Understanding the motives of consumers employed at a nutrition company for choosing sugared dairy products

Jolindi Botha
23440015

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Supervisor: Dr A Mielmann
Co-supervisor: Mrs H Dreyer
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Declaration

I, Jolindi Botha, hereby declare that:
UNDERSTANDING THE MOTIVES OF CONSUMERS EMPLOYED AT A NUTRITION COMPANY FOR CHOOSING SUGARED DAIRY PRODUCTS
is my own work and that this dissertation submitted for degree purposes at the North-West University has not previously been submitted for degree purposes to any other higher education institution and that, except for sources acknowledged, the work is entirely that of the researcher.

____________________
J Botha

26 April 2017
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Summary

Sugar consumption has been proven to be too high worldwide, with statistics indicating sugar consumption within South Africa to be similarly problematic. A constant high intake of sugar can lead to obesity, which increases the risk for developing type 2 diabetes. Dairy products are popularly consumed and viewed by consumers as a nutrient-dense staple food which forms part of a healthy diet. High concentrations of sugar (sucrose) are however added to these products, posing a risk to its healthfulness. Food choice is the process of decision making within the consumer involving the selection and consumption of food and beverages, further concerning their eating behaviour. Consumers will not make a food choice or behave in a certain way without being motivated to do so. The motivation of a consumer to choose or to eat a specific food product will therefore act as the reason why the consumer makes this choice. This research study aimed to explore the motivations of consumers employed at a nutrition company – therefore consumers with health awareness – to choose and to eat sugared dairy products. The study was conducted through the distribution of online questionnaires containing questions regarding food choice, eating behaviour and the socio-demographic influence on the food choice of flavoured milk, yoghurt and drinking yoghurt as sugared dairy products. The sample consisted of males (53.3%) and females (46.7%) from a high socio-economic group. The sample is health conscious as frequent physical exercise was reported, BMI scores were normal, none of the respondents were diabetics and the majority of respondents showed a high awareness regarding sugar intake and its related non-communicable diseases. Motives to eat were Physical and Social eating. Motives to choose were Sensory appeal, Convenience and Price. Correlations between motives to choose and motives to eat were found and the influence of the socio-demographic characteristics of respondents on their motives to choose and motives to eat was determined. Gender, population group and marital status were found to influence the food choice and eating behaviour of sugared dairy products. Significant correlations (p<0.001) were present between Physical eating and Health, Sensory appeal, Natural content, Familiarity, Convenience, Ethical concern and Price; between Environmental eating, Health, Natural content and Price; Emotional eating, Familiarity and Mood; and Social eating and Familiarity. Results from this study indicate the lack of knowledge regarding the sugar content of sugared dairy products among health-conscious consumers. Information obtained as the first of its kind within a South African context can be used as a basis to educate consumers regarding their choice of sugared dairy products and aid in the development of health and wellness programs, as well as provide useful information to the dairy industry.

Keywords: Sugar; Dairy; Food choice; Motivation; Consumer; Health
Opsomming

Dit is bewys dat suikerinname wêreldwyd te hoog is en statistiek van suikerinname in Suid-Afrika dui ’n soortgelyke probleem aan. ’n Konstante hoë suikerinname kan lei tot vetsug, wat ook die risiko vir die ontwikkeling van tipe 2 diabetes verhoog. Suiwelprodukte word algemeen verbruik en word deur verbruikers beskou as ‘n voedingsryke stapelvoedsel wat deel vorm van ’n gesonde dieet. Hoë konsentrasies suiker (sukrose) word egter by hierdie produkte gevoeg, wat ’n gesondheidsrisiko inhoud. Voedselkeuse is die besluitnemingsproses van die verbruiker wat die keuse en verbruik van voedsel en drank behels, en sluit ook eetgedrag in. Verbruikers sal nie ’n voedselkeuse maak of op ’n sekere manier optree sonder om gemotiveerd te wees om dit te doen nie. Die motivering van ’n verbruiker om ’n spesifieke voedselprodukt te kies of te eet, sal dus dien as die rede waarom die verbruiker hierdie keuse maak. Hierdie navorsingstudies het ten doel gehad om die motivering van verbruikers wat vir ’n voedingsmaatskappy werk - dus verbruikers wat gesondheidsbewus is - te ondersoek om suikerversoete suiwelprodukte te kies en te eet. Die studie is uitgevoer deur die verspreiding van elektroniese vraelyste wat vrae bevat rakende voedselkeuse, eetgedrag en die sosio-demografiese invloed op die voedselkeuse van gegeurde melk, jogurt en drinkjoghurt. Die steekproef het bestaan uit mans (53,3%) en vroue (46,7%) vanuit ’n hoë sosio-ekonomiese groep. Lede van die steekproef is gesondheidsbewus - gereellede fisiese oefening is aangemeld, LMI-tellings was normaal, geen respondente was diabete nie en die meerderheid respondentie het ’n hoë bewustheid van suikerinname en die betrokke leefstilziektes getoon. Respondente se motiewe om te eet was Fisies en Sosiaal van aard. Motiewe om te kies was Sensoriese aspekte, Gerief en Prys. Korrelasies tussen motiewe om te kies en motiewe om te eet, is gevind en die invloed van die sosio-demografiese eienskappe van respondentie op hul motiewe om te kies en om te eet, is bepaal. Dit is bevind dat geslag, bevolkingsgroep en huwelikstatus die voedselkeuse en eetgedrag van suikerversoete suiwelprodukte beïnvloed. Betekenisvolle (p<0.001) korrelasies was teenwoordig tussen Fisiese eetgedrag en Gesondheid, Sensoriese aspekte, natuurlike inhoud, Bekendheid, Gerief, Etiese besorgdheid en Prys; Omgewingseetgedrag, Gesondheid, natuurlike inhoud en Prys; Emosionele eetgedrag, Bekendheid en Bui en tussen Sosiale eetgedrag en Bekendheid. Resultate van hierdie studie dui op gesondheidsbewuste verbruikers se gebrek aan kennis rakende die hoë suikerinhoud van suikerversoete suiwelprodukte. Hierdie inligting is die eerste in sy soort in die Suid-Afrikaanse konteks en kan gebruik word as ’n basis om verbruikers op te voed rakende hul keuse van suikerversoete suiwelprodukte. Verder kan dit gebruik word in die ontwikkeling van gesondheids- en welstandsprogramme, en dit kan ook nuttige inligting aan die suiwelbedryf verskaf.

Sleutel terme: Suiker; Suiwel; Voedselkeuse; Motivering; Verbruikers; Gesondheid
## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>EFA</td>
<td>Exploratory Factor Analysis</td>
</tr>
<tr>
<td>FBDGs</td>
<td>Food-Based Dietary Guidelines</td>
</tr>
<tr>
<td>FCQ</td>
<td>Food Choice Questionnaire</td>
</tr>
<tr>
<td>FDA</td>
<td>Food and Drug Administration</td>
</tr>
<tr>
<td>HFCS</td>
<td>High Fructose Corn Syrup</td>
</tr>
<tr>
<td>HREC</td>
<td>Health Research Ethics Committee</td>
</tr>
<tr>
<td>IDF</td>
<td>International Diabetes Federation</td>
</tr>
<tr>
<td>KMO</td>
<td>Kaiser-Meyer-Olkin value</td>
</tr>
<tr>
<td>MFES</td>
<td>Motivation for Eating Scale</td>
</tr>
<tr>
<td>MPO</td>
<td>Milk Processers’ Organisation</td>
</tr>
<tr>
<td>NCDs</td>
<td>Non-communicable Diseases</td>
</tr>
<tr>
<td>NWU</td>
<td>North-West University</td>
</tr>
<tr>
<td>PCA</td>
<td>Principle Components Analysis</td>
</tr>
<tr>
<td>SA</td>
<td>South Africa</td>
</tr>
<tr>
<td>SCS</td>
<td>Statistical Consultation Services</td>
</tr>
<tr>
<td>SDPs</td>
<td>Sugared Dairy Products</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
</tr>
<tr>
<td>Acronym</td>
<td>Full Name</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>SSBs</td>
<td>Sugar-sweetened Beverages</td>
</tr>
<tr>
<td>StatsSA</td>
<td>Statistics South Africa</td>
</tr>
<tr>
<td>USA</td>
<td>United States of America</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organisation</td>
</tr>
<tr>
<td>WHF</td>
<td>World Heart Federation</td>
</tr>
<tr>
<td>WWF</td>
<td>World Wide Fund for Nature</td>
</tr>
</tbody>
</table>
Concept clarification

Added sugar
Added sugar means that sugar was added during the processing and preparation of food products – this includes sugar in the form of sucrose, high-fructose corn syrup (HFCS), honey, molasses and other syrups (Bray et al., 2004:539; Popkin & Nielsen, 2003:1325; South Africa, 2015:5).

Consumer motives
A process within the psychological field of consumers which causes them to behave in a certain way in order to satisfy their needs, which can be both physiological and psychological, through the consumption, purchase or use of a product or service (Hoyer & Maclnnes, 2010:45; Schiffman & Kanuk, 2014:106; Solomon et al., 2010:177).

Dairy allergy
An allergic reaction caused by the immune system towards the protein present in milk and dairy products. Symptoms occurring in minutes or a few hours after consumption include hives, wheezing, vomiting, diarrhoea, stomach cramps and an itchy skin rash, often around the mouth (Mayo clinic, 2014). Dairy allergy differs from milk protein intolerance or lactose intolerance.

Flavoured dairy products
Dairy products containing added flavourings and sugar. This does not include artificial or non-nutritive sweeteners. The term “flavoured” is used in this dissertation because the majority of sugared dairy products are flavoured and this term is therefore familiar to the consumer.

Food choice
The process of decision making within the consumer involving the selection and consumption of food and beverages, further concerning their eating behaviour involving what, when, where, how and with whom consumers eat (Sobal et al., 2006:1).

Functional foods
Foods that reduce the risk of disease and promotes optimal health. Functional foods provide positive effects on consumers’ health that goes beyond nutrition (Mayo clinic, 2015).
**Lactose intolerance**
A reaction caused by the digestive system due to the inability to digest the sugar present in milk and dairy products. Symptoms occurring after consumption include bloating, gas and digestive problems (Mayo clinic, 2014).

**Motives to choose**
The reasons underlying the behaviour of consumers to choose a specific food product – this may be to buy it for themselves or to buy it for others.

**Motives to eat**
The reasons underlying the behaviour of consumers to eat a specific food product themselves – this therefore initiates a food choice to be made.

**Sugar**
Sugar (sucrose) is added as an ingredient in food products to provide certain functional properties including taste, flavour, colour and texture (McWilliams, 2012:146). Sugars relevant to this study mainly include sucrose, but also more simplified forms such as lactose, fructose and glucose. This does not include artificial or non-nutritive sweeteners.

**Sugared dairy products**
Dairy products sweetened with sugar in one of its different forms – as discussed in chapter 2. This does not include artificial or non-nutritive sweeteners.

**Type 1 diabetes**
Type 1 diabetes or juvenile-onset diabetes occurs when the body produces very little to no insulin – individuals with this disease therefore need to inject insulin on a daily basis in order to regulate their blood glucose levels (IDF, 2015).

**Type 2 diabetes**
Type 2 diabetes, adult-onset diabetes or non-insulin dependent diabetes occurs when the body shows an insulin resistance or insulin deficiency and accounts for at least 90% of diabetes cases. It is often associated with obesity and causes abnormal blood glucose levels, which may be managed by controlled exercise and diet, oral drugs as well as insulin (IDF, 2015).

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Chapter 1: Introduction

1.1. Background and motivation

Non-communicable diseases (NCDs), a collective term for diseases such as cardiovascular disease, diabetes, obesity and certain cancers (Eksteen & Mungal-Singh, 2015:9), contribute to a global increase in health problems and is currently one of the leading causes of death worldwide (DSM, 2015:2; WHO, 2014:2). Non-communicable diseases are most commonly caused by poor diet quality e.g. high sugar intake and inactivity, with an impact that is devastating in social, economic and public health contexts (WHO, 2014:ix). The negative effects that added sugars have on the consumer’s health, have widely received attention within research communities (Louie et al., 2016:36). Although sugar acts as a good source of energy and is necessary in maintaining the human metabolism, a constant oversupply of sugar through the diet can lead to diseases (Chollet et al., 2013:5501; WHO, 2015:1) such as obesity, diabetes and insulin resistance which leads to cardiovascular disease, as well as other side effects such as dental cavities and a fatty liver (Steyn et al., 2003:599; Temple & Steyn, 2013:101; WHO, 2014:11). Adding sugar to food products for the sake of sensory pleasure should therefore be done while considering these health risks (Whitney & Rolfes, 2011:112). The overconsumption of sugar has even been associated with elevated blood pressure in children (Kell et al., 2014:50). Obesity and diabetes are however the most relevant to this study, as a considerable amount of research has indicated the overconsumption of sugar as a main risk factor (Temple & Steyn, 2013:100). Reducing the risks for these diseases has traditionally included decreasing intake of sodium and fat, but added dietary sugars have more recently been associated with these health conditions (Temple & Steyn, 2013:103; Kell et al., 2014:46). A strong recommendation by the World Health Organisation (WHO, 2015:4) is made to reduce the daily intake of sugar to less than 10% of the total energy intake, with a conditional recommendation of a further reduction to less than 5%.

