.                                   |  |  |  |  |  |
| <b>64</b> | Information on some food labels<br>confuses me. |  |  |  |  |  |
| <b>66</b> | Food labels contain sufficient<br>information.  |  |  |  |  |  |

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**APPENDIX B**

DATASET TWO  
INFORMED CONSENT  
USE AND UNDERSTANDING QUESTIONNAIRE APPLICABLE FOR THE  
PRESENT STUDY  
2011

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NORTH-WEST UNIVERSITY  
YUNIBESITHI YA BOKONE-BOPHIRIMA  
NOORDWES-UNIVERSITEIT

# **Student consumers' use and understanding of food labels**

**Main study**

**September 2011**

**Administered by: B.Honours Consumer Sciences students**

**Honours coordinator: Ms Nadia Prinsloo**

**Project leader: Professor Daleen van der Merwe**

Campus.....

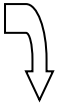
Participant no. 

|  |  |  |
|--|--|--|
|  |  |  |
|--|--|--|

a) Do you have any formal education with regard to the importance of a healthy diet?

|   |
|---|
| 1 |
|---|

Yes



|   |
|---|
| 2 |
|---|

No

If you answered **no**, please continue with this questionnaire

If you answered **yes** please specify:

.....

.....

**Sorry, you do not qualify to continue with this questionnaire.**

b) Are you enrolled as a student at a tertiary institution?

|   |
|---|
| 1 |
|---|

Yes Please continue with this questionnaire.

|   |
|---|
| 2 |
|---|

No Sorry, you do not qualify to continue with this questionnaire.

c) Are you 18 years or older?

|   |
|---|
| 1 |
|---|

Yes Please continue with this questionnaire.

|   |
|---|
| 2 |
|---|

No Sorry, you do not qualify to continue with this questionnaire.

## Questionnaire

This questionnaire is aimed at determining students' understanding and use of food labels which is part of a research project conducted by the Subject Group of Consumer Sciences at the NWU. The questionnaire is completed anonymously and will take approximately 15-20 minutes of your time. By agreeing to participate in this study, you are also giving consent that data collected may be used by the researchers for scientific purposes as they see fit, with the caveat that it will be anonymous and that your name will not be linked to any of the data. Participation in the study is completely voluntary and you are free to withdraw from the study at any time, without stating reasons. However, you are kindly requested not to withdraw from the study without careful consideration. Ethical approval for this study was obtained from the Ethics Committee of the North-West University and the academic and student management of the University gave permission to perform this study. Should you require more information, please do not hesitate to contact Ms Nadia Prinsloo (honours studies coordinator) at 018 299 2471 or Prof. Daleen van der Merwe (research coordinator) at 018 299 2476.

**Please answer ALL the questions in this questionnaire by marking the block of your choice with an X.**

### **Section A**

- 1) On what campus do you study? ☐ 1 Mafikeng ☐ 2 Potchefstroom ☐ 3 Vaal
- 2) What course do you study?.....
- 3) Gender  
☐ 1 Male ☐ 2 Female
- 4) Age  
☐ 1 18-21 ☐ 2 22-24 ☐ 3 25-34 ☐ 4 35+

### **Section B**

- 16) Do you read food labels?

- |                            |                                                                                    |
|----------------------------|------------------------------------------------------------------------------------|
| <input type="checkbox"/> 1 | Always (Please <b>answer questions 17-20</b> then <b>continue to question 22</b> ) |
| <input type="checkbox"/> 2 | Often (Please <b>answer questions 17-20</b> then <b>continue to question 22</b> )  |
| <input type="checkbox"/> 3 | Seldom (Please <b>answer questions 17-20</b> then <b>continue to question 22</b> ) |
| <input type="checkbox"/> 4 | Never (Please <b>skip questions 17-20</b> and go <b>directly to question 21</b> )  |

- 17) When/Why do you use food labels? Please mark the option that best describes your level of agreement with **each statement**.

| Statements                                                                                | Never | Seldom | Often | Always |
|-------------------------------------------------------------------------------------------|-------|--------|-------|--------|
| a) In the store while doing grocery shopping.                                             | 1     | 2      | 3     | 4      |
| b) To assist with purchasing decisions.                                                   | 1     | 2      | 3     | 4      |
| c) When buying a food product for the first time.                                         | 1     | 2      | 3     | 4      |
| d) When planning meals at home.                                                           | 1     | 2      | 3     | 4      |
| e) To determine the nutrient content of a specific food product.                          | 1     | 2      | 3     | 4      |
| f) When checking nutrition claims made on the front of the package, such as "low in fat". | 1     | 2      | 3     | 4      |
| g) When I follow a special diet for medical/other reasons.                                | 1     | 2      | 3     | 4      |
| h) Other (please specify)                                                                 |       |        |       |        |

18) When using the information on food labels, please mark the option that best describes your level of agreement with each of the following statements.

| Statements                                                                          | Completely Disagree | Disagree | Undecided | Somewhat agree | Completely agree |
|-------------------------------------------------------------------------------------|---------------------|----------|-----------|----------------|------------------|
| a) It is difficult to understanding the nutrition information table on food labels. | 1                   | 2        | 3         | 4              | 5                |
| b) It is easy to locate a nutrient from the nutrition information table.            | 1                   | 2        | 3         | 4              | 5                |
| c) The terms used in the ingredient list are confusing.                             | 1                   | 2        | 3         | 4              | 5                |
| d) The font/letter size of the print on food labels is too small to read.           | 1                   | 2        | 3         | 4              | 5                |
| e) The information on the food label is easy to use.                                | 1                   | 2        | 3         | 4              | 5                |

19) Please indicate the importance you attach to each of the following items when you are using food labels.

| Item:                                 | Unimportant        | Less important        | Important        | Very important        |
|---------------------------------------|--------------------|-----------------------|------------------|-----------------------|
| a) Manufacturing date and expiry date | 1                  | 2                     | 3                | 4                     |
| b) List of ingredients                | 1                  | 2                     | 3                | 4                     |
| c) Carbohydrate content               | 1                  | 2                     | 3                | 4                     |
| d) Protein content                    | 1                  | 2                     | 3                | 4                     |
| e) Total fat information              | 1                  | 2                     | 3                | 4                     |
| f) Cholesterol information            | 1                  | 2                     | 3                | 4                     |
| g) Vitamins and minerals information  | 1                  | 2                     | 3                | 4                     |
| h) Fibre information                  | 1                  | 2                     | 3                | 4                     |
| <b>Nutrient claims such as:</b>       | <b>Unimportant</b> | <b>Less important</b> | <b>Important</b> | <b>Very important</b> |
| i) Low in fat                         | 1                  | 2                     | 3                | 4                     |
| j) Low in cholesterol                 | 1                  | 2                     | 3                | 4                     |
| k) Low in sugar                       | 1                  | 2                     | 3                | 4                     |
| l) High in fibre                      | 1                  | 2                     | 3                | 4                     |

21) Why don't you use food labels?