1.1.1. Global sugar intake

The use of added sugars has risen steadily over the past decades (Whitney & Rolfes, 2011:112). Daily kilojoules consumed from added sugar by American adults increased from 15.7% in 1988-1994 to 25% or more in 2005-2010 (Yang et al., 2014:516). Sugar-sweetened beverages (SSBs) are the fourth highest contributor of kilojoules in the diets of the general United States of America (USA) population and in the amounts it is consumed, it provides 70 000 empty kilojoules per person per day (Trumbo & Rivers, 2014:572; Wang et al., 2012:199). Sugar intake within European adults ranges from about 7-8% of total energy
in countries such as Hungary and Norway, to 16-17% in countries such as Spain and the United Kingdom (WHO, 2016). Sugar consumption among European children is even higher, with Portugal showing consumption rates as high as 25% of their total energy intake (WHO, 2016a). India, Latin America and East Asia are further also classified as major drivers of growth in global sugar consumption and it is predicted to continually increase (Siervo et al., 2013:588). Consumption of sugared dairy remains high, even though the majority of consumers in international surveys indicated that they found the sugar content of their dairy purchases concerning (DSM, 2015:7). Studying flavoured milk consumption in Americans, Miller et al. (2013:419) found that drinking flavoured milk contributed to 23% of total kilojoules obtained from added sugar.

1.1.2. Sugar intake in South Africa

South Africa (SA) is considered an emerging country, consisting of wealthy suburbs as well as poor and underdeveloped rural areas (IMF, 2015:43; Steyn et al., 2006:259). Due to certain political, demographic and socio-economic changes occurring in SA since becoming democratic in 1994, food consumption patterns have been dramatically affected and as a result of changes in food availability and accessibility, consumption patterns will continuously change within the future (Sheehy et al., 2013:443; World Wide Fund For Nature (WWF), 2012:3). A large adjustment in food consumption patterns leading to a higher intake of processed foods high in sugar has taken place, leading to the so-called “nutrition transition” (Hattingh et al., 2013:2). The nutrition transition involves large alterations in consumption patterns which are reflected in nutritional outcomes such as a change in body composition (Popkin, 2006:289). These changes in consumption patterns are also portrayed in the 73.3% increase in yoghurt consumption and the 16.7% increase in flavoured milk consumption over the period of 1999-2012 (Ronquest-Ross et al., 2015:4). Consumption of sugar used as sweeteners showed a 33.1% increase during the same time period (Ronquest-Ross et al., 2015:5). Even SA consumers living in poor socio-economic circumstances are proven to have a sugar intake that is too high – 12% for total sugar and 13% for added sugar from their daily calorie intake (Hattingh et al., 2013:8). Furthermore, rural consumers in KwaZulu-Natal indicate brown sugar as one of the top four most commonly consumed items in a 24 hour recall study (Sheehy et al., 2013:446). While Steyn et al. (2003:601) found lower sugar intakes in urban than in rural areas of SA, Vorster et al. (2014:1484) revealed urban sugar intakes that have increased to values that are higher than that of the earlier study. The substantial increase in sugar consumption, especially within rural and low socio-economic communities, is concerning and strongly supports evidence for the nutrition transition that is currently experienced in SA (Vorster et al., 2014:1479,1484).
Food based dietary guidelines (FBDGs) for SA as adapted in 2013 by the Department of Health, advise consumers to “Use sugar and foods and drinks high in sugar, sparingly” (Vorster et al., 2013:7). The consumption of added sugar by the black population further shows a drastic increase (Temple & Steyn, 2013:100). This is important to consider, as the SA population consists of 80.2% black consumers (StatsSA, 2014b:7). Sugar consumption of township residents in Cape Town showed men consuming 52g of sugar per day (11% energy) and women 51g per day (15% energy) in a cardiovascular risk study in black South Africans (Peer et al., 2013:4). Food intake data from an earlier study done in Gauteng support these results by indicating that consumers supplement their diet with highly refined carbohydrates, with sugar being the main culprit (Pretorius & Sliwa, 2011:182). Comparing SA sugar intakes to that of the USA (as seen in paragraph 1.1.1) have always shown variation because of factors such as socio-economic status and the awareness of a healthy diet, but these reported data show a great similarity in sugar consumption (Temple & Steyn, 2013:101). This changing pattern of dietary consumption will most likely lead to adverse health outcomes and it is therefore essential to contribute to research aimed towards prevention (Pretorius & Sliwa, 2011:183).

1.1.3. Health effects: obesity and diabetes

Obesity is a global epidemic and a major risk factor for the growing burden of NCDs (World Heart Federation (WHF), 2016). The occurrence of obesity within consumers reflects the interaction between environmental and dietary factors, such as physical inactivity and dietary misbehaviour (WHO, 1990:69). An excess in body weight leading to obesity occurs due to an imbalance in energy intake and expenditure – when more energy (measured in kiloJoules) is consumed than is spent (WHO, 1990:72; WHO, 2015:1). A constant high intake of sugar can therefore lead to weight gain and ultimately obesity due to sugar-rich foods providing poor satiety and inducing an increased energy intake (Chollet et al., 2013:5501; Temple & Steyn, 2013:102). The prevalence of obesity is measured by using the Body Mass Index (BMI), which takes into consideration a person’s height and weight (WHF, 2016). Excessive body weight is classified as obese once a BMI of 25 has been exceeded, both for men and women (Whitney & Rolfes, 2011:271).

Diabetes is a metabolic disorder characterised by high blood glucose concentrations and disordered insulin metabolism (Whitney & Rolfes, 2011:620). It is classified as a chronic disease which occurs when the pancreas is unable to produce insulin, or when the body is unable to use the insulin produced effectively (IDF, 2015). Though some of the complications are similar, type 1 and type 2 diabetes varies according to cause. The risk for developing type 2 diabetes is substantially increased by obesity, poor dietary habits and
physical inactivity, with obesity being present in 90 to 95% of diabetes cases (Whitney & Rolfes, 2011:622). Type 2 diabetes is therefore of relevance to this study, as the overconsumption of sugar may be held responsible for the development of this NCD.

1.1.3.1. The global incidence of obesity and diabetes

Globally a transition from a traditional diet to a more western style diet, which is associated with a higher energy intake (Bowen et al., 2011:1,5), is changing the population’s health. Although consumers are found to feel greatly influenced by diet-related news which causes them to feel concerned with their dietary health, these feelings do not appear to lead to change in their dietary habits (DSM, 2015:6) as obesity and diabetes are showing concerning increased rates. The health status of 44.3 million American adults is threatened by obesity and its associated health problems (Lando & Labiner-Wolfe, 2007:157) and the prevalence of obesity is steadily rising across the USA and Europe (Popkin et al., 2011:3; State of Obesity, 2016; WHO, 2016b). Worldwide overweight and obesity figures have more than doubled since 1980 and in 2014 it was found that 11% of men and 15% of women aged 18 and older were obese (WHO, 2014:80). Obesity is also no longer an issue confined to urban areas – rural women in Latin America, the Middle East and North Africa are having a much higher prevalence than women in urban areas (Popkin et al., 2011:5). The same trend occurs in India, where obesity is witnessed side-by-side with undernutrition in poor rural areas (Chan, 2016).

Obesity can precipitate diabetes in general and as the incidence of obesity has risen within the last few decades in the USA, the incidence of diabetes has followed (Whitney & Rolfes, 2011:110). Diabetes has even been labelled as an epidemic and rates of the development of diabetes across the USA population, including different ethnic groups showed an overall increase of 30.5% over an eight year time frame (Dabelea et al., 2014:1780). A rapidly emerging diabetes epidemic has also been identified within Asia, with 78.3 million diabetes cases recorded in 2015 (IDF, 2015; Ramachandran et al., 2010:408). Worldwide diabetes figures are estimated to grow from 415 million people in 2015 to 642 million people in 2040 (IDF, 2015). A comparison of 175 different countries’ food supply data indicated an independent association between added sugar and the worldwide prevalence of diabetes (Basu et al., 2013:6). Diseases such as diabetes can lead to cardiovascular disease, which is one of the leading causes of death in the USA, accounting for one third of deaths from 2012-2013 (United States Department of Health, 2015:2). This disease is also accountable for more than half of all deaths across Europe (WHO, 2016b). Estimated global prevalence of diabetes was at 6.4% (285 million adults) and is predicted to be 7.7% (439 million adults) by 2030 (Weeratunga et al., 2014:1). The cost of the global diabetes epidemic is
overwhelming both in terms of quality of life and health care expenditures – 12% of global health expenditure is spent on diabetes (IDF, 2015; Malik & Hu, 2012:195).

1.1.3.2. Obesity and diabetes within South Africa
South Africa is experiencing a rise in the prevalence of NCDs, proven by the General Household Survey conducted in 2011 (StatsSA, 2011:51) and this burden is experiencing an increase in both urban and rural areas (Mayosi et al., 2009:935). Statistics showing the leading causes for mortality in SA credits eight out of ten deaths being due to NCDs (StatsSA, 2014a). Obesity is widespread in SA and affects consumers physically, economically and socially (Chan, 2016; IDF, 2015; Steyn et al., 2003:599). Obesity rates have grown over the past 30 years, resulting in the country being ranked as the most obese country in sub-Saharan Africa (South Africa, 2015:2). Over half of the country’s adults are reported to be overweight and obese – 42% women and 13% men (WHF, 2016). Surveys done in Limpopo and Mpumalanga provinces indicated a very high prevalence of diabetes in these areas, while 50% of adult females were found to be obese (Thorogood et al., 2007:5). Diabetes, together with heart disease and stroke, constitutes the second most important cause of death in SA and deaths from diabetes showed an increase of 38% during 1999-2006 (Mayosi et al., 2009:939). Furthermore, the total number of deaths in SA adults due to diabetes in 2015 was reported to be as high as 57318 people and the prevalence of diabetes rises together with the increase of age (IDF, 2015). It is therefore evident that SA is experiencing the same health concerns that are considered as an epidemic globally.

1.1.4. Sugared dairy products
Dairy products are popularly consumed (Hoppert et al., 2013:1) and viewed by consumers as a nutrient-dense staple food which forms part of a healthy diet (DSM, 2015:2). High concentrations of sugar is however added by the food industry to these products (Chollet et al., 2013:5501) and Kell et al. (2014:46) credits dairy desserts as being one of the main contributors to added sugar within the diet. The USA dietary guidelines advise consumers to consult the ingredient list to find out if sugars have been added (Kyle & Thomas, 2014:2483). American consumers are found to implement this practise and consult nutrition labels for information such as sugar content in order to make a healthy food choice (Kyle & Thomas, 2014:2481), while South African consumers in certain areas were found to only consult nutrition labels for information regarding fat and cholesterol content (Jacobs et al., 2010:520). In addition, a study exploring worldwide consumers’ preferences concerning flavoured milk and drinking yogurt (DSM, 2015:2) revealed an increase in the consumption of sugared dairy products (SDPs) within the last three years. Thus it is not known whether consumers are not knowledgeable regarding the high sugar content in some dairy products.
and therefore it necessitates research to explore their motivation for including this product in their diet.

1.1.5. Targeting consumers employed at a nutrition company
The motives of consumers who are employed at a nutrition company were explored in this study. Although it could not be assumed that all of these consumers are health conscious, it is a probability that they have some kind of health awareness regarding sugar and added sugar in food products. It is likely that these consumers assume and regard flavoured milk and yoghurt products as healthy. Their motives to choose SDPs were however unclear and were investigated in this study. This research aimed to explore whether consumers fail to make informed and healthy choices regarding SDPs even though they are employed at a company with strong health values. The researchers suspected that these employees’ motives to choose SDPs, are in contrast with their health values and that they are not informed regarding the high sugar content in these products which they see as healthy. Consumers are further not informed regarding their motives to choose or to eat SDPs, and therefore need to be educated to pay attention to their motives before a choice is made.

1.2. Problem statement
Globally, the consumption of excessive sugar is associated with the development of obesity and diabetes, contributing to high mortality and impacting consumer physical well-being negatively. Sugar consumption has worldwide proven to be too high, with statistics indicating sugar consumption within SA to be similarly problematic. Research shows that consumers are aware of the importance of limiting their sugar intake. However, this awareness is not reflected by their use of dairy products, and consumers may have the perception that all dairy products are healthy. Dairy products are widely consumed due to their health benefits, while the high sugar content of sugared dairy tends not to be taken into consideration. Various studies have investigated motives behind food choice, often based on sugared products. No research done in SA has however been found where a study based on both motives for food choice and SDPs has been conducted.

Although the FBDGs for SA consist of positive dietary recommendations, messages are needed which can inform consumers on how to choose food and beverage combinations. The FBDGs only provide a rational for the FBDG on milk, yoghurt and sugar consumption for South Africans (Temple & Steyn, 2013:100) and not on consumer behaviour. In a study by Brown et al. (2011:17), consumers’ awareness, understanding and use of FBDGs were reviewed. It was found that the FBDGs have been in existence for a number of years, yet they do not appear to have been as effective as hoped at changing consumer behaviour or
helping to reduce the incidence of NCDs. There is therefore a lack in research regarding FBDGs leading to behaviour change amongst consumers.

Another problem is the classification of dairy products in the Agricultural Product Standard Act, 1990 (ACT No. 119 of 1990) that provides standards for milk, drinking yoghurt and yoghurt with added foodstuff and fruit regarding fat and protein content (South Africa, 2015:2), however no standards are provided regarding added sugar and therefore not included in food claims made on the label of dairy products to influence consumers’ food choice.

Therefore, investigating the motives behind consumers’ food choice will provide insight on the aspects that have the highest influence on their choice of SDPs, as well as the interrelationship between these factors, within the SA context. This study is the first of its kind that can serve as baseline data needed for future interventions and messages towards policy makers within the South African context. This research can aid in educating consumers regarding their sugared dairy consumption and the down-side of a too high sugar consumption which might enable consumers to make better informed sugared dairy food choices and contribute to consumers’ physical well-being. Furthermore, the research will be useful to categorise consumer behaviour, specifically consumers’ motives to choose SDPs, and complement the dietary survey and health outcome data in process of the FBDG evaluation and revision in the future.

1.3. Aim, research question and objectives

1.3.1. Aim
The aim of this study was to understand consumers who are employed at a nutrition company’s motives to choose SDPs.

1.3.2. Primary research question
The primary research question for this study was what motivates consumers to choose SDPs.
1.3.3. Objectives

The objectives of this study were to:

- Investigate consumers' motives to choose SDPs
- Investigate consumers' motives to eat SDPs
- Measure whether motives vary according to different socio-demographic characteristics
- Determine whether motives to choose and motives to eat SDPs are correlated.

1.4. Summary of methodology

This study was quantitative in nature and employed a non-experimental study design, with a descriptive cross-sectional survey design. This study was conducted by means of a quantitative survey and used online questionnaires in data collection. It measured all the relevant variables at a specific time, with no repeated data gatherings. Data gathering took place by using surveys containing a series of questions to determine which factors influence the consumers’ motives for choosing SDPs and the results obtained were descriptive.

A non-probability purposive sampling method was used since the respondents required to partake in this study needed to comply according to the inclusion and exclusion criteria (Maree & Pietersen, 2007:176-178). Only adult consumers were included in this study, both male and female who are permanently employed at the involved company. The sample group was from regional offices of a sports nutrition company in SA. The targeted offices are situated in urban environments namely Centurion (Gauteng), Durban (KwaZulu-Natal), Stellenbosch (Western Cape), Bloemfontein (Free State) and Port Elizabeth (Eastern Cape). The online questionnaire was distributed for completion to each permanent employee by sending it to the employees’ e-mail addresses as provided by the Human Resources department of the company.

Data analysis for the questionnaire was performed by the Statistical Consultation Services (SCS) of the NWU. Descriptive statistics analysis was applied to all sections of the questionnaire, which included frequencies, mean scores and standard deviations. Inferential statistics included factor analysis, Cronbach’s alpha, T-tests, ANOVA’s and 2-way frequency tables. Effect sizes were considered for all statistics.
1.5. Ethical considerations
Ethical approval of this study was acquired from the Health Research Ethics Committee (HREC) of the Faculty of Health Sciences of the NWU (Reference number: NWU-00339-16-S1) and all ethical measures were practically applied. A full discussion follows in section 3.8.

1.6. Conceptual framework

![Conceptual framework of factors influencing food choice of sugared dairy products]

**Figure 1:** Conceptual framework of factors influencing food choice of sugared dairy products
1.7. Author contribution

The aim and objectives of this study were accomplished by a team of academic researchers, each with a relevant role. These roles are summarised in the following table.

Table 1.1: Summary of authors' contributions to this study

<table>
<thead>
<tr>
<th>Author</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miss J Botha</td>
<td>First author</td>
</tr>
<tr>
<td>Dr A Mielmann</td>
<td>Supervisor</td>
</tr>
<tr>
<td>Mrs H Dreyer</td>
<td>Co-Supervisor</td>
</tr>
</tbody>
</table>
References


IDF see International Diabetes Federation.


IMF see International Monetary Fund.


South Africa. 2015. Government notice: regulations relating to the classification, packing
and marking of dairy products and imitation dairy products intended for sale in the Republic

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2016.


cross-sectional study of vascular risk factors in a South African population: data from the


WHO see World Health Organisation.


WHF see World Heart Federation.


WWF see World Wide Fund for Nature.


Chapter 2: Literature review

2.1. Introduction

Milk is a natural and very nutritious part of a balanced diet and dairy products form a major part of functional foods (Saxelin et al., 2003:1). The dairy industry is the fifth largest agricultural industry in SA and a fast growing component within the food supply, with a demand for dairy products that has increased during recent years (MPO, 2016). This industry involves the marketing and production of pasteurised milk and cream, long-life milk and cream, fermented milk, yoghurt, cheese and whey, butter and butter oil and concentrated milk (SAMPRO, 2016). Dairy products containing added sugar are popular products generally available and easily accessible within SA. Cow’s milk mainly consists of water, with approximately 4.8% lactose, 3.2% protein and 3.7% fat (Saxelin et al., 2003:2). While the addition of sugar to dairy products improves its sensory characteristics and makes it more appetising to consume, it only adds to its total energy content from a nutritional point of view (WHF, 2016). The consumption of milk and dairy products are encouraged by dietary guidelines worldwide and while the benefits thereof should not be overlooked, it is necessary to consider the amount of sugar that is being consumed in the process (Li et al., 2015:1455).

It is not always clear why consumers make the food choices they do. Consumers will not make a decision or behave in a certain way without being motivated to do so. When a need arises within an individual that has not yet been fulfilled, it gives rise to a motivation to act in a certain way which will fulfil or eliminate this need. The motivation a consumer experiences is therefore a process which causes consumers to behave in the way that they do – acting in a certain way and making certain choices (Solomon et al., 2010:177; Thuy, 2015:6). Consumers have different lifestyles and unique characteristics which influence the way in which they behave and the choices they make (Sobal et al., 2006:1; Vabo & Hansen, 2014:145). Together with the specific physical properties related to a food product, the psychological factors unique to every individual influence which food choices they make (Thuy, 2015:1).

Consumers therefore choose these food products due to various influences which motivate them to do so. By exploring the consumer’s motivation behind making the food choice of consuming SDPs, research will be aimed towards why consumers make this specific food choice instead of what they choose to consume. Understanding the reasons behind the food choice of the consumer can be helpful in changing eating behaviour to be more sustainable.
and to encourage healthier food choices, contributing to health research and ultimately consumer well-being (Thuy, 2015:1).

In this chapter, a literature review provides an in-depth look at sugar as an ingredient in dairy products. Consumer motivation, food choice and eating behaviour regarding these products are discussed and the link is drawn between these concepts as well as the worldwide health burden caused by the overconsumption of sugar as discussed in chapter 1.

2.2. Sugar

There is a rising scientific interest in the role of both caloric and non-caloric sweeteners in the worldwide food supply and the effect it has on consumers’ health (Ng et al., 2012:1828). “Caloric sweeteners” as a category includes a wide variety of different types of sugar which exist either in a crystallised form as sugar or in a liquid form as syrup. Caloric sweeteners, therefore sugar, represent sources of energy with little nutritional value – leading to the label of “empty calories” (Ng et al., 2012:1828). To provide a common frame of reference throughout this dissertation, the definitions of sugar should be understood. Sugar can be defined as a sweet crystalline substance obtained primarily from the juice of sugar cane (Saccharum officinarum) and sugar beet (Beta vulgaris) (Cummings & Stephen, 2007:7; Popkin & Nielsen, 2003:1326). Sugar as a term refers to any monosaccharide or disaccharide present in a food product in any of its forms (Bray et al., 2004:537). Monosaccharides include glucose, galactose and fructose, with fructose being the most common sugar which is found in fruits and vegetables (Johnson et al., 2009:1012). Common disaccharides include sucrose (glucose and fructose), found in sugar cane, honey, sugar beets and corn syrup; lactose (glucose and galactose) found in milk and maltose (glucose and glucose), found in malt (Whitney & Rolfes, 2011:97). Added or extrinsic sugars are sugars and syrups added to food products during processing and preparation (Johnson et al., 2009:1012). Naturally occurring or intrinsic sugars is sugar naturally present in food as an innate component which has not been added during processing, preparation or at the table and is an integral part of fruit, vegetables and milk (Bray et al., 2004:537; Cummings & Stephen, 2007:8). Total sugar refers to all sugar present in a food product from any source, including those naturally occurring and those added (Cummings & Stephen, 2007:7). Artificial or non-caloric sweeteners are therefore not included within the sugar category. Sugar as an ingredient in food products is added to provide certain functional properties including taste, flavour, colour and texture as well as sweetness, solubility and hygroscopicity (McWilliams, 2012:146) and even preservation, as in the case of jams and jellies (Cummings & Stephen, 2007:7). Because a sweet taste promotes the enjoyment of food, sugar adds desirable sensory effects to many food products (Ng et al., 2012:1012).
2.2.1. Added sugar in food

Sugars are a universal component of our food supply and are consumed in different forms as: i) additions to food during processing or preparation and ii) as a naturally occurring component (Johnson et al., 2009:1011). It is however important to know the difference between these two main types of sugar. Added sugar includes sweeteners such as sucrose, high-fructose corn syrup (HFCS), honey, molasses and other syrups (Bray et al., 2004:539). Although honey and maple syrup provide some healthy antioxidants and minerals and are often viewed as a healthier sweetener, they still contain a large amount of sugar and calories per portion (Popkin & Nielsen, 2003:1325). Naturally occurring sugar is found in whole foods such as fruit, vegetables and dairy products (Ng et al., 2015:7). Although it is chemically similar, added sugar does not involve or relate to naturally occurring sugar, for example the lactose in milk – which supplies sugar together with vitamins, minerals and phytochemicals (Ng et al., 2015:7; Whitney & Rolfes, 2011:113). Food products containing added sugar will therefore rather contribute towards nutrient deficiencies and should not replace nutritious foods in the diet (Whitney & Rolfes, 2011:114). The addition of sugar to food products only adds to its total energy content and added sugar is therefore connected to NCDs (WHF, 2016).

Sucrose and HFCS both contain fructose (Ma et al., 2015:462; McWilliams, 2012:157; Stanhope & Havel, 2010:16). Because fructose is the sweetest of the sugars, it (or sugars that contain it) is commonly added to food products to improve its palatability (Vos et al., 2016:2). Fructose has previously been thought to be a healthier source of sugar, and has been a recommended sweetener for type 2 diabetics (Schwarz et al., 1989:667). When ingested through fruits and vegetables, fructose is provided together with dietary fibre, making the digestion and absorption process slower (Lowette et al., 2015:1). When fructose is however added to food products, the digestion differs – fructose consumption in this isolated form results in the decreased secretion of both leptin and insulin because it is not transported into the brain during digestion – these hormones are both essential in the long term regulation of adiposity and energy homeostasis (Elliot et al., 2002:918; Schwarz et al., 1989:667). This means that fructose does not provide “satiety signals” to the brain as glucose does (Bray et al., 2004:538). Fructose intake levels therefore affects appetite control and causes the consumer to eat more due to the lack in reaching the point of satiety (Lowette et al., 2015:2). In relation to this, the high consumption rates of HFCS are often held responsible for the epidemic of obesity (Bray et al., 2004:542). High fructose corn syrup is an inexpensive sweetener made from corn sugar and acts as a profitable substitute for sucrose; it has therefore become a choice substitute for sucrose in carbonated beverages, processed foods and is also the most common sweetener within the worldwide dairy industry.
(Bray et al., 2004:538,539; Popa & Ustunol, 2011:452). Although sucrose is used rather than HFCS in SA, both these forms of added sugar are more or less equal combinations of glucose and fructose (Hattingh et al., 2013:2).

2.3. Sugared dairy products

A “dairy product”, according to the Agricultural Product Standard Act, 1990 (ACT No. 119 of 1990) regulations relating to the classification, packaging and marketing of dairy products and imitation dairy products intended for sale in SA, means a primary dairy product, a composite dairy product or a modified dairy product (South Africa, 2015:2). Dairy products provide numerous essential nutrients including protein, carbohydrates, vitamins (A, Riboflavin and B12) and minerals (Calcium, Phosphorus, Magnesium, Potassium and Zinc) (Saxelin et al., 2003:2; Whitney & Rolfes, 2011:36;43;406). The demand for dairy products in SA is continuously growing. Statistics from the Milk Producers’ Organisation of SA show an increased demand for dairy products – an increase of 5.5% for flavoured milk and 1.7% for yoghurt was noted in 2015-2016 (MPO, 2016:10). Within the past decade, the demand for dairy products has increased by more than 35% (BFAP, 2016:95). Dairy products sweetened with sugar - SDPs - which include flavoured milk and fruit-filled yogurt, is popularly consumed (Hoppert, 2013:1) and generally viewed as a nutrient-dense staple food which forms part of a healthy diet (DSM, 2015:2). Three types of SDPs relevant to this study include flavoured milk, yoghurt and drinking yoghurt.