Please mark the option that best describes your level of agreement with each statement.

| Statements                                                                                   | Completely disagree | Disagree | Undecided | Somewhat agree | Completely agree |
|----------------------------------------------------------------------------------------------|---------------------|----------|-----------|----------------|------------------|
| a) Food label information is too time consuming to read.                                     | 1                   | 2        | 3         | 4              | 5                |
| b) I have insufficient background knowledge to use the label information.                    | 1                   | 2        | 3         | 4              | 5                |
| c) The terms used in the ingredient list are confusing.                                      | 1                   | 2        | 3         | 4              | 5                |
| d) The font/letter size of the print on the food labels is too small to read.                | 1                   | 2        | 3         | 4              | 5                |
| e) I choose food products on the basis of price only.                                        | 1                   | 2        | 3         | 4              | 5                |
| f) I do not compare the nutrition content of different food products.                        | 1                   | 2        | 3         | 4              | 5                |
| g) The taste of the product is more important than the nutritional content of the product.   | 1                   | 2        | 3         | 4              | 5                |
| h) Nutrition information is not trustworthy.                                                 | 1                   | 2        | 3         | 4              | 5                |
| i) I purchase food items as a habit, without reading the nutrition information on the label. | 1                   | 2        | 3         | 4              | 5                |

### Section C

Please answer the following questions by using the ATTACHED samples A, B and C.

25) Look at the ingredient list of sample A. Select the **ingredient** that is present in the highest quantity. Please mark only one option.

- ☐ 1 Soya protein   
 ☐ 2 Flavour enhancer   
 ☐ 3 Starch   
 ☐ 4 Meat (pork, turkey and/or chicken)   
 ☐ 5 Don't know

26) Look at the nutritional information of sample A. Select the **nutrient** that is present in the highest quantity. Please select only one.

- ☐ 1 Fat   
 ☐ 2 Protein   
 ☐ 3 Carbohydrate   
 ☐ 4 Don't know   
 ☐ 5 Other.....

27) Compare the nutritional information of sample B and C. Which of the two do you think is the healthier? ☐ 1 B    ☐ 2 C    ☐ 3 Don't know

28) Please provide a reason for your answer in question 27.

.....

29) Look at sample B. How much fat (gram) is in each 100g of this food?

- 1 3000 2 0 3 80 4 0,5 5 Don't know

### SAMPLE A

|                                                                                                                                                             |                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Original Flavour</b><br><b>RED VIENNAS</b><br><br><b>1 KG</b><br>Keep refrigerated below 5 °C<br>Best before 10.10.11                                    |                                                                                                                                                                                                                                            |
| <b>Nutritional information/100g</b><br>Protein (min) 12g<br>Total fat (max) 17g<br>Carbohydrates (max) 6g<br>Energy Value (max) 935kj<br>Sodium (max) 953mg | <b>Ingredients</b><br>Meat (Pork, Turkey and/or Chicken), Soya Protein, Starch, Salt, Sugar, Flavour Enhancer, MSG, Phosphate, Food Colourant, Erythrosine CI no 45430, Preservatives: Sodium Nitrate and – Nitrite, Anti-oxidant, Spices. |
| Manufactured by ABC Ltd.<br>Customer helpline: 0800 123 111                                                                                                 |                                                                                                                                                                                                                                            |

### SAMPLE B

| NUTRITION INFORMATION |         | Per 100 g |
|-----------------------|---------|-----------|
| Energy                | kJ      | 3000      |
| Protein               | g       | 0         |
| Carbohydrates         | g       | 0.5       |
| Total Fat             | g       | 80        |
| Trans Fatty Acids     | g       | 0.5       |
| Cholesterol           | g       | 0         |
| Vitamin D             | µg      | 10        |
| Vitamin E             | mg α TE | 20        |

### SAMPLE C

| NUTRITION INFORMATION |         | Per 100 g |
|-----------------------|---------|-----------|
| Energy                | kJ      | 3000      |
| Protein               | g       | 0         |
| Carbohydrates         | g       | 0.5       |
| Total Fat             | g       | 65        |
| Cholesterol           | g       | 0         |
| Vitamin A             | µg RE   | 330       |
| Vitamin D             | µg      | 10        |
| Vitamin E             | mg α TE | 20        |

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**APPENDIX C**

DATASET THREE  
INFORMED CONSENT  
KNOWLEDGE QUESTIONNAIRE  
2010

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NORTH-WEST UNIVERSITY  
YUNIBESITHI YA BOKONE-BOPHIRIMA  
NOORDWES-UNIVERSITEIT

## Consumers' knowledge of food product label

September 2010

Administered by Honours degree Consumer Sciences students  
Honours coordinator: Sunelle Jacobs  
Project leader: Professor Daleen van der Merwe

**TITLE OF THE RESEARCH STUDY:**

Consumers' knowledge of food product labels

Dear Mr. / Mrs. / Miss.

**THE AIM AND NATURE OF THE RESEARCH STUDY:**

The aim of this research study is to explore consumers' knowledge of food product labels. Questionnaires will be used to gather data for this study, which will be completed at selected public places in Potchefstroom.

**REASEARCH PROCEDURE:**

1. You will be asked to complete a questionnaire, which is aimed at exploring consumers' knowledge of food labels.
2. The questionnaire takes approximately 15 minutes to complete.
3. All data gathered during this study will be handled and stored confidentially and only members of the research study will have access to the data. Data published in these or journal will not contain any information which may result in the identification of respondents. Therefore, your anonymity is assured.
4. It is possible that you may not derive any benefit personally from your participation in the study, although the knowledge gained by means of the study may benefit other persons or communities.
5. By agreeing to take part in the study, you are also giving consent that data generated to be used by the researcher for scientific purposes as they see fit, with the caveat that it will be confidential and that your name will not be linked to any of the data.

**POSSIBLE BENEFITS OF THE STUDY**

The present study shall provide insight regarding the consumers' knowledge of food labels, which will then be utilized to identify an educational medium through which information on labels could be communicated to consumers. This study can also help establish consumer education programs aimed at promoting more informed product choices.

## **INFORMATION**

Should you require more information, please do not hesitate to contact Miss. Sunelle Jacobs at 018 299 2471.

## **WITHDRAWAL OF PARTICIPATION**

Participation in the study is voluntary, you are free to withdraw from the study at any time, without stating reasons, and so doing will in no way harm you. However, you are kindly requested not to withdraw from the study without careful consideration.

**PART II**  
**Demographic Information**

5. Mark the respondent's gender in the appropriate box.

|        |   |
|--------|---|
| Male   | 1 |
| Female | 2 |

7. What is your age? Please mark the appropriate box.

|             |   |
|-------------|---|
| 18-24 years | 1 |
| 25-34 years | 2 |
| 35-44 years | 3 |
| 45-54 years | 4 |
| 55-64 years | 5 |
| 65+         | 6 |

**PART V**  
**Label use**

Please mark the appropriate box in the following questions:

|     |                                    | Never | Rarely<br>(once in a while) | Sometimes | Always |
|-----|------------------------------------|-------|-----------------------------|-----------|--------|
| 22. | How often do you read food labels? | 1     | 2                           | 3         | 4      |

**PART VI**  
**Label Knowledge**

Please look at the label marked “C” and then answer the following questions.

| <b>CARD C</b><br><br>BB<br><br>1 DEC 13<br><br>ABC<br><br>Ingredients: Corn flour (30%),<br>vegetable oils and fats,<br>maltodextrin,<br>milk solids, thickener, salt, emulsifiers:<br>(including soya lecithin),<br>preservative:<br>(potassium sorbate), vitamin E,<br>flavourant, colourant: (beta-carotene),<br>vitamins A & D.<br><br>Allergen: Gluten<br>500 g<br><br><br>Manufactured by ABC foods<br>Customer helpline: 0800 1234<br>www.abcfoods.co.za<br>Store in a cool dry place | Nutrition information |         | Per<br>30g | Per<br>100g |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------|------------|-------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Energy                | kJ/kcal | 360        | 1200        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Protein               | g       | 6          | 20          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Carbohydrates         | g       | 3          | 10          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Total Fat             | g       | 10         | 35          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Polyunsaturated Fat   | g       | 5          | 18          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Mono-unsaturated Fat  | g       | 2          | 8           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Saturated fat         | g       | 3          | 9           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Trans Fatty Acids     | g       | 0          | 0           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Cholesterol           | g       | 0          | 0           |

25. How many kilojoules are in 100g of this food?

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

26. How much protein is in 100g of this food?

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

27. How much saturated fat is in 100g of this food?

---

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

28. Name the manufacturer of this product.

---

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

29. What is the main ingredient of this product?

---

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

30. Consumers with what type of allergy should avoid this product.

---

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

31. What is the “best before/by date” of this product?

---

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

32. How/where should this product be stored?

---

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

33. What number should I phone to complain about this product.

---

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

34. Are there any preservatives in this product?  
If “yes”, please specify.

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

Please look at the label marked “D” and answer the following questions.

|                                                                                                                                                                                                                                      |                |                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|
| <b>CARD D</b>                                                                                                                                                                                                                        |                |                 |
| Servings = 50                                                                                                                                                                                                                        |                |                 |
| <b>NUTRITIONAL INFORMATION</b>                                                                                                                                                                                                       | <b>PER 50G</b> | <b>PER 100G</b> |
| Energy kJ/kcal                                                                                                                                                                                                                       | 300            | 600             |
| Proteien g                                                                                                                                                                                                                           | 10             | 20              |
| Carbohydrates g                                                                                                                                                                                                                      | 20             | 40              |
| Total Fat g                                                                                                                                                                                                                          | 5              | 10              |
| Polyunsaturated Fat g                                                                                                                                                                                                                | 10             | 20              |
| Mono-unsaturated Fat g                                                                                                                                                                                                               | 2              | 4               |
| Saturated Fat g                                                                                                                                                                                                                      | 3              | 6               |
| Trans Fatty Acids g                                                                                                                                                                                                                  | 0              | 0               |
| Cholesterol g                                                                                                                                                                                                                        | 0              | 0               |
| Fiber g                                                                                                                                                                                                                              | 5              | 10              |
| <div style="display: flex; justify-content: space-between; padding: 5px;"><div>Manufactured by ABC foods<br/>Customer helpline: 0800 1234</div><div>500 g<br/><a href="http://www.abcfoods.co.za">www.abcfoods.co.za</a></div></div> |                |                 |

35. If you ate 100g of this food,  
how much sugar would you consume?

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

36. If you ate one serving of this food,  
how much fiber would you consume?

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

37. How many servings can you get from the total  
content of this product?

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

Please look at the label marked “E”. Based on the given nutrition information,  
are the following statements true or false?

|                                                                                                                                                                                |                                   |         |                    |                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------|--------------------|---------------------|
| <p style="text-align: center;"><b>CARD E</b></p> <p style="text-align: center;">ABC</p> <p>High in Vitamin A<br/>High in Fibre<br/>Trans Fat Free<br/>Low in Saturated Fat</p> | <b>Nutrition information</b>      |         | <b>Per<br/>30g</b> | <b>Per<br/>100g</b> |
|                                                                                                                                                                                | Energy                            | kJ/kcal | <b>360</b>         | <b>1200</b>         |
|                                                                                                                                                                                | Protein                           | g       | <b>6</b>           | <b>20</b>           |
|                                                                                                                                                                                | Carbohydrates                     | g       | <b>3</b>           | <b>10</b>           |
|                                                                                                                                                                                | Total Fat                         | g       | <b>10</b>          | <b>35</b>           |
|                                                                                                                                                                                | Polyunsaturated Fat               | g       | <b>5</b>           | <b>18</b>           |
|                                                                                                                                                                                | Mono-unsaturated Fat              | g       | <b>2</b>           | <b>8</b>            |
|                                                                                                                                                                                | Saturated fat                     | g       | <b>3</b>           | <b>9</b>            |
|                                                                                                                                                                                | Trans Fatty Acids                 | g       | <b>0</b>           | <b>0</b>            |
|                                                                                                                                                                                | Cholesterol                       | g       | <b>0</b>           | <b>0</b>            |
|                                                                                                                                                                                | Dietary Fiber                     | g       | <b>5</b>           | <b>17</b>           |
|                                                                                                                                                                                | Vitamin A (30% of RDA)<br>µg RE   |         | <b>300</b>         | <b>1000</b>         |
|                                                                                                                                                                                | Vitamin E (15% of RDA)<br>mg α TE |         | <b>1.5</b>         | <b>5</b>            |

|     |                      | True | False |
|-----|----------------------|------|-------|
| 38. | High in Vitamin A    | 1    | 2     |
| 39. | High in Vitamin E    | 1    | 2     |
| 40. | Trans-fat free       | 1    | 2     |
| 41. | Low in saturated fat | 1    | 2     |