2.3.1. Flavoured milk

Milk is a source of calcium, Vitamin B12 and protein and brings high bioavailability of these nutrients to dairy products (Andrés et al., 2015:1100). Because of its health benefits, the consumption of milk is encouraged by dietary guidelines worldwide (Andrés et al., 2015:1106). Flavoured milk is a sweetened milk drink made with milk, flavourings, colourings and sugar and is often enriched with calcium and other vitamins such as Vitamin D and B vitamins (Dairy technology, 2016; Ravindra et al., 2011:130). Flavoured milk has been incorporated into diets and lunch programs in order to improve milk consumption; however it does not recognise the high sugar content posing a risk to its healthfulness (Li et al., 2015:1455). Table 2.1 provides an indication of the amount of sugar a single serving of flavoured milk contains.
<table>
<thead>
<tr>
<th>Product category</th>
<th>Product name</th>
<th>Serving size</th>
<th>Energy</th>
<th>Sugar per serving</th>
<th>Sugar per 100g</th>
<th>Equivalent teaspoons of sugar per serving (4g/teaspoon)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flavoured milk</td>
<td><strong>Full fat Chocolate flavoured milk</strong></td>
<td>300ml</td>
<td>1098kJ</td>
<td>32.7g</td>
<td>10.9g</td>
<td>8.2</td>
</tr>
<tr>
<td></td>
<td><strong>Full fat Peanut butter milkshake</strong></td>
<td>275ml</td>
<td>1184kJ</td>
<td>41.2g</td>
<td>15g</td>
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</tr>
<tr>
<td></td>
<td><strong>Medium Fat Banana flavoured milk</strong></td>
<td>300ml</td>
<td>619kJ</td>
<td>28g</td>
<td>7g</td>
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</tr>
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<td></td>
<td><strong>Medium Fat Chocolate flavoured milk</strong></td>
<td>350ml</td>
<td>844kJ</td>
<td>31g</td>
<td>9g</td>
<td>7.8</td>
</tr>
<tr>
<td></td>
<td><strong>Low Fat Strawberry flavoured milk</strong></td>
<td>300 ml</td>
<td>714kJ</td>
<td>22.2g</td>
<td>7.4g</td>
<td>5.5</td>
</tr>
<tr>
<td></td>
<td><strong>Fat free (skimmed) Chocolate flavoured milk</strong></td>
<td>275ml</td>
<td>760kJ</td>
<td>27.1g</td>
<td>9.9g</td>
<td>6.8</td>
</tr>
<tr>
<td>Drinking yoghurt</td>
<td><strong>Medium fat Cherry flavour</strong></td>
<td>350ml</td>
<td>1463kJ</td>
<td>37.8g</td>
<td>10.8g</td>
<td>9.5</td>
</tr>
<tr>
<td></td>
<td><strong>Medium fat Strawberry flavour</strong></td>
<td>200g</td>
<td>634kJ</td>
<td>21.6g</td>
<td>10.8g</td>
<td>5.4</td>
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<td></td>
<td><strong>Low Fat Strawberry flavour</strong></td>
<td>300ml</td>
<td>960kJ</td>
<td>38.4g</td>
<td>12.8g</td>
<td>9.6</td>
</tr>
<tr>
<td></td>
<td><strong>Low fat Strawberry flavour</strong></td>
<td>250g</td>
<td>708kJ</td>
<td>26.8g</td>
<td>10.7g</td>
<td>6.7</td>
</tr>
<tr>
<td></td>
<td><strong>Fat free (skimmed) Strawberry flavour</strong></td>
<td>300ml</td>
<td>930kJ</td>
<td>47.7g</td>
<td>15.9g</td>
<td>11.9</td>
</tr>
<tr>
<td>Yoghurt</td>
<td><strong>High fat double cream yoghurt Choc Chip flavour</strong></td>
<td>100g</td>
<td>541kJ</td>
<td>15g</td>
<td>15g</td>
<td>3.8</td>
</tr>
<tr>
<td></td>
<td><strong>High fat Strawberry &amp; Cream flavour</strong></td>
<td>150g</td>
<td>730kJ</td>
<td>18.8g</td>
<td>12.5g</td>
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<td><strong>Medium fat Salted Caramel flavour</strong></td>
<td>150g</td>
<td>602kJ</td>
<td>17.1g</td>
<td>11.4g</td>
<td>4.3</td>
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<td></td>
<td><strong>Medium fat Strawberry flavour</strong></td>
<td>100g</td>
<td>370kJ</td>
<td>10.7g</td>
<td>10.7g</td>
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<td></td>
<td><strong>Low Fat Strawberry flavour</strong></td>
<td>100g</td>
<td>266kJ</td>
<td>9.1g</td>
<td>9.1g</td>
<td>2.3</td>
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<tr>
<td></td>
<td><strong>Fat free (skimmed) Strawberry flavour</strong></td>
<td>100g</td>
<td>210kJ</td>
<td>3.1g</td>
<td>3.1g</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td><strong>Fat free (skimmed) white peach flavour</strong></td>
<td>150g</td>
<td>431kJ</td>
<td>17g</td>
<td>11.3g</td>
<td>4.3</td>
</tr>
</tbody>
</table>
2.3.2. Yoghurt

Yoghurt is considered a healthy dairy product due to its nutrient density, produced by fermenting the lactose in milk through the addition of various starter cultures known as probiotics (Allgeyer et al., 2010:212) (e.g. Lactobacillus bulgaricus, Lactobacillus acidophilus and Streptococcus thermophilus), which coagulates the milk proteins and creates a tart flavour (McWilliams, 2012:305; Murano, 2003:227). These probiotics are live organisms which, in sufficient amounts, provide numerous health benefits when included in the diet (WHO, 2001:4). While it improves the balance of microbiota in the human body and plays an important role in digestive, immunological and respiratory functions, it can also aid in the alleviation of infectious diseases in children (WHO, 2001:6). Probiotics further aid in the sensory quality of yoghurt, as it will produce a product which is neither too sour nor sweet (Allgeyer et al., 2010:219). The health benefits of the fermentation of milk producing yoghurt has been discovered over a century ago and since the flavouring and sweetening of yoghurt has been done in the 1950s, the consumption of these products have increased radically (Saxelin et al., 2003:4). Flavoured milk and sugar-sweetened yoghurt however typically contain 5% or more of added sugars (Levine, 2001:20). Table 2.1 provides an indication of the amount of sugar a single serving of yoghurt contains.

2.3.3. Drinking yoghurt

Drinking yoghurt is a dairy product produced by using milk as the main ingredient to which dry ingredients, including sugar and starter cultures, are added where after it is left for fermentation (Allgeyer et al., 2010:213). It therefore includes the sensory properties and nutritional value of yoghurt, but is made more fluid and therefore drinkable with the addition of more milk. The product is fast growing within the South African market, generally consumed for its health-promoting properties and convenient characteristics (Allgeyer et al., 2010:212; Sun-Waterhouse et al., 2013:450). Similar to the other products involved in this study, drinking yoghurt however also contain high amounts of added sugar. Table 2.1 provides an indication of the amount of sugar a single serving of drinking yoghurt contains.
2.4. The link between sugar consumption and sugared dairy products

Although milk-based drinks provide a healthy contribution to human nutrition (Andrés et al., 2015:1106), it is necessary to consider the high sugar content of SDPs which may reduce its health benefits (Pohjanheimo & Sandell, 2009:459). Dairy products have for example been proven to aid in promoting dental health due to its ability to neutralise acid in the mouth (Whitney & Rolfe, 2011:114). Adding sugar to dairy however does not allow this function and high rates in dental cavities caused by sugar have been reported to be problematic worldwide (Moynihan & Kelly, 2013:16). When sugar is added to nutrient-dense foods, such as dairy products, to improve its sensory qualities, the diet quality will still be superior to other foods high in sugar should it be eaten as a substitute. What is however concerning is the lack of portion control regarding the consumption of these health products – while consumers may be aware of restricting their intake of other foods high in sugar, large amounts of sugar are ultimately consumed (Ng et al., 2012:1012). The WHO’s recommendations to limit sugar intake to 10% of total energy would then suggest that consuming one serving of a popular flavoured milk product would supply the consumer with their total sugar intake for an entire day. The addition of more natural sweeteners to yoghurt, such as honey, further tends to influence consumers in thinking that it will be healthier – when in fact honey is typically not used to replace sucrose and is mostly used as a flavouring (Popa & Ustunol, 2011:451).

New food legislation that came into effect in 2016 brought a reclassification of dairy products according to fat content (South Africa, 2015:11). Regulation 260 (R260) announced by the Department of Agriculture, Forestry and Fisheries, repeals regulation 2581 and aims to align local dairy products with international standards and codes of practice that contribute to the safety, quality and fairness of the international food trade. One of the implications of R260 is that dairy products will now be categorised according to five different class designations: high fat, full fat, medium fat, low fat and fat free (skimmed). These regulations however do not categorise SDPs nor do they provide regulations regarding added sugars. This may result in consumers turning their main focus towards the fat content of dairy products, not giving attention to its sugar content.

Some of the most widely available commercial dairy products in SA, as shown in Table 2.1, contain high levels of added sugar, not subjective to its fat content – it is clear that a lower fat content does not necessarily indicate a lower sugar content. This supports the importance of consumers consulting the sugar content together with the fat content of SDPs in order to make healthy food choices.
2.5. Measures taken to reduce the negative health effects

The increased awareness of the health implications of the overconsumption of sugar and the high rates of sugar consumption has led to authorities within the food industry and government to implement certain strategies to reduce these health implications and protect the consumer. Examples of these strategies include updated food labels, the implementation of a sugar tax and changes in product development.

2.5.1. Food labels

The nutrition label on food products is perhaps the most accessible and most accessed source of nutrition information (Kyle & Thomas, 2014:2481) and a resource which consumers can use to help prevent NCDs and promote their health (Laquatra et al., 2015:17). Food labels indicate the total sugar content of a food product - which consists of the added sugar together with the natural occurring sugar (Bray et al., 2004:537). Determining the amount of added sugar a food product contains and which is consumed in the diet has therefore been proven to be difficult, even for health-conscious individuals (Kyle & Thomas, 2014:2483), making it difficult to adhere to health recommendations (Ng et al., 2015:7). The USA Food and Drug Administration (FDA) has recently finalised the new nutrition facts label for packaged goods which now includes an indication of the amount of added sugars in the food product, together with the total sugar. The added sugar value is now indicated in grams and as a percentage Daily Value and will be effective from July 2018 in the USA (FDA, 2016).

This separate indication of added sugar aims to enable consumers to identify their added sugar intake and enable them to make better informed food choices (FDA, 2016; Kyle & Thomas, 2014:2481). These measures have however not been implemented in SA. The absence of added sugar labelling makes it difficult for the general public to restrict their added sugar intake, while also making it more difficult to obtain evidence of the South Africans’ added sugar intake (Louie et al., 2016:36). It may therefore be considered to implement this on SA food labels.

2.5.1.1. Total sugar content – lactose plus added sugar

Lactose is quite an uncommon disaccharide formed from glucose and galactose which is not found in a significant amount of food other than milk (McWilliams, 2012:297). Lactose is water soluble and found in the whey portion of milk (Clemens et al., 2011:162) and provides 30% of its energy (Saxelin et al., 2003:2; Scrimshaw & Murray, 1988:1099). The amount of lactose present in a dairy product varies according to the specific product and its processing. Yoghurt, for example, contains less lactose than milk due to its microbial properties.
(Clemens et al., 2011:163). Because the bacteria present in yoghurt uses the lactose as energy, therefore digesting it, the lactose content of yoghurt decreases each day during storage (Dairy Australia, 2011). As previously discussed, lactose is present in milk and dairy products as an intrinsic component and is therefore a naturally occurring sugar (Bray et al., 2004:537). Because the amount of total sugar present in a SDP consists of the natural sugar together with the added sugar, it may be useful to consider the amount of sugar added to these products which threatens its healthfulness.

The amount of lactose in one portion of milk (250ml) equals 12-15g or 4.8-6%, and 200g yoghurt contains 4.6-9.6g or 2.3-4.8%, depending on the time of storage (Barlowska et al., 2011:293; Saxelin et al., 2003:2; Scrimshaw & Murray, 1988:1102). Considering the amount of total sugar present in SDPs as depicted in Table 2.1, the amount of added sugar these products contain can be calculated. Supposed that 250ml milk used for the flavoured milk product with the highest total sugar content (Table 2.1) contains 12g lactose per serving, the conclusion can be made that more than 29g (7 teaspoons) of sugar has been added to a single serving of the product.

This proves to be a complicated calculation which cannot be realistically expected of consumers to perform each time when evaluating a food product. This makes it difficult for consumers to determine the amount of sugar artificially added to a SDP and to implement healthier food choices in the following of health recommendations (Ng et al., 2015:7). The determining of a consumer’s added sugar intake and making an informed food choice should be made as uncomplicated as possible (FDA, 2016).

2.5.2. The implementation of sugar tax
The consumption of SSBs is found to be one of the main contributors to obesity (Bleich et al., 2014:2417; Popkin & Nielsen, 2003:1325) and in researching the overconsumption of sugar, SSB consumption is often the main focus (Bleich et al., 2014:2417; Bruening et al., 2014:277; Ng et al., 2015:8; Tipton, 2014:564). The South African Department of Health has set a target to reduce the prevalence of obesity by 10% by 2020 and in aiming to attain this goal, developed the Strategic Plan for the Prevention and Control of NCDs 2013-2017, as well as the National Strategy for the Prevention and Control of Obesity 2015-2020 (South Africa, 2016:2). Because a pricing policy is a powerful way to influence dietary behaviour (Steenhuis et al., 2011:2220) and taxes are believed to act in influencing the purchase decisions of consumers, the latter strategy has identified taxes on food high in sugar as a cost-effective approach to address these diet-related issues (South Africa, 2016:2). Strategies like these have been developed according to recommendations from the WHO
encouraging Member States to consider strategies such as the implementation of taxes and subsidies that improve the affordability and encourage consumption of healthier food products, while discouraging the consumption of less healthy options (WHO, 2013:31). In implementing this strategy, the minister of finance has announced in the February 2016 budget the decision to introduce a tax on SSBs with effect from 1 April 2017 (South Africa, 2016). Sugar-sweetened beverages have been targeted because the consumption in SA has shown a large increase – more than 50% of adults within rural and urban areas consume these beverages (Vorster et al. 2014:1484). Taxes on SSBs have already been levied in countries such as Denmark, France, Finland, Hungary, Mexico, Ireland, Norway and Mauritius, while the intention to introduce these taxes has recently been announced by the UK, Thailand and Australia (South Africa, 2016:2). Although structured different in each country, these taxes have reduced SSB consumption and increased health outcomes at various levels (South Africa, 2016:2). Different structures of this tax are for example the “penny-per-ounce” approach that is proposed by some states in the USA (15-20% price increase); the 7.55 cents per litre in France (3.5% price increase) and the 1 Peso per litre (10% price increase) in Mexico (Berardi et al., 2016:3976; Colchero et al., 2015:2; Wang et al., 2012:204). It is proposed that the sugar tax rate in SA matches the 20% price increase suggested by literature and also announced by the UK, and will be 2.29 cents per gram of sugar (South Africa, 2016:3). Researchers claim that if the tobacco tax history is any parallel, the sugar tax could represent a development in the use of taxes to promote health and decrease health care costs (Wang et al., 2012:204).