Please identify the following symbols by marking the appropriate block in each row. You should mark only one block in each row.

|     |                          |  |  |  |  |
|-----|--------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 42. | Halaal                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| 43. | Heart Foundation         |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| 44. | Suitable for vegetarians |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| 45. | Recycled                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |

## PART VII

### Health / Nutrient claims

If a food product contains certain ingredients or nutrients, some statements or claims are allowed, while others are not. Please indicate if the following statements / claims are allowed or not allowed on food labels by ticking the appropriate block.

|     |                | Allowed | Not allowed |
|-----|----------------|---------|-------------|
| 46. | "Healthy"      | 1       | 2           |
| 47. | "Wholesome"    | 1       | 2           |
| 48. | "95% fat free" | 1       | 2           |

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**APPENDIX D**

DATASET THREE  
INFORMED CONSENT  
KNOWLEDGE QUESTIONNAIRE  
2013

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**To all respondents**

**THE PURPOSE OF THIS QUESTIONNAIRE IS TO DETERMINE CONSUMERS' KNOWLEDGE OF FOOD LABELS IN SOUTH AFRICAN AND AMERICAN CONTEXT.**

A study is currently being conducted to determine and to compare consumers' knowledge of food labels in Potchefstroom, in the North West Province of South Africa (SA), and in Fayetteville, Arkansas, in the United States of America (USA). The researchers kindly ask your support as it will provide insight into South African and American consumers' use and comprehension of food labels that might lead to the proposition of educational programmes in SA and the USA to promote consumers' current understanding of the information presented on labels; enabling consumers to make more informed food purchase decisions.

Participation in the study is **voluntary** and all the information obtained will be handled in an **anonymous** and **confidential** manner. It is asked of you as respondent to fill out the following questionnaire with the researcher or fieldworker. This questionnaire takes approximately 15 minutes to fill out.

Your contribution towards the study is appreciated.

---

S.C. (Roelien) Havenga  
079 526 7819

**Supervisor:** Prof. M. van der Merwe  
**Co-supervisor:** Prof. M.J.C. Bosman  
**Co-supervisor:** Prof. M. Warnock

**FOOD LABEL KNOWLEDGE SURVEY**

**Section A — Opening**

1. Do you or your spouse/partner work as one of the following? **Please mark the appropriate box (An instruction for fieldworkers regarding most questions).**

|                   | Yes | No |    |
|-------------------|-----|----|----|
| Dietician         |     |    | 1  |
| Consumer Sciences |     |    | 2  |
| Nutritionist      |     |    | 3  |
| Pharmacist        |     |    | 4  |
| None of the above |     |    | 5. |

*If the respondent marked any option in 1-4, end interview.*

2. For whom do you do the household food shopping?

|                                 | Yes | No |   |
|---------------------------------|-----|----|---|
| For the entire household        |     |    | 1 |
| For yourself and the children   |     |    | 2 |
| For yourself and spouse/partner |     |    | 3 |
| Only for yourself               |     |    | 4 |
| None ( <i>end interview</i> )   |     |    | 5 |

3. To complete this interview, you will need to read certain items.

Do you need glasses to read?

|                                |  |   |
|--------------------------------|--|---|
| Yes (continue with question 4) |  | 1 |
| No (continue with question 5)  |  | 2 |

4. Do you have them with you?

|     |  |   |
|-----|--|---|
| Yes |  | 1 |
| No  |  | 2 |

**If the respondent answered No: Show them Card A and ask them to read the list of nutrients to you. If they can't read it, thank them and end interview.**

### Section B – Demographic and general information

5. Mark the respondent's gender

|        |  |   |
|--------|--|---|
| Male   |  | 1 |
| Female |  | 2 |

6. What is your age?

|       |  |   |
|-------|--|---|
| 18-24 |  | 1 |
| 25-34 |  | 2 |
| 35-54 |  | 3 |
| 55 +  |  | 4 |

### Section E: Label reading

|     |                                    | Never | Rarely (once in while) | Sometimes | Always |
|-----|------------------------------------|-------|------------------------|-----------|--------|
| 31. | How often do you read food labels? | 1     | 2                      | 3         | 4      |

34. Is there anything about food labels that keeps you from using them as often as you would like?

|                                 |  |   |
|---------------------------------|--|---|
| Yes (continue with question 35) |  | 1 |
| No (continue with question 36)  |  | 2 |

35. Select ALL the reasons why you do not read/use food labels as often as you would like?

|      |                                      | Yes | No |
|------|--------------------------------------|-----|----|
| 35.1 | Takes too much time to read          | 1   | 2  |
| 35.2 | Too much information/Too detailed    | 1   | 2  |
| 35.3 | Confusing/I don't understand         | 1   | 2  |
| 35.4 | Print is too small for me to read    | 1   | 2  |
| 35.5 | Too little information               | 1   | 2  |
| 35.6 | Do not trust/believe the information | 1   | 2  |
| 35.7 | Unnecessary to know                  | 1   | 2  |
| 35.8 | Difficult to find information        | 1   | 2  |
| 35.9 | Other (please specify)               |     |    |

**Section F: Food label objective knowledge****Locating information**

Please take a look at this label and answer the following questions. **(Show Card C)**

| <b>CARD C</b>                                                                                                                                                                                                                                     |  | <b>Nutrition information</b> | <b>Per 30g</b> | <b>Per 100g</b> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------|----------------|-----------------|
| BB                                                                                                                                                                                                                                                |  | Energy kJ/kcal               | <b>360</b>     | <b>1200</b>     |
| 1 DEC 13                                                                                                                                                                                                                                          |  | Protein g                    | <b>6</b>       | <b>20</b>       |
| ABC                                                                                                                                                                                                                                               |  | Carbohydrates g              | <b>3</b>       | <b>10</b>       |
| Ingredients: Corn flour (30%), vegetable oils and fats, maltodextrin, milk solids, thickener, salt, emulsifiers: (including soya lecithin), preservative: (potassium sorbate), vitamin E, flavourant, colourant: (beta-carotene), vitamins A & D. |  | Total Fat g                  | <b>10</b>      | <b>35</b>       |
|                                                                                                                                                                                                                                                   |  | Polyunsaturated Fat g        | <b>5</b>       | <b>18</b>       |
|                                                                                                                                                                                                                                                   |  | Mono-unsaturated Fat g       | <b>2</b>       | <b>8</b>        |
|                                                                                                                                                                                                                                                   |  | Saturated fat g              | <b>3</b>       | <b>9</b>        |
|                                                                                                                                                                                                                                                   |  | Trans Fatty Acids g          | <b>0</b>       | <b>0</b>        |
| Allergen: Gluten                                                                                                                                                                                                                                  |  | Cholesterol g                | <b>0</b>       | <b>0</b>        |
| 500 g                                                                                                                                                                                                                                             |  |                              |                |                 |
| Manufactured by ABC foods<br>Customer helpline: 0800 1234<br>www.abcfoods.co.za<br>Store in a cool dry place                                                                                                                                      |  |                              |                |                 |

37. How many kilojoules are in 100g of this food? \_\_\_\_\_

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

38. How much protein is in 100g of this food? \_\_\_\_\_

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

39. How much saturated fat is in 100g of this food? \_\_\_\_\_

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

40. Name the manufacturer of this product \_\_\_\_\_

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

|                                                                          |                                                                                                        |         |   |           |   |
|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|---------|---|-----------|---|
| 41. What is the main ingredient of this product? _____                   | <table><tbody><tr><td>Correct</td><td>1</td></tr><tr><td>Incorrect</td><td>2</td></tr></tbody></table> | Correct | 1 | Incorrect | 2 |
| Correct                                                                  | 1                                                                                                      |         |   |           |   |
| Incorrect                                                                | 2                                                                                                      |         |   |           |   |
| 42. Consumers with what type of allergy should avoid this product? _____ | <table><tbody><tr><td>Correct</td><td>1</td></tr><tr><td>Incorrect</td><td>2</td></tr></tbody></table> | Correct | 1 | Incorrect | 2 |
| Correct                                                                  | 1                                                                                                      |         |   |           |   |
| Incorrect                                                                | 2                                                                                                      |         |   |           |   |
| 43. What is the “best before/by date” of this product? _____             | <table><tbody><tr><td>Correct</td><td>1</td></tr><tr><td>Incorrect</td><td>2</td></tr></tbody></table> | Correct | 1 | Incorrect | 2 |
| Correct                                                                  | 1                                                                                                      |         |   |           |   |
| Incorrect                                                                | 2                                                                                                      |         |   |           |   |
| 44. How/where should this product be stored? _____                       | <table><tbody><tr><td>Correct</td><td>1</td></tr><tr><td>Incorrect</td><td>2</td></tr></tbody></table> | Correct | 1 | Incorrect | 2 |
| Correct                                                                  | 1                                                                                                      |         |   |           |   |
| Incorrect                                                                | 2                                                                                                      |         |   |           |   |
| 45. What number should I phone to complain about this product? _____     | <table><tbody><tr><td>Correct</td><td>1</td></tr><tr><td>Incorrect</td><td>2</td></tr></tbody></table> | Correct | 1 | Incorrect | 2 |
| Correct                                                                  | 1                                                                                                      |         |   |           |   |
| Incorrect                                                                | 2                                                                                                      |         |   |           |   |
| 46. Name the preservative in this product. _____                         | <table><tbody><tr><td>Correct</td><td>1</td></tr><tr><td>Incorrect</td><td>2</td></tr></tbody></table> | Correct | 1 | Incorrect | 2 |
| Correct                                                                  | 1                                                                                                      |         |   |           |   |
| Incorrect                                                                | 2                                                                                                      |         |   |           |   |

### Manipulating Information

Please take a look at this label and answer the following three questions.

*(Show Card D—card D is a Nutrition information label, not specifying a particular product. The Nutrition Information label on Card D is different from the label on Card C.)*

| CARD D                                                    |         |          |
|-----------------------------------------------------------|---------|----------|
| Servings = 50                                             |         |          |
| NUTRITIONAL INFORMATION                                   | PER 50G | PER 100G |
| Energy kJ/kcal                                            | 300     | 600      |
| Proteien g                                                | 10      | 20       |
| Carbohydrates g                                           | 20      | 40       |
| Total Fat g                                               | 5       | 10       |
| Polyunsaturated Fat g                                     | 10      | 20       |
| Mono-unsaturated Fat g                                    | 2       | 4        |
| Saturated Fat g                                           | 3       | 6        |
| Trans Fatty Acids g                                       | 0       | 0        |
| Cholesterol g                                             | 0       | 0        |
| Fiber g                                                   | 5       | 10       |
| Manufactured by ABC foods<br>Customer helpline: 0800 1234 |         |          |
| 500 g<br>www.abcfoods.co.za                               |         |          |

47. If you ate 100g of this food, how much sugar would you consume? \_\_\_\_\_

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

48. If you ate one serving of this food, how much fibre would you consume? \_\_\_\_\_

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

49. How many servings can you get from the total content of this product? \_\_\_\_\_

|           |   |
|-----------|---|
| Correct   | 1 |
| Incorrect | 2 |

**Health/Nutrient Claims**

*(Show Card E) Before every question, point to the nutrition label and say:*

Based on this nutrition information are the following statements true or false?