The definition used throughout literature for SSBs has been lacking consistency (Miller et al., 2013:416), while some include flavoured milk and drinking yoghurt together with sport drinks, fruit drinks and ready to drink teas and coffees (Bleich et al., 2014:2417), others focus solely on sodas (Ma et al., 2015:462; Ng et al., 2015:7). It is however important to make the distinction between these products, as dairy products provide kiloJoules from sources other than sugar (O'Neil et al., 2011:2) as well as other nutrients (Andrés et al., 2015:1100). Sugar-sweetened beverages according to the policy paper regarding the sugar tax are defined as beverages that contain added caloric sweeteners such as sucrose, HFCS or fruit juice concentrates, which include but are not limited to fruit drinks, soft drinks, vitamin water drinks, sports and energy drinks and sweetened ice tea. Any beverage that only contains sugar naturally will be excluded from the tax – this includes unsweetened milk and milk products and 100% fruit juice (South Africa, 2016:2). Because sugar is added deliberately to SDPs, it is inferred that SDPs will also be taxed.
2.5.3. Low-sugar product development

Although it is necessary for the product development process to be highly consumer-oriented and that products should be manufactured with the goal to fulfil the consumer’s needs (Sijtsema et al., 2002:565), the development of new food products according to current trends is essential for the survival of any company (Fuller, 2005:1). A change in legislation, such as the sugar tax, is an example of such a trend and provides a requirement for companies to adapt accordingly should they aim to achieve sustainable profit (Fuller, 2005:16).

In relation to this, the South African company Clover, which controls nearly 80% of SA’s dairy market, has revealed its intent to launch a low-sugar and low-calorie alternative to one of its best-selling dairy fruit beverages. The reviewing of a low-sugar alternative for one of its leading flavoured milk products is also in effect. This strategy aims to offset the expected price increase by the tax with increased sales of the new product and in the process; consumers are provided a low-sugar option (Drinkstuff SA, 2016). In general, reduced sugar or sugar free products have been widely available for a number of years. Consumers have been following the low or no-calorie brands as far back as the 1980s – which was when the Coca Cola Company premiered its Diet Coke in July 1982 (Moye, 2013). The popularly used artificial sweetening tablets produced by Canderel were launched around the same time in 1983, with their sugar free chocolate following in 2006 (Canderel, 2017).

There are various alternatives to sugar in the sweetening of dairy products. Not only are yoghurt products containing artificial sweeteners widely available, but methods of sugar reduction in dairy which are perhaps healthier and do not involve artificial ingredients are also an emerging subject in research (Chollet et al., 2013:5501; Li et al., 2015:1455; Oliveira et al., 2015:148; Popa & Ustunol, 2011:451). In relation to this, the acceptance of sugar reduction in yoghurt by adding more flavouring to it has been explored. By using natural sources of flavours, yoghurt products containing less sugar and a higher concentration of strawberry and coffee flavour were tested and achieved acceptance among consumers (Chollet et al., 2013:5509). Acceptance data from another study supports this and authors conclude that adapting the flavouring concentration may be an appropriate tool to mask sugar reduction (Hoppert et al., 2013:6).

The effects of product characteristics such as colour may also influence consumers’ perception of its sweetness. Sensory tests conducted by changing the intensity of a colour or by using different colours, lead consumers to value the product as being sweeter even though the amount of sucrose in samples did not differ (Johnson & Clydesdale, 1982:750).
Yoghurt with a more intense colour was perceived to be sweeter than samples with a lighter colour (Calvo et al., 2001:103).

Consumer acceptance and liking of sugar reduction without the substitution of flavours or colours has further been explored in flavoured milk. A study regarding this found that the reduction of added sugar up to 40% in chocolate flavoured milk still achieved consumer liking (Oliveira et al., 2015:155). Another study also involving chocolate milk reported consumer liking up to 30% reduced sugar (Li et al., 2015:1464). This may suggest that the sugar content in flavoured milk products is excessive and could be reduced without a relative impact on consumers’ hedonic responses. By testing different thresholds of sweet taste within consumers, further research may indicate whether the gradual reduction of sugar in dairy products will be feasible.

Sugar reduction has been claimed to be one of the most effective strategies for decreasing sugar intake (Oliveira et al., 2015:148). South African consumers view sugar reduction as a bonus aspect of a food product should the taste and indulgence thereof not be impaired (Du Pont, 2017). The development of new dairy products with a low or reduced sugar value is therefore necessary in order to enable consumers to make healthier food choices by making healthier products available to them. Sugar should however only be substituted with ingredients which do not pose a threat to the healthfulness of a dairy product – otherwise the problem is merely shifted in another direction and does not contribute to finding a solution.

2.6. Consumer motivation
Motivation can be defined as the force within an individual, created by an unfulfilled need, which influences the behaviour of the consumer (Botha, 2013:28; Schiffman & Kanuk, 2014:74) or an arousal within the inner state of a consumer which leads to achieving a goal (Hoyer et al., 2013:45). Motivation is therefore a process which causes consumers to behave in the way that they do and is related to the reasons underlying consumer behaviour (Solomon et al., 2010:177; Thuy, 2015:6). It is therefore an including factor in the internal field of the Consumer Behaviour Model (Hoyer & Maclnnes, 2010:206; Schiffman & Kanuk, 2014:413). When an unfulfilled need is identified within the consumer, it creates a sense of tension and acts as a force in compelling them into action in an attempt to reduce or eliminate the need (Hoyer & Maclnnes, 2010:50; Solomon et al., 2010:177).
2.6.1. Different types of motivation

In order to form a better explanation, motives are divided into subgroups according to their nature as rational and emotional motives (Botha, 2013:37; Schiffman & Kanuk, 2014:78) and further by Solomon et al. (2010:180) as utilitarian, hedonic and symbolic motivation. Firstly, both rational and emotional motives work together within the consumer, with the rational motive focusing on logic and facts and the emotional motive focusing on subjective aspects such as pleasure and beauty (Botha, 2013:38). The rational motive of consumers will aid them in selecting a dairy product based on size, weight or price (Schiffman & Kanuk, 2014:78) and is related to the utilitarian motivation. Utilitarian or functional motivation is a non-social component related to the safety and physical well-being of the consumer (Hoyer & MacInnes, 2010:51) and places the emphasis on the objective, tangible attributes of the product (Solomon et al., 2010:181). Consuming a dairy product because of its health benefits and to fulfil the need of hunger is therefore related to this type of motivation (Labbe et al., 2015:56).

Motivation is further personally relevant and is connected with the self-concept of the consumer, which establishes an emotional connection (Hoyer et al., 2013:49). The emotional motive will base their choice on fear and affection towards the product including status (Schiffman & Kanuk, 2014:78) and is related to hedonic and symbolic motivation. Hedonic motivation is subjective, includes the need for sensory stimulation and reflects the desire an individual has for sensory pleasure (Hoyer & MacInnes, 2010:52; Solomon et al., 2010:181). Hedonically driven eating involves the sensory pleasure experienced when eating and the intent to eat for pleasure (Bakke et al., 2016:98; Vabo & Hansen, 2014:148). To support this statement, Holsten et al. (2012:64) explains that one of the main motivations of food intake, other than hunger, is the experience and expectation of pleasure - the wanting and liking of food (Labbe et al., 2015:56). The sweet sensation experienced when consuming a SDP and the preference consumers have for sweet tastes (Chollet et al., 2013:5501) is therefore related to this type of motivation. Symbolic motivation relates an individual to others and is externally directed towards the consumer’s social environment (Hoyer & MacInnes, 2010:51). In relation to this, consumers’ food choice is affected by the social milieu or culture they are surrounded by (Fotopoulos, 2009:199; Shepherd, 1999:807; Vabo & Hansen, 2014:146). Because food is most commonly eaten in the presence of others, social influence has a significant value when the motivation for food choice is explored (Nestlé et al., 1998:51).

Major motives of consumption adapted by Solomon et al. (2010:189) can be made applicable to dairy products. The motives of power, security, social acceptance and reward
can be explored. The power motive uses sugary products to energise oneself. The security motive causes the consumer to relive the feelings of a loved child when consuming a sweet dairy product. Social acceptance places the emphasis on sharing a product with others and the positive experience it brings with it. Allowing oneself to consume a sweet dairy product with a positive association can act as a reward.

2.6.2. Motivation in health behaviour theories

Health behaviour theories provide an explanation of why and how consumers refrain from risk behaviours and embrace health behaviours. In order to implement these behavioural changes, a consumer needs to be motivated to move towards a certain goal. Goals are set by the consumer in order to achieve the elimination of an unfulfilled need, which include attainment and maintenance goals. Attainment goals being goals which are aimed to achieve a desired state which differs from the current state, and maintenance goals already matching the current state and the attempt in maintaining this (Yang et al., 2015:94). Behaviour is affected by the outcomes a consumer expects to be produced by their actions (Bandura, 2004:144). For example, the consumer may set an attainment goal to reduce their intake of SDPs in order to improve their health, or a maintenance goal to keep their intake the same and aim the focus towards not increasing their consumption thereof. These goals are set with the aim to achieve certain outcomes regarding the consumer's health – lowering sugar intake avoids the consumer of the risk behaviour of overconsuming sugar, while it embraces the health benefits of lower consumption. This behaviour can be explained through health behaviour theories involving social cognition. These theories explain that the initial phase of behaviour, the motivation phase, involves the consumer developing an intention to act, therefore a goal. After this goal has been set and a behavioural intention is identified, the consumer enters the actual behaviour in which effort is invested (Schwarzer & Renner, 2000:488).

Motives are not purely behaviouristic, but involve a social and cognitive factor. Models that are grounded in the social-psychological theories of decision making and behaviour has been used in research regarding the determinants of food choice (Glanz et al., 1998:1119). Various psychological theories of health behaviour have indicated the effect of both social and cognitive factors on human health and disease (Bandura, 1998:623). In the context of this study, the negative outcomes on consumer health and well-being due to the overconsumption of sugar will act as the social factor, while the motivation of the consumer to choose SDPs will be the cognitive factor.
Five core determinants are identified by the social cognitive theory of Bandura (1998), all of which can be made applicable to the context of this study. These core determinants include knowledge regarding possible health risks and health practises supplying possible benefits, perceived self-efficacy indicating the control consumers have over their practised habits, outcome expectations of the benefits and costs of implementing health habits, goals consumers set for themselves and the perceived facilitators to the changes that they aim to make (Bandura, 2004:144). Firstly, it is important for the consumer to be knowledgeable regarding any health risks or benefits their current habits may pose. It is therefore necessary for consumers to know that sweetened yoghurt, drinking yoghurt and milk drinks contain high levels of sugar and to realise that despite the nutritional benefits of dairy, consuming these products frequently may pose a risk to their health. The belief of personal efficacy is secondly the foundation of human motivation and action, because it is necessary for consumers to believe that they can produce the desired effects of their actions. This determinant indicates that consumers can change their habits by choosing non-sweetened dairy options, consulting food labels for sugar content or using sweetened dairy products in moderation. Thirdly, the expectations consumers have of the outcomes of their behaviour will influence their decisions – when consumers are able to see how a habit change is in their self-interest, it will enhance their motivation to do so. Changing their behaviour, for example practising moderation when consuming SDPs, will lessen their risk of developing NCDs associated with the overconsumption of sugar. Consumers should further set both short and long term goals for themselves, for example lowering their sugar intake in the short term in order to reduce their risk of developing diabetes in the long term. Lastly, the perceived facilitators will act as barriers and prevent consumers to achieve improvement in their health behaviour. An example of such barriers is consumers only considering the fat content when choosing these SDPs and lacking knowledge regarding the high sugar content.

2.7. Consumer food choice

Food choice is the process of decision making within the consumer involving the selection and consumption of food and beverages, further concerning their eating behaviour involving what, when, where, how and with whom consumers eat (Sobal et al., 2006:1). Consumers are faced with making a food choice each day and perform this task with different levels of consciousness (Stanhope & Havel, 2010:15). Besides it being a physiological requirement, they base their decision of what to eat on several criteria (Jackson et al., 2003:298; Vabo & Hansen, 2014:145). What consumers buy and eat not only depends on individual factors, but includes biological, personal and environmental factors (Thuy, 2015:3; Vabo & Hansen, 2014:146). Biological factors are related to the signals the brain receives from different
senses and ultimately combine to form a sensory perception of the food, also including the sensation of hunger or satiety (Vabo & Hansen, 2014:148). Personal factors are related to the consumer self, resulting the food choice on to be based on subjective, psychological criteria which includes the consumer’s motives (Sijtsema et al., 2002:572). Environmental factors are external cues the consumer experiences from the environment they function in (Story et al., 2002:41).

A consumer’s food choice is therefore a complex behavioural process which is also formed by interpersonal influences from other consumers (Holsten et al., 2012:64) and, although it is a basic physiological need, it is affected by various different factors subjective to an individual’s situations, goals and values (Botha, 2013:28; Pohjanheimo & Sandell, 2009:459; Vabo & Hansen, 2014:145).

Motives for food choice are more reasonable when divided into categories according to their nature. Food choice motives according to Steptoe et al. (1995:272) include nine different aspects: sensory appeal, health, weight control, natural content, ethical concern, convenience, familiarity, mood and price. These aspects will all be relevant to this study and will be discussed briefly.

2.7.1. Sensory appeal
One of the main factors food choice is based on is taste (Whitney & Rolfes, 2011:3). The taste preference of the consumer is therefore the sensory qualities and taste of food products which can determine the acceptance of the food by the consumer and the choice to purchase the product (Vabo & Hansen, 2014:147). The experience of a product’s sensory qualities motivates its choice, e.g. low fat products are experienced as having a different mouthfeel and taste than regular products (Lahteenmaki, 2003:348). There are various studies indicating the preference that consumers have for high levels of sucrose in their food (Chollet et al., 2013:5501; Hoppert et al., 2013:6; Markey et al., 2015:138), which has also been proven to be true within SA regarding dairy fruit beverages (Visser, 2007:70). In addition, Thompson et al. (2007:4980) indicates the sweet taste of drinking yoghurt to be the main motivator for choice among consumers.