| <b>CARD E</b><br><br>ABC<br><br>High in Vitamin A<br>High in Fibre<br>Trans Fat Free<br>Low in Saturated Fat | Nutrition information             |         | Per 30g | Per 100g |
|--------------------------------------------------------------------------------------------------------------|-----------------------------------|---------|---------|----------|
|                                                                                                              | Energy                            | kJ/kcal | 360     | 1200     |
|                                                                                                              | Protein                           | g       | 6       | 20       |
|                                                                                                              | Carbohydrates                     | g       | 3       | 10       |
|                                                                                                              | Total Fat                         | g       | 10      | 35       |
|                                                                                                              | Polyunsaturated Fat               | g       | 5       | 18       |
|                                                                                                              | Mono-unsaturated Fat              | g       | 2       | 8        |
|                                                                                                              | Saturated fat                     | g       | 3       | 9        |
|                                                                                                              | Trans Fatty Acids                 | g       | 0       | 0        |
|                                                                                                              | Cholesterol                       | g       | 0       | 0        |
|                                                                                                              | Dietary Fiber                     | g       | 5       | 17       |
|                                                                                                              | Vitamin A (30% of RDA)<br>µg RE   |         | 300     | 1000     |
|                                                                                                              | Vitamin E (15% of RDA)<br>mg α TE |         | 1.5     | 5        |

|     |                      | True | False |
|-----|----------------------|------|-------|
| 50. | High in Vitamin A    | 1    | 2     |
| 51. | High in fibre        | 1    | 2     |
| 52. | Trans-fat free       | 1    | 2     |
| 53. | Low in saturated fat | 1    | 2     |

If food products contain certain ingredients or nutrients, there are regulations on how it should be presented on food labels.

NOTE: If a food product contains certain ingredients or nutrients, some statements or claims are allowed, while others are not. Please indicate if the following statements/claims are allowed or not allowed on food labels.

|     |                     | Allowed | Not allowed |
|-----|---------------------|---------|-------------|
| 54. | "Healthy"           | 1       | 2           |
| 55. | "Wholesome"         | 1       | 2           |
| 56. | "95 % fat free"     | 1       | 2           |
| 57. | "Source of calcium" | 1       | 2           |
| 58. | "Fat Free"          | 1       | 2           |
| 59. | "High in energy"    | 1       | 2           |

### Identifying Symbols

Please identify the following symbols by marking the appropriate block in each row. You should mark only one block in each row.

|     |                          |  |  |  |  |  |  | Correct | Incorrect |
|-----|--------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------|-----------|
| 60. | Halaal                   |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       | 1       | 2         |
| 61. | Heart foundation         |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       | 1       | 2         |
| 62. | Suitable for vegetarians |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       | 1       | 2         |
| 63. | Recycled                 |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       | 1       | 2         |
| 64. | Radura Symbol            |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       | 1       | 2         |
| 65. | Wholegrain Symbol        |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       | 1       | 2         |

**Thank you for your participation**

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**APPENDIX E**

DATASET FOUR  
NEEDS ASSESSMENT QUESTIONNAIRE – 2012

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NORTH-WEST UNIVERSITY  
YUNIBESITI YA BOKONE-BOPHIRIMA  
NOORDWES-UNIVERSITEIT

**A need assessment for education amongst consumers in  
Potchefstroom regarding food label information.**

September 2012

Administered by Honours degree Consumer Sciences students  
Honours coordinator: Nadia Prinsloo  
Project leader: Professor Daleen van der Merwe

## Questionnaire

This questionnaire is aimed at determining consumers' need for education/training on the use of food labels and is part of a research project conducted by the Subject Group of Consumer Sciences at the North-West University (NWU). The questionnaire is completed anonymously and will take approximately 10 minutes of your time. By agreeing to participate in this study, you are also giving consent that the data collected may be used by the researchers for scientific purposes as they see fit, with the assurance that it will be anonymous and that your name will not be linked to any of the data. Participation in the study is completely voluntary and you are free to withdraw from the study at any time, without stating reasons. However, you are kindly requested not to withdraw from the study without careful consideration. Ethical approval for this study was obtained from the Ethics Committee of the NWU (reference number NWU-00024-09-S1). Should you require more information, please do not hesitate to contact Ms Nadia Prinsloo (honours studies coordinator) at 018 299 2471 or Prof. Daleen van der Merwe (research coordinator) at 018 299 2476.

Please answer ALL the questions in this questionnaire by marking the block of your choice with an X.

### Section A

1) Gender

Male

1

Female

2

2) Age

18-25

1

26-35

2

36-45

3

46-54

4

55-64

5

65+

6

### Section B

6) How often do you read food labels?

|   |        |
|---|--------|
| 1 | Never  |
| 2 | Seldom |
| 3 | Often  |
| 4 | Always |

7) Please indicate how important the following information on a food label is to you:

|                                                  | Unimportant | Somewhat important | Important | Very Important |
|--------------------------------------------------|-------------|--------------------|-----------|----------------|
| Expiry date                                      | 1           | 2                  | 3         | 4              |
| List of ingredients                              | 1           | 2                  | 3         | 4              |
| Nutrition information / table                    | 1           | 2                  | 3         | 4              |
| Usage instructions                               | 1           | 2                  | 3         | 4              |
| Symbols (e.g. heart foundation)                  | 1           | 2                  | 3         | 4              |
| Storage instructions                             | 1           | 2                  | 3         | 4              |
| Contact information of manufacturer              | 1           | 2                  | 3         | 4              |
| Allergen information                             | 1           | 2                  | 3         | 4              |
| Weight / mass of total product                   | 1           | 2                  | 3         | 4              |
| Portion size information                         | 1           | 2                  | 3         | 4              |
| Nutrient claims (e.g. low in sodium, low in fat) | 1           | 2                  | 3         | 4              |

10) Would you be interested to learn more about food label information (e.g. to help you to read / use / understand food labels)?

Yes

1

No

2

11) Would you be interested to learn more about the following items on food labels?

|                                                  | Yes | No |
|--------------------------------------------------|-----|----|
| Expiry date                                      | 1   | 2  |
| List of ingredients                              | 1   | 2  |
| Nutrition information / table                    | 1   | 2  |
| Usage instructions                               | 1   | 2  |
| Symbols (e.g. heart foundation)                  | 1   | 2  |
| Storage instructions                             | 1   | 2  |
| Contact information of manufacturer              | 1   | 2  |
| Allergen information                             | 1   | 2  |
| Weight / mass of total product                   | 1   | 2  |
| Portion size information                         | 1   | 2  |
| Nutrient claims (e.g. low in sodium, low in fat) | 1   | 2  |

12) Through which medium would you prefer to learn about food label information?