2.7.2. Health and weight control
A consumer will however not choose to consume a food product based solely on their perception of its sensory attributes (Shepherd, 1999:807). Food choice is also influenced by factors such as health and lead to consumers often making choices based on health or weight concerns rather than taste preferences (Hearty et al., 2007:9). However, a recent
study involving the food choice of sweet baked goods indicated that although SA consumers are generally open to a healthier version of the product; they do not accept them as a lifestyle choice (Du Pont, 2017). The possible health effects of a food product is something that in most cases are assumed and assessed through information on food labels by the consumer because these effects cannot be directly sensed or provide immediate feedback such as the sensory qualities would (Lahteenmaki, 2003:347). As one of the most popular fermented milk products worldwide, yoghurt is considered a nutrient-dense food because it provides a variety of nutrients in large amounts in relation to its energy content (Pohjanheimo & Sandell, 2009:459). Consumers have been proven to become more health conscious (Lando & Labiner-Wolfe, 2007:162; Nielsen, 2015:6) and health claims made on food labels are found to aid in motivating consumers in their decision to purchase yoghurt (Miklavec et al., 2015:31). Trends in purchasing dairy products have resulted in consumers choosing reduced-fat options and skim milks, indicating their awareness of health regarding fat content (Bakke et al., 2016:93). Motives of consumers for choosing calorie-reduced dairy products include healthiness and good taste (Johansen et al., 2011:23). Consumers are reported to increasingly avoid added sugar, although this statement is aimed mainly towards SSBs not including dairy (Kyle & Thomas, 2014:2483; McCarthy, 2014). The need therefore arises to inform consumers regarding this.

2.7.3. Natural content
In relation to the health aspects, the consumer considers the natural content of a food product. Consumers have been found to show an overall preference for ingredients that are natural or authentic, as synthetic ingredients are generally considered to be undesirable or harmful and food products containing it are viewed as a risk (Lahteenmaki, 2003:348; Wissgott & Bortlik, 1996:298). Food authenticity in milk and dairy products is considered especially important, due to the consumer having a high demand for quality regarding this natural product (Kamal & Karoui, 2015:44). The natural content of dairy products is jeopardised through fraudulent practise during processing such as mixing different types of milk and whey, using non-milk fat and oil, adding excessive amounts of water into milk or the addition of synthetic ingredients to neutralise or mask extra water or high solid contents (Kamal & Karoui, 2015:27).

2.7.4. Ethical concern
Health is however only one of the various aspects consumers take into consideration when making a food choice and Sun (2008:42) suggests going beyond the aspect of nutrition and health knowledge in order to investigate the motives a consumer has when making a specific food choice (Steptoe et al., 1995:268). Another, perhaps underrepresented, aspect that can
be measured is food choice based on ethical reasons (Steptoe et al., 1995:272). The ethical concern factor represents the political approval of the country of the food’s origin and labelling indicating environmental protection such as animal welfare (Lindeman & Vaananen, 2000:55). Animal welfare logos and the indication of organic practices are especially significant in dairy products (Grunert et al., 2014:178). The increasing concern and negative attitude of consumers towards the use of hormones in milk such as rBST (Recombinant Bovine Somatotrophin; a growth hormone) affecting consumer food choice relates to their food choice based on ethical concern (Chakraborty, 2005:633). Motives for food choice based on this factor are reinforced by food labelling containing logos such as Fair Trade and Rainforest Alliance (Grunert et al., 2014:177; Lindeman & Vaananen, 2000:55) and labels on dairy products indicating that it is hormone or rBST free will therefore motivate the consumer’s choice of purchase (Chakraborty, 2005:637). Choosing food products that are ethical is often driven by external social influences, as consumers consider choosing these products as beneficial for their reputation (Grunert et al., 2014:178).

2.7.5. Convenience
Adults, young adults and students often consider convenience as the most important factor in motivating them to make a food choice (Ensaff et al., 2015:4623; Marquis, 2005:55). This is mainly because of the pressures experienced due to limited time and the lack of participating in preparation and cooking activities (Marquis, 2005:62). Social changes such as the changes in family structures which have become common during recent years, also lead to adapted food habits and reduced time available for food selection (An & Sorensen, 2017:2; Connors et al., 2001:189). Yoghurt drinks are, for example, often chosen because they are portable and convenient to consume anywhere (Allgeyer et al., 2010:212).

2.7.6. Familiarity
Familiarity, often regarded by high-dogmatic or traditional consumers (Schiffman & Kanuk, 2014:107) as a very important factor in choosing a food product, involves the consumer being familiar with the product because it is something they usually eat or is similar to food they ate as a child (Steptoe et al., 1995:272). Older adults are found to have particularly habit-driven consumption behaviour (Van Til et al., 2015:525) and therefore consider this factor as important in determining their food choice. Familiarity may play a role in the food choice of dairy products by providing a memory of growing up and consuming sweet dairy products as a child (Solomon et al., 2010:189). Students in the UK reported their experiences and familiarity with a food product to strongly influence their food choice and preference (Ensaff et al., 2015:4624). Supporting this, South African consumers stated that
their choice of dairy fruit beverages was mainly motivated by the fact that they were familiar to them (Visser, 2007:69).

2.7.7. Mood
The mood of the consumer can further alter food choice, or food choice can alter their mood. This is due to the effect of food on the consumer – sensory pleasure may lead to a more positive mood, while food can also aid in relieving stress (Gibson, 2006:58). Both positive and negative emotions can influence food choice. Happiness generally serves as a motivator to choose a certain food product (Jackson et al., 2003:298), often encouraging nutritious food choices (Gardner et al., 2014:352). Sensory pleasure experienced from a SDP lets the consumer make a positive association (Thompson et al., 2007:4980) and can therefore positively influence the consumer’s mood. Food eaten under the circumstance of a negative mood state such as stress, anxiety, depression or boredom are often sweet, indulgent and high in carbohydrates and fat (Gardner et al., 2014:320).

2.7.8. Price
Both the price and value of a food product influence the consumer’s decision to choose it. The price is the amount of money charged for a product, while the value of a product relates the price to the perceived benefits of owning the product (Business dictionary, 2016). The price of a food product therefore relates to its affordability to the consumer. It also influences the consumer in their consideration of its perceived value, which includes the relation between the price, portion size and quality of the product (French, 2003:842). The cost of a food product was found to be most important in food choice among younger consumers, women and consumers earning a lower income (Glanz et al., 1998:1124; Visser, 2007:72). Price can however become less important when the perceived value of a product is considered to be high – consumers may choose the more expensive option because it is of good quality (Visser, 2007:72).

2.8. Measuring food choice and eating behaviour
There are various scales aiming to organise the wide variety of determinants for a consumer’s food choice, including the Food Choice Questionnaire (FCQ) and the Motivation for Eating Scale (MFES). A combination of these open source models will be used in this study, providing a more comprehensive explanation for the motives in choosing SDPs.
2.8.1. Food Choice Questionnaire
Firstly, the FCQ was developed by Steptoe et al. in 1995. This questionnaire aims to investigate consumers’ motives for food choice based on nine different aspects: sensory appeal, health, weight control, mood, convenience, natural content, price, familiarity and ethical concern (Steptoe et al., 1995:272), as have been discussed above. Reviewing the FCQ, Fotopoulos et al. (2009:206) found it to be a reliable instrument in the context where it was administered, but notes that results show variation in terms of the motives for food choice when the study is conducted using samples from different cultures. Due to this variation, it will be useful to investigate these food motives within the SA culture.

2.8.2. Motivation for eating scale
The MFES was created to evaluate the primary motives for the consumer’s eating behaviour by using 5-point Likert-type statements (Hawks et al., 2003:154). Since it has been used successfully in previous studies concerning food choice (Hawks et al., 2003:155), has been reviewed by Hawks et al. (2004:311) and tested for validity and reliability by Merrill (1997:64), it is considered a reliable instrument to measure the motives behind food choice within the contexts that it has been tested. The MFES is a comprehensive scale consisting of four subscales indicating the reasons why people initiate eating, why people stop eating, how people decide what to eat and how aware people are of sensation while they eat (Merrill, 1997:32). For the purpose of this study, only questions from the initiation of eating and how people decide what to eat subscales will be used, as these are related to food choice. Scores on these subscales are then classified according to four categories: emotional eating, physical eating, environmental eating and social eating (Hawks et al., 2004:309). These subscales rarely function separately. Hawks et al. (2004:319) found clear correlations between emotional eating, environmental eating and social eating; explaining that stimuli from the environment and social eating cues increase the susceptibility to hunger. Physical eating was however found to be unrelated to the other subscales by the same study. These categories will be used to classify scores in this study and is discussed briefly.

2.8.2.1. Emotional eating
Emotional decision making supports the view that consumers choose food products with the aim to obtain pleasure and fulfil a desire (Gibson, 2006:53). The pleasure experienced from eating a pleasant tasting food product is a strong motivator for future food choices (Lahteenmaki, 2003:347). Emotions and food choice can clearly interact with each other and a consumer’s emotions may often influence their eating behaviour (Gibson, 2006:53; Waller & Osman, 1998:420). Emotional eating is a form of coping mechanism for different emotional
states experienced by the individual, such as stress, frustration, boredom or loneliness (Boggiano, 2016:96; Waller & Osman, 1998:423). Women who respond with eating to emotional states tend to show unhealthy eating behaviour and choose food products such as fast food and sweets (Boggiano et al., 2014:164; Waller & Osman, 1998:423). It has been found that consumers show an emotional reaction towards dairy products such as milk, yoghurt, cheese and maas – consumers reported their behaviour regarding these products to be based on emotional aspects such as trust, enjoyment, quality of life and nurturing (Yao, 2013:184).

2.8.2.2. Physical eating
Physical or intuitive eating is the reaction to the body’s natural hunger sensations and hunger-induced feelings of weakness or fatigue indicating the need for food (Vabo & Hansen, 2014:147). This type of eating behaviour is performed with the functional properties of food in mind in response to hunger and satiety cues and will not occur in the absence of hunger (Avalos & Tylka, 2006:486). The physiological effects of food on the body may act in motivating the consumer to eat the product – an example of this would be coffee consumed for the refreshing effect it has due to the caffeine content (Lahteenmaki, 2003:347). The consumption of a dairy product because the consumer feels hungry will therefore be due to this motivation.

2.8.2.3. Environmental eating
Environmental eating is a consumer’s response to the stimuli received from the environment in which they function. This includes food advertising which reminds and exposes them to a product, smelling and seeing food while it is being prepared and driving past a restaurant that sells the product (Story et al., 2002:41). In SA, advertisements of SSBs including flavoured milk convey positive messages of happiness and well-being, leading consumers to believe that the consumption of these beverages would provide such outcomes (Boyd, 2014:45). Environmental stimuli received by the consumer may influence their decision to eat a SDP – such as a cold flavoured milk drink on a warm summer’s day or a convenience store close to their work environment. When a fast-food outlet or convenience store which sells the SDP is located near the consumer’s work or home environment, it will act as motivation to consume these products (Story et al., 2002:42).

2.8.2.4. Social eating
Most eating occurs in the presence of others (Nestlé et al., 1998:51). Social eating is the result of food being consumed in response to a social situation involving a group activity (Shepherd, 1999:807) and is found to be one of the most frequently endorsed food motives.
The social approval or disapproval which a consumer's eating behaviour causes, acts as a major influence (Bandura, 2004:44; Ensaff et al., 2015:4624). When consumers are with friends or colleagues at work who are eating SDPs or when someone buys it for them, they will be motivated to eat these products. It can be shared among friends while reflecting values of friendship and hospitality. Social level influences further include factors such as cultural values which are used in deciding which foods are considered to be acceptable or unacceptable to eat (Nestlé et al., 1998:51). Food products have a cultural value which the consumer compares with their own values and when these values correspond, the likelihood of choice and repetition will be increased (Vabo & Hansen, 2014:149). Culture, subculture and ethnic group serve as a foundation for choosing food products that are acceptable and considered proper, due to culture playing a significant role in forming dietary habits (Nestlé et al., 1998:51; Prescott et al., 2002:489). This value serves as a guideline for a consumer's food choice and provides a sense of security through familiar foods (Visser, 2007:8). Milk has always been one of the more dominant items in the African diet and it is often consumed in a fermented state (Beukes et al., 2001:189; Ukeyima et al., 2010:299). Culture is also credited as one of the main determinants in consumers’ taste preference in yogurt (DSM, 2014:4).

2.9. Consumer food choice and motives to eat

Literature distinguishes between food choice and eating behaviour (Kearny et al., 2000:219; Naughton et al., 2015:2; Nestlé et al., 1998:51; Renner et al., 2012:118). In relation to food choice and motivation, Naughton et al. (2015:9) indicate a positive and significant association between being motivated to eat healthily and choosing healthy food products. This means that a relationship can be seen between motives and food choice – the consumer will be motivated to eat a certain food product for a specific reason, and at the same time may be influenced to choose a food product for another reason. There is therefore a difference between a consumer’s motives to choose a food product and their motives to eat a food product. The motives of the consumer to choose a specific product relates to the reasons underlying the behaviour of this consumer to choose a specific food product – this may be to buy it for themselves or to buy it for others. The motives of the consumer to eat a specific food product relate to the consumer making the decision to eat it themselves. For example, a mother might choose to purchase full cream dairy products for her children as she views it as being healthy for them to consume, but chooses to eat low fat dairy products herself because she wants to lose weight. Her motives to choose and her motives to eat will therefore not be the same. Motives for eating and food choices may also overlap, for example being in a negative mood state can trigger eating, but can also influence the choice of specific foods, in this case comfort food (Renner et al., 2012:18).
It is evident that there are numerous factors that act in motivating consumers to make certain food choices. Some factors are considered more common than others and factors having the highest influence on consumers’ food choice vary according to situational aspects and variables such as the specific food product. It is further subjective to the socio-demographic influences on consumers.