|                                          | Yes | No |
|------------------------------------------|-----|----|
| School textbooks                         | 1   | 2  |
| Printed media (newspapers and magazines) | 1   | 2  |
| Internet                                 | 1   | 2  |
| Health practitioners                     | 1   | 2  |
| Training workshops / seminars            | 1   | 2  |
| Store assistants                         | 1   | 2  |
| Food labels itself                       | 1   | 2  |
| Broadcast media (television and radio)   | 1   | 2  |
| Interactive DVDs or CDs                  | 1   | 2  |
| Informative brochures                    | 1   | 2  |
| Other (please specify)                   | 1   | 2  |

13) I need to learn more about food labels to:

|                                                       | Strongly disagree | Disagree | Agree | Strongly agree |
|-------------------------------------------------------|-------------------|----------|-------|----------------|
| Help me make healthier choices                        | 1                 | 2        | 3     | 4              |
| Save money                                            | 1                 | 2        | 3     | 4              |
| Help me understand the information                    | 1                 | 2        | 3     | 4              |
| Protect myself and/or family from certain ingredients | 1                 | 2        | 3     | 4              |
| Help me make more informed food choices               | 1                 | 2        | 3     | 4              |
| Help me find all the information I need               | 1                 | 2        | 3     | 4              |
| Help me plan meals                                    | 1                 | 2        | 3     | 4              |
| Enable me to purchase environmental friendly products | 1                 | 2        | 3     | 4              |
| Other (please specify)                                | 1                 | 2        | 3     | 4              |

14) Are you willing to pay for training / education on food labels?

|     |   |
|-----|---|
| Yes | 1 |
| No  | 2 |

15) In your opinion, who should be responsible for educating / training consumers on food label information?

|                        | Strongly disagree | Disagree | Agree | Strongly agree |
|------------------------|-------------------|----------|-------|----------------|
| The consumer           | 1                 | 2        | 3     | 4              |
| Retailers              | 1                 | 2        | 3     | 4              |
| Manufacturers          | 1                 | 2        | 3     | 4              |
| Government             | 1                 | 2        | 3     | 4              |
| Health practitioners   | 1                 | 2        | 3     | 4              |
| Other (please specify) | 1                 | 2        | 3     | 4              |

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**APPENDIX F**

Ethics certificate

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NORTH-WEST UNIVERSITY  
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**Ethics Committee**  
Tel +27 18 299 4849  
Email [Ethics@nwu.ac.za](mailto:Ethics@nwu.ac.za)

## ETHICS APPROVAL OF PROJECT

The North-West University Research Ethics Regulatory Committee (NWU-RERC) hereby approves your project as indicated below. This implies that the NWU-RERC grants its permission that provided the special conditions specified below are met and pending any other authorisation that may be necessary, the project may be initiated, using the ethics number below.

|                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |   |   |                |   |   |   |   |   |   |      |   |        |   |   |   |             |  |  |  |                |  |  |  |  |  |  |      |  |        |  |
|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|----------------|---|---|---|---|---|---|------|---|--------|---|---|---|-------------|--|--|--|----------------|--|--|--|--|--|--|------|--|--------|--|
| <b>Project title:</b> Consumer's food label behaviour: a preventive and<br>interventive educational model for informed decision making |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |   |   |                |   |   |   |   |   |   |      |   |        |   |   |   |             |  |  |  |                |  |  |  |  |  |  |      |  |        |  |
| <b>Project Leader:</b> Dr D van der Merwe                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |   |   |                |   |   |   |   |   |   |      |   |        |   |   |   |             |  |  |  |                |  |  |  |  |  |  |      |  |        |  |
| <b>Ethics<br/>number:</b>                                                                                                              | <table border="1"> <tr> <td>N</td><td>W</td><td>U</td><td>-</td><td>0</td><td>0</td><td>1</td><td>3</td><td>6</td><td>-</td><td>1</td><td>4</td><td>-</td><td>A</td><td>1</td> </tr> <tr> <td colspan="3">Institution</td> <td></td> <td colspan="6">Project Number</td> <td></td> <td colspan="2">Year</td> <td colspan="2">Status</td> </tr> </table> <p><small>Status: S = Submission, R = Re-Submission; P = Provisional Authorisation, A = Authorisation</small></p> | N | W | U              | - | 0 | 0 | 1 | 3 | 6 | -    | 1 | 4      | - | A | 1 | Institution |  |  |  | Project Number |  |  |  |  |  |  | Year |  | Status |  |
| N                                                                                                                                      | W                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | U | - | 0              | 0 | 1 | 3 | 6 | - | 1 | 4    | - | A      | 1 |   |   |             |  |  |  |                |  |  |  |  |  |  |      |  |        |  |
| Institution                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |   |   | Project Number |   |   |   |   |   |   | Year |   | Status |   |   |   |             |  |  |  |                |  |  |  |  |  |  |      |  |        |  |
| <b>Approval date:</b> 2014-09-25                                                                                                       | <b>Expiry date:</b> 2017-12-31                                                                                                                                                                                                                                                                                                                                                                                                                                            |   |   |                |   |   |   |   |   |   |      |   |        |   |   |   |             |  |  |  |                |  |  |  |  |  |  |      |  |        |  |

Special conditions of the approval (if any): None

### General conditions:

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following:

- The project leader (principal investigator) must report in the prescribed format to the NWU-RERC:
  - annually (or as otherwise requested) on the progress of the project,
  - without any delay in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.
- The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the NWU-RERC. Would there be deviated from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.
- The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date, a new application must be made to the NWU-RERC and new approval received before or on the expiry date.
- In the interest of ethical responsibility the NWU-RERC retains the right to:
  - request access to any information or data at any time during the course or after completion of the project;
  - withdraw or postpone approval if:
    - any unethical principles or practices of the project are revealed or suspected,
    - it becomes apparent that any relevant information was withheld from the NWU-RERC or that information has been false or misrepresented,
    - the required annual report and reporting of adverse events was not done timely and accurately,
    - new institutional rules, national legislation or international conventions deem it necessary.

The Ethics Committee would like to remain at your service as scientist and researcher, and wishes you well with your project. Please do not hesitate to contact the Ethics Committee for any further enquiries or requests for assistance.