2.10. Socio-demographic influence on food choice

The socio-demographic characteristics - the age, gender, marital or parental status, population group and financial status of the consumer may further also influence the consumer’s food choice and eating behaviour. These characteristics were included in the questionnaire and their influence on food choice of SDPs has therefore also been explored in this study.

2.10.1. Age

Age is a category where consistent behavioural differences regarding food choice have been noticed (Wardle et al., 2004:108). Most adolescents for example consume very few fruits and vegetables, much less than older age groups (Ensaff et al., 2015:4626; Granner et al., 2004:173). Interestingly, trends in the consumption of dairy products are different – longitudinal studies indicate a decline in milk consumption with age. Caucasian girls in the USA studied between the ages of 5-10 years showed a significant decrease in the consumption of milk as a beverage (Friorito et al., 2006:540). The increasing of age brings a variation in factors influencing the consumer’s food choice, often related to self-efficacy (Granner et al., 2004:179) and health awareness - children reaching adolescence tend to shift towards reduced-fat milk options (Dror & Allen, 2013:72). Asian adolescents in previous years showed a strong influence by taste and stated that they drink chocolate flavoured milk because they like the taste (Navotny et al., 1999:102). The food choices of older adults are mostly influenced by factors contributing to the quality of the diet and health factors (Locher et al., 2009:660). Older consumers find the nutritional content of food products to be more important than younger consumers, who tend to rate convenience and taste as a high priority (Glanz et al., 1998:1124; Locher et al., 2009:665).

Statistics showing high rates of sugar consumption among adults and children (WHO, 2016a; WHO, 2016b) may indicate unhealthy food choices made by adults for themselves and their children. Furthermore, the prevalence of diabetes rises together with the increase of age, which may indicate a correlation with unhealthy food choices (IDF, 2015).
2.10.2. Gender
Men and women prioritise differently when it comes to making a food choice, mostly due to their different health beliefs (Chao et al., 2016:43; Marquis, 2005:61; Wardle et al., 2004:108). For example, studies involving food choices in general indicate that women tend to rate health and weight control much higher than men, while men are more focused on the taste and convenience aspects of food (Courtenay et al., 2002:227; Glanz et al., 1998:1124; Wardle et al., 2004:109). Women have also been found to purchase more fruit and vegetables than men (Granner et al., 2004:176; Roos et al., 1998:1526), while men consume larger quantities of dairy products than women - not only due to physiological factors (Fulgoni et al., 2007:261). Interestingly, sugar consumption among SA consumers does not support these findings, and indicate that women consume more sugar than men – research regarding sugar consumption showed that men consume 52g of sugar per day (11% energy) and women 51g per day (15% energy) (Peer et al., 2013:4). Worldwide statistics of 2014 showed 11% of men and 15% of women were obese (WHO, 2014:80), and in SA 42% women and 13% men were obese by 2016 (WHF, 2016), which may further indicate unhealthier food choices among women than men.

2.10.3. Marital and parental status
Food choices are not limited to the domain of the individual and are often influenced by the family context on a household level (Flagg et al., 2013:2061; Ricciuto et al., 2006:779). Marriage was positively associated with food behaviour among both men and women, and men for example gain a great health advantage from being married, most likely due to an increased health influence on their food choice induced by women (Roos et al., 1998:1527). Divorce or becoming a widow/widower will also play a role - consumers who are single or living alone often spend less time cooking and preparing food, therefore assigning a high priority towards convenience products (Flagg et al., 2013:2062; Marquis, 2005:56) e.g. sugared yoghurt drinks. Parental status is a determinant for food choice behaviour, in particular for women responsible for choosing food for their children (Roos et al., 1998:1527). Parental modelling is responsible for the formation of food choices and eating behaviour of consumers at a young age (Granner et al., 2004:179). Dairy intake in children is influenced by parental attitude and practise regarding these products (Navotny et al., 1999:103).

2.10.4. Population group
The population group or race to which a consumer belongs plays a significant role in the formation of food choices and different population groups are influenced by different factors when making a food choice (Chao et al., 2016:43; Granner et al., 2004:173). Health beliefs
and what is considered to be a healthy diet depends on cultural conventions and varies among countries and population groups (Lahteenmaki, 2003:348). In the study by Granner et al. (2004:176) exploring the food choices of black and white consumers living in the USA, black consumers showed a higher social influence than white consumers, whereas white consumers reported greater family and environmental influence. Exploring cultural influence on food choice, Prescott et al. (2002:494) found Taiwanese and Malaysian consumers to equally consider health, weight control and natural content the main factors to influence their food choice. The price is considered by Japanese consumers and sensory appeal by New Zealanders as the most important factor. Consumption rates of yoghurt in Europe vary according to country, with the Nordic countries and the Netherlands having the highest rates (Saxelin et al., 2003:5). Studying Finnish consumers’ food choice regarding sweetened yoghurt, Pohjanheimo and Sandell (2009:465) found consumers who considered natural content, health, ethical concern and sensory appeal as the most important food choice motives to prefer yoghurt that is not too sweet.

Regarding South African consumers’ food choice, it is clear that certain traditional cultural values are being replaced by modern Western values which highly influence their food choices (Temple & Steyn, 2013:101). The black population, which makes up the vast majority of SA consumers, shows high intakes of added sugar which have not been previously consumed as part of the traditional diet (Temple & Steyn, 2013:100).

2.10.5. Financial status
Economic factors have a high influence on consumer food choice due to food producers’ control over supply (Visser, 2007). Food choice may be influenced by economic considerations such as access to food (Nestlé et al., 1998:50) and availability. Low income households in South Africa are often faced with the barrier of not having access to certain food products (Coetzee, 2015:110). When a food product is too expensive for a consumer to afford, the product can be considered unavailable to them. Access to food and food availability may be subjective to geographical factors and urbanisation - consumers living in wealthier neighbourhoods, for example, have more access to grocery stores and supermarkets and therefore a wide variety of foods, including dairy products (Popkin et al., 2005:604). Furthermore, the effects of education and income on food choice have been found to be differential (Ricciuto et al., 2006:787). A higher level of education, implying a higher financial status, was positively associated with food choices based on health concerns (Flagg et al., 2013:2068; Kearny et al., 2000:224).
Interestingly, dominant food choices in terms of dairy products among SA consumers from different socio-economic groups do not indicate a large variety. The poorest 30% of consumers in SA choose full cream milk, maas, yoghurt and powdered milk, which is the same for the wealthiest 20% of consumers only with the addition of low fat milk (BFAP, 2016:27). The consumption patterns of food products high in sugar also do not seem to be highly subjective to the financial status of a consumer. Consumers living in poor socio-economic circumstances in SA show high sugar consumption rates and indicate that sugar as an ingredient or added in a food product is a food choice they often make (Hattingh et al., 2013:8; Sheehy et al., 2013:446). Obesity is also no longer an issue confined to wealthy urban areas – rural women in low income areas of Latin America, the Middle East and North Africa are having a much higher prevalence of obesity than women in urban areas (Popkin et al., 2011:5). The same trend occurs in India, where obesity is witnessed side-by-side with undernutrition in poor rural areas (Chan, 2016). Overall, SA consumers indicate sugar as being a dominant food choice among all consumer income groups (BFAP, 2016:28).

2.11. Conclusion

It can therefore be concluded that in order to understand the motives of consumers to choose SDPs, it is necessary to understand all the aspects regarding sugar as an ingredient in food products, specifically sugared dairy, as well as consumer motivation and food choice as determining factors for these decisions to be made. Sugar is added to dairy products in order to improve its sensory characteristics and make it more appetising to consume. While the consumption of milk and dairy products should be encouraged as it is very nutritious and should be part of a healthy diet, the amount of sugar added to these products should be considered. The reason consumers choose these products, even though the high amount of added sugar poses a threat to its healthfulness, is unclear. Different psychological, environmental and socio-demographical factors have been proven to highly influence a consumer in their decision to make a food choice. When these factors are explored within consumers who make the decision to choose or to eat a SDP, the factors having the highest influence on their choice can be identified and the reason behind their choice will therefore become clear.
References


BFAP see Bureau for Food and Agricultural Policy


IDF see International Diabetes Federation


IDF see International Diabetes Federation

IDF see International Diabetes Federation. Date of access: 11 January 2017.


MPO see Milk Producers’ Organisation


SAMPRO see South African Milk Producers’ Organisation


WHF see World Heart Federation


WHO See World Health Organisation


Chapter 3: Methodology

3.1. Introduction
Sugared dairy products are commonly consumed in SA, however the reasons why consumers with health awareness choose and eat these products are not clear. Therefore, the purpose of this study was to: i) investigate consumers’ motives to choose SDPs; ii) investigate consumers’ motives to eat SDPs; iii) measure whether motives vary according to different socio-demographic characteristics and to iv) determine whether motives to choose and motives to eat SDPs are correlated. Respondents who took part in data collection are all consumers of flavoured milk, yoghurt or drinking yoghurt and provided insight on their motives to choose and to eat these products. Online questionnaires were sent to respondents’ e-mail addresses as facilitated by the Human Resources department of a nutrition company. This chapter provides information regarding the research process, sampling, data collection and analysis as well as the necessary ethical issues which has been addressed.

3.2. Research design
This study was quantitative in nature and employed a non-experimental study design, with a descriptive cross-sectional survey design. This study was conducted by means of a survey and used online questionnaires to collect data. It was conducted by measuring all the relevant variables at a specific time, with no repeated data gatherings. Data gathering took place by using surveys containing a series of questions to determine which factors influence the sample’s motives for choosing and eating SDPs and the results obtained were descriptive. Descriptive studies are often associated with the cross-sectional survey designs (Strydom, 2011:156). The questions that were asked determined food choice motives according to the categories used in the FCQ and the MFES, as discussed in chapter 2, section 2.8. An association between motivation and behaviour was found to become more pronounced with the increasing of age (Naughton et al., 2015:9) and variations in motives for food choice have been noted in different cultures (Fotopoulos et al., 2009:206; Pohjanheimo & Sandell, 2009:465; Prescott et al., 2002:494). Therefore, an analysis based on socio-demographics including gender, age, population group, financial and marital status was conducted in order to investigate the relation it has to food choice and eating behaviour regarding SDPs. Standardised questionnaires were adapted and used as a data collection method, which were distributed online. These questionnaires have been adapted by only using the questions it contains that can be applied to SDPs, as well as taking out sections of the MFES which are not relevant to the aim of this research.
3.3. Sampling

3.3.1. Study population

A non-probability purposive sampling method was used since the respondents required to partake in this study needed to comply with the inclusion and exclusion criteria (Maree & Pietersen, 2007:176-178). Please refer to section 3.4.1 for a discussion of these criteria. Only adult consumers were included in this study, both male and female who are permanently employed at the involved company (see following paragraph regarding the sample group). Consumers are considered adults when they are over 18 years of age and are allowed to give informed consent to participate in research for themselves. The demographic profile of respondents further included gender, age, population group, financial and marital status as these are all relevant to this research (chapter 2, section 2.10). Because online questionnaires were used as the method in collecting data, it was essential for respondents to have access to a computer, tablet or smartphone and the internet. This study involves the consumption of SDPs, therefore respondents needed to either consume at least one of the three SDPs (flavoured milk or yoghurt or drinking yoghurt), discussed in this study, regularly or have consumed it in the past. Respondents should therefore not have been allergic to dairy, as this will possibly prevent them from consuming these products. However, being lactose intolerant or diabetic were not an exclusion criteria, but being allergic to dairy prevented the respondent from participating in the study. This is due to lactose intolerant and diabetic consumers often being able to consume yoghurt products or dairy products in small amounts, but being allergic would prevent them from consuming these products altogether.

The sample group was from regional offices of a sports nutrition company in SA. The targeted offices are situated in suitable urban environments namely Centurion (Gauteng), Durban (KwaZulu-Natal), Stellenbosch (Western Cape), Bloemfontein (Free State) and Port Elizabeth (Eastern Cape). Because these offices are distributed across the country, a wide variety of respondents were reached who provided useful information regarding the motives for food choice within the SA culture. The chosen company aligns with this study’s aim to investigate the motives of consumers specifically with a health awareness. All permanent employees of this company acted as the targeted sample to conduct this research. The company has 211 employees in all the regions, which were all targeted as the population. These employees are all in possession of a company e-mail address and it is therefore inferred that they have internet access and were able to receive the questionnaire. In order to ensure that only the targeted sample was reached, the respondents were asked to indicate that they are permanent employees of the company by providing their personnel numbers. The company which served as the study location is a multi-cultural nutrition
institution, providing a diverse population with variation in different ethnic groups, languages, ages and genders.

The sports nutrition company was chosen because the company employs people who reflect the characteristic qualities of the brand - driven, committed to excellence, health-conscious and goal-driven. Quality and accountability are the company’s foundation values which are reflected in the way their staff conduct themselves, their business ethics and their products. Furthermore, they are dynamic and a fast growing company focusing on its understanding of consumers’ nutritional requirements, ensuring the maximisation of the brand’s ability to deliver, including educating consumers on product features and benefits. There has not been any conflict of interest. This company is not a sponsor of the study, but merely provided access to use its employees as the target population.

3.3.2. Description of the sample and sample size

The sample in this study was not a random sample but a survey of all employees who are available and willing to take part in this study, therefore a minimum sample size of 150 respondents was advised by the Statistical Consultation Services (SCS) of the North-West University (NWU) to be a suitable sample size in order to be able to perform meaningful factor analysis and a power calculation was not applicable.

A total of 94 respondents participated in the study, however due to inclusion criteria not being met, 19 respondents were prohibited to complete the questionnaire. The study sample ultimately included 75 respondents (n=75). This sample size was not reached due to inclusion criteria not being met by the respondents and a low response rate (45%) during data collection. Various employees were not allowed to continue with the questionnaire due to indicating a dairy allergy. Data collection lasted seven weeks from December 2016 to February 2017, during which it was advertised five times.

3.4. Data collection

Approximately one week before data gathering took place; advertising of the data gathering was done by sending an e-mail to respondents containing an advertisement of the proposed study in pdf format. The online questionnaire was subsequently distributed for completion to each permanent employee by sending it to the employees’ e-mail addresses as facilitated by the Human Resources department of the company.
3.4.1. Measurement instrument

The questionnaire (Appendix A) which was used for data collection is an online questionnaire, which consists of four sections. Before being allowed to start the questionnaire, respondents were presented with a letter of consent (Appendix B) and requested to read through it and give their permission that the researcher may use the data obtained. Consent was given by the respondents by clicking on the provided box which indicated that they agree to the informed consent form. After the respondent had read and accepted the consent form, the questionnaire commenced.

At the start of the questionnaire, respondents were presented with an information page which aided in familiarising them with the different SDPs which were mentioned in the questions. Section A followed, which addressed the inclusion criteria; then Section B which contained demographic and general information of the respondents including gender, age, population group, financial and marital status as well as their diabetic, BMI and physical activity status. The respondents' diabetic, BMI and physical activity status were included in this questionnaire to enable the researchers to explore any possible link between SDPs and these diseases within the target population. Respondents' BMI scores were calculated after requiring respondents to provide their height and weight. Section B further contained questions regarding the respondent's sugared dairy preference and intake, and their awareness or knowledge of these SDPs. These questions are not from standardised questionnaires, but have been formulated by consulting literature (Boggiano, 2016:96; Hawks et al., 2003:154; Jackson et al., 2003:298; Merrill, 1997:32). Section C (Motivation) and Section D (Food Choice) followed which both consisted of questions from previously validated questionnaires. These questionnaires include the MFES and FCQ scales as discussed in chapter 2, section 2.8.

Section C (Motivation) contained questions from the MFES (Hawks et al., 2003:154) which measures the respondent's eating behaviour regarding the involved SDPs. Respondents were asked how often the several statements exist regarding their eating behaviour, indicating this on a five point Likert type scale with the lowest score (1) indicating that the statement never exists and the highest score (5) indicating that the statement always exists when they consume the involved SDPs. Section D (Food choice) contained questions from the FCQ (Steptoe et al., 1995:272) which measures the respondent's motives for food choice regarding the involved SDPs. Respondents were lastly asked how often the several statements exist when they choose SDPs. This is indicated on the same five point Likert type scale with the lowest score (1) indicating that they never base their choice on the
applicable statement and the highest score (5) indicating that they always base their choice on the applicable statement.

Forming part of the questions in section A, respondents were requested to answer certain screening questions and meet the inclusion criteria namely that they are:

i. above the age of 18;
ii. permanently employed at the involved company;
iii. a consumer of or have ever consumed one of the three SDPs relevant to this study; and
iv. not allergic to dairy.

If respondents did not meet these requirements, they did not qualify to take part in this study. The questionnaire then automatically closed and sent a thank you notification. A function to submit the questionnaire was available once it had been completed. As soon as submission had taken place, respondents were presented with a page thanking them for their participation in the study and informed that they will be entered into a draw and stand a chance to win a voucher.

Incentives thanking the respondents for their time and effort were in the form of Woolworths vouchers, which respondents stood a chance to win. Once the questionnaire had been completed, respondents were entered into a draw. The draw took place once data collection had been completed, giving 10 respondents the chance to win a Woolworths voucher worth R100 each. The researchers were available by means of e-mail or telephone, should the respondents have had any questions during the research process.

As the company’s official business language is English and the language of the computer software used by employees is English, the questionnaire was only available in English. According to Casale and Posel (2011:385), English is generally the official spoken language within a corporate environment in SA. The online questionnaire was made available through the survey program Question Pro © (www.questionpro.com), which was self-administered electronically by the respondents.

3.5. Validity and reliability of the instrument

Although the original questionnaires achieved validity and reliability, these questionnaires were adapted and applied within different contexts. The validity and reliability of the questionnaire used for the present study needed to be determined again.
3.5.1. Validity

Validity refers to the extent to which the measuring instrument effectively measures what it is set out to measure (Delport & Roestenburg, 2011:173). For the purpose of this study, the validity indicated whether the questionnaire was successful in measuring consumers’ motives to choose SDPs. There are different types of validity which should be considered, including face, content and construct validity.

3.5.1.1. Face validity

Face validity, or whether the instrument appears at a glance to be valid (Delport & Roestenburg, 2011:174) was achieved by consulting experts in the field, such as the study leaders and personnel in Consumers Sciences with experience regarding research in food and consumer behaviour.

3.5.1.2. Content validity

Content validity indicates the validity of the research with regard to the concept it is set out to measure (Pietersen & Maree, 2007:217) therefore, whether it was able to measure motives of consumers to choose SDPs. In order to achieve content validity, existing questionnaires (MFES and FCQ) were used and the designing of the other sections of the questionnaire were done under the guidance of study leaders who have experience in the field of Food- and Consumer Sciences, as well as consulting a statistician. Qualified personnel within the department of Consumer Sciences who have background regarding the research topic, as well as Dr S. Ellis at the SCS of the NWU has been consulted in evaluating the questionnaire in terms of its ability to adequately represent the research topic. Having done a thorough literature study further supported both the content and construct validity.

3.5.1.3. Construct validity

Construct validity determined whether the instrument was valid in measuring the different constructs of the study – in this case motives in terms of the different subscales of the FCQ and the MFES. By performing a factor analysis, it was determined whether the different variables in the study are interrelated or not (Pietersen & Maree, 2007:219). Exploratory factor analysis (EFA) together with Principle Components Analysis (PCA) was employed for the scales in the measurement instrument to measure construct validity. Construct validity was confirmed by the EFA for all sections. Kaiser-Meyer-Olkin (KMO) values of the EFA were also acceptable for all sections. Please refer to chapter 4 for a comprehensive discussion regarding these values.
3.5.2. Reliability
The reliability of an instrument was indicative of whether the same results were obtained when the study was repeated within the same conditions (Malhotra, 2010:319). Internal reliability was evaluated by means of inter-item correlations using Cronbach’s alpha. Values closest to 0.8-0.9 indicate a highly reliable scale (Delpert & Roestenburg, 2011:177-178; Pietersen & Maree, 2007:216), therefore indicating that should the study be repeated, the instrument will obtain the same results. Cronbach alpha values indicated an internal consistency with acceptable internal reliability for all sections. The measurement instrument can therefore be classified as acceptable in terms of internal reliability. A more comprehensive discussion on Cronbach alpha values for each section follows in chapter 4. Together with the validity, EFA indicated a high reliability of all factors in the measuring instrument.

3.6. Data analysis
The measuring instrument included closed-ended structured questions which are easy to understand and conduct data analysis (Creswell, 2008:397; Maree & Pietersen, 2007:59). The program used in conducting the survey has the ability to ensure that all the sections and questions are compulsory to complete, therefore ensuring that all questionnaires were completed. The data obtained through the questionnaires was entered into an Excel spreadsheet which was password protected and the Statistical Package for Social Science (SPSS) was used to analyse the data. Descriptive statistics analysis was applied to all sections of the questionnaire, which includes frequencies, mean scores and standard deviations. Inferential statistics included EFA, Cronbach’s alpha, T-tests and non-parametric correlations. Effect sizes were considered for all statistics. Differences between variables were calculated using Cohen’s $d$-values. Associations between variables were calculated by using Spearman’s rank correlation coefficient ($r$). The demographic variables addressed in Section B of the questionnaire were analysed for descriptive statistics, where after the data was tested for validity and reliability. Correlations and differences were then determined between these demographic variables and the factors relating to the objectives of the study. The possible correlation between motives to choose and motives to eat SDPs were further determined. T-tests and non-parametric correlations were therefore used in order to indicate the relationships between a respondent’s socio-demographic characteristics and their motives, as well as the correlation between motives to choose and motives to eat SDPs.

Table 3.1 provides a summary of the variables that were analysed to achieve the aims specified in chapter 1 section 1.3.3.
Table 3.1: Operationalisation of data analysis

<table>
<thead>
<tr>
<th>Objective</th>
<th>Section in questionnaire</th>
<th>Statistical analysis</th>
</tr>
</thead>
</table>
| 1. Investigate consumers’ motives to choose SDPs                          | D                        | Descriptive statistics: Frequencies, mean scores and standard deviations
                                                                                      |                                          | Inferential statistics: EFA and PCA, Confirmatory factor analysis, KMO and Bartlett’s test, Cronbach’s alpha coefficient |
| 2. Investigate consumers’ motives to eat SDPs                             | C                        | Descriptive statistics analysis: Frequencies, mean scores and standard deviations
                                                                                      |                                          | Inferential statistics: EFA and PCA, KMO and Bartlett’s test, Cronbach’s alpha coefficient |
| 3. Measure whether motives vary according to different socio-demographic characteristics | B                        | Descriptive statistics analysis: Frequencies, mean scores and standard deviations
                                                                                      |                                          | Bartlett’s test
                                                                                      |                                          | Inferential statistics: Non-parametric correlations (Spearman’s rank correlation coefficient ) and T-tests |
| 4. Determine whether motives to choose and motives to eat SDPs are correlated | C&D                      | Descriptive statistics analysis: Frequencies, mean scores and standard deviations
                                                                                      |                                          | Inferential statistics: Non-parametric correlations
                                                                                      |                                          | Pearson’s equation (Spearman’s rank correlation coefficient ) and T-tests |

3.7. Data dissemination
Data will be disseminated according to the requirements of the company where data collection took place (Appendix C) by providing a copy of the final dissertation together with a summary. Respondents will be provided with an electronic infographic containing the results of this study and will further be informed that they can contact the researcher to request an electronic copy of the dissertation. By providing respondents with an infographic containing the results of this study, information is presented to them in a simplified manner which is easily referred to and can be conveniently viewed on a computer or electronic device. When such information is received, it may aid in raising awareness or educating this specific sample of consumers and enable them to make healthier food choices.
The results of this study will be published and therefore made available to use for anyone aiming to implement health or awareness programs regarding sugar intake. The dissertation is part of the student’s Master’s degree and possible publication of data in the form of a research article will occur.

3.8. Ethical considerations
The outlay and discussion of the following ethical considerations was stipulated as required by the Health Research Ethics Committee (HREC) of the NWU.

3.8.1. Approval
Ethical approval for this study was obtained (Appendix D) from the HREC of the Faculty of Health Sciences of the NWU (Reference number: NWU-00339-16-S1). Respondents were recruited by consulting the Human Resources department of the company included in this study. Before the study was conducted, its aim and nature were explained to respondents, leaving them with the decision whether or not to take part in this study. Participation in this study was voluntary and respondents were therefore not forced to participate. Respondents were reassured that they would not be disadvantaged in any way if they decide not to take part in this study. The employer was not informed whether or not the employees decided to take part in the study or not and none of the respondents’ identity or feedback was shared with the employer.

3.8.2. Informed consent
Informed consent forms (Appendix B) were provided to the respondents before data collection. The consent form explained the aim and nature of this study to respondents as well as the possible benefits and contribution of the study to the field of Health Science. The researcher’s personal details and contact information, as well as the contact information of the HREC, Faculty of Health Sciences of the NWU were provided. The exact procedures and instructions that needed to be followed in the completion of the questionnaire, as well as the duration of the completion of the questionnaire were explained. By providing a consent form, respondents were informed about any possible risks the study may pose, as well as provided guidelines on how to act if such an event should occur – they were informed that they could withdraw at any time during this study if they felt any discomfort. They were not required to make an immediate decision and were able to take time to decide whether or not to take part in the study. Respondents were not misled, nor was any information regarding the study withheld from them.
3.8.3. Confidentiality and right to privacy

The completed questionnaires were handled with confidentiality and personal information about the respondents was not made known to any party. Only the researchers had access to the personal information of the respondents, which included their e-mail addresses and personnel numbers. The principal investigator employed by the NWU was responsible for storage. Data obtained from the completed questionnaires was directly stored on the personal computer of the principal investigator in the Consumer Sciences building (F15) in room 112 of the NWU Potchefstroom Campus, where it is password protected. As there are only electronic versions of the data, this data will be deleted from the hard drive after seven years. Accessing the obtained data will require the permission of the primary investigator employed by the NWU. Only the researcher and the study leaders have the password. It is further considered unethical to do research without making the results known (Strydom, 2011:114). Results are published in the dissertation for Masters in Consumer Science. The company name or information of respondents is not made public through publishing in the final dissertation or research articles.

3.9. Conclusion

To achieve the objectives set out for this research study a quantitative, non-experimental research design was employed. Respondents employed at the involved nutrition company were recruited by using a non-probability purposive sampling method. Information regarding their food choices and eating behaviour of SDPs, as well as the influence of different factors on these choices were obtained from the study population.

Data collection took place through self-administered online questionnaires distributed via company e-mail addresses. The questionnaire addressed the socio-demographic characteristics of the sample and contained questions regarding their intake and awareness of SDPs. Their motives to choose and motives to eat these products were addressed through questions which had been adapted from previously standardised questionnaires. With assistance of the SCS, SPSS and Microsoft Excel were used to analyse the data. Validity of the questionnaire was achieved through consultation of SCS and professionals within the Consumer Sciences subject group, as well as Cronbach alpha values which were considered acceptable. Validity and reliability of the questionnaire were tested and confirmed using EFA and considering Cronbach alpha and KMO values. Research was conducted in an appropriate manner through the obtaining of ethical approval from the HREC of the Faculty of Health Sciences of the NWU.
References


Chapter 4: Results and discussion

4.1. Introduction
While statistics indicate that worldwide consumers’ sugar consumption is too high (Siervo et al., 2013:588; WHO, 2016a; Yang et al., 2014:6), SA consumers’ consumption rates are proven to be similarly problematic (Hattingh et al., 2013:8; Ronquest-Ross et al., 2015:5; Vorster