Yours sincerely

**Linda du Plessis**  
Digitally signed by Linda du Plessis  
DN: cn=Linda du Plessis, o=NWU,  
Vaal Triangle Campus, ou=Vice-  
Rector: Academic,  
email=linda.duplessis@nwu.ac.za,  
c=US  
Date: 2015.01.14 10:12:37 +02'00'

**Prof Linda du Plessis**  
Chair NWU Research Ethics Regulatory Committee (RERC)

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**APPENDIX G**

**AUTHOR GUIDELINES**

ARTICLE 1: International Journal of Consumer Studies

ARTICLE 2: British Food Journal

ARTICLE 3: Public Health Nutrition

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# International Journal of Consumer Studies

## International Journal of Consumer Studies

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Edited By: Katherine Hughes

Impact Factor: 1.086

ISI Journal Citation Reports © Ranking: 2015: 78/120 (Business)

Online ISSN: 1470-6431

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summary of the paper (Abstract). Four to six keywords should be supplied for indexing purposes. The main manuscript should be divided into appropriate sections, e.g. Introduction, Methods, Results, Discussion, Conclusions, Acknowledgements and References.

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URL <http://web.mit.edu/jsterman/www/SDG/beergame.html> (accessed on July 26th, 2006).

Stinchcombe, A. (1965) Social structure and organizations. In: *Handbook of Organizations* (ed. by J. March), pp. 142-193. Rand McNully, Chicago, IL, USA.

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|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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e.g. Moizer, P. (2003), "How published academic research can inform policy decisions: the case of mandatory rotation of audit appointments", working paper, Leeds University Business School, University of Leeds, Leeds, 28 March.

*For encyclopedia entries (with no author or editor)*

*Title of Encyclopedia* (year) "Title of entry", volume, edition, Title of Encyclopedia, Publisher, Place of publication, pages.

e.g. *Encyclopaedia Britannica* (1926) "Psychology of culture contact", Vol. 1, 13th ed., Encyclopaedia Britannica, London and New York, NY, pp. 765-71.

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e.g. Litman, S. (1902), "Mechanism & Technique of Commerce", Unpublished Manuscript, Simon Litman Papers, Record series 9/5/29 Box 3, University of Illinois Archives, Urbana-Champaign, IL.

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# PUBLIC HEALTH NUTRITION

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### • SCOPE

The scope of *Public Health Nutrition* includes multi-level determinants of dietary intake and patterns, anthropometry, food systems, and their effects on health-related outcomes. We welcome papers that:

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- Develop **methodology** needed for assessment and monitoring
- Inform efforts to improve **communication of nutrition-related information**
- **Build workforce capacity** for effective public health nutrition action
- Evaluate or discuss the effectiveness of **food and nutrition policies**
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- Relate diet and nutrition to **sustainability** of the environment and food systems

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Authors should list at least four keywords or phrases (each containing up to three words).

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- Rebello SA, Koh H, Chen C *et al.* (2014) Amount, type, and sources of carbohydrates in relation to ischemic heart disease mortality in a Chinese population: a prospective cohort study. *Am J Clin Nutr* **100**, 53-64.
- Villar J, Ismail LC, Victora CG *et al.* (2014) International standards for newborn weight, length, and head circumference by gestational age and sex: the Newborn Cross-Sectional Study of the INTERGROWTH-21st Project. *Lancet* **384**, 857-868.
- Alonso VR & Guarner F (2013) Linking the gut microbiota to human health. *Br J Nutr* **109**, Suppl. 2, S21–S26.
- Bauserman M, Lokangaka A, Gado J *et al.* A cluster-randomized trial determining the efficacy of caterpillar cereal as a locally available and sustainable complementary food to prevent stunting and anaemia. *Public Health Nutr.* Published online: 29 January 2015. doi: 10.1017/S1368980014003334.

### *Books and monographs*

- Bradbury J (2002) Dietary intervention in edentulous patients. PhD Thesis, University of Newcastle.
- Ailhaud G & Hauner H (2004) Development of white adipose tissue. In *Handbook of Obesity. Etiology and Pathophysiology*, 2nd ed., pp. 481–514 [GA Bray and C Bouchard, editors]. New York: Marcel Dekker.
- Bruinsma J (editor) (2003) *World Agriculture towards 2015/2030: An FAO Perspective*. London: Earthscan Publications.
- World Health Organization (2003) *Diet, Nutrition and the Prevention of Chronic Diseases*. Joint WHO/FAO Expert Consultation. WHO Technical Report Series no. 916. Geneva: WHO.
- Keiding L (1997) *Astma, Allergi og Anden Overfølsomhed i Danmark – Og Udviklingen 1987–1991 (Asthma, Allergy and Other Hypersensitivities in Denmark, 1987–1991)*. Copenhagen, Denmark: Dansk Institut for Klinisk Epidemiologi.

### *Sources from the internet*

- Nationmaster (2005) HIV AIDS – Adult prevalence rate. <http://www.nationmaster.com/country-info/stats/Health/HIV-AIDS/Adult-prevalence-rate> (accessed June 2013).

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**APPENDIX H**

PROOF OF SUBMISSION OF ARTICLE 1

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to me

21-Aug-2017

Dear Ms. Van Zyl:

A manuscript titled Young adult and older consumers' self-reported food label behaviour: identifying barriers to informed decision making (IJC-OA-2017-357) has been submitted by Ms. Sophia Van Zyl to the International Journal of Consumer Studies.

You are listed as a co-author for this manuscript. The online peer-review system, Manuscript Central, automatically creates a user account for you. Your International Journal of Consumer Studies - Manuscript Central account information is as follows:

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Thank you for your participation.

Kind regards,  
International Journal of Consumer Studies Editorial Office

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**APPENDIX I**

PROOF OF LANGUAGE EDITING OF THESIS

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K Gilbertson | 2017

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10/12/2017

To whom it may concern,

This letter serves to confirm that the attached thesis, “Consumers’ food label behaviour: A preventative and interventive educational model for informed decision making”, has been edited by a qualified language practitioner. For further verification, I may be contacted by email: [kellygilbertson@gmail.com](mailto:kellygilbertson@gmail.com) or by cellphone: 0616150292/+447984529866.

Kind regards,

Kelly-Anne Gilbertson

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K. Gilbertson | [kellygilbertson8@gmail.com](mailto:kellygilbertson8@gmail.com)

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**APPENDIX J**

TURNITIN REPORT

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From: " eFundi (efundi@nwu.ac.za) " <postmaster@v-efundi-ap-lnx4.nwu.ac.za>

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Assignment Due Date: 31-Jan-2018 17:00

Student: DALEEN VAN DER MERWE( 13250574 )

Submission ID: 14d11aed-ed26-4399-a4a1-b5379ed3f28a

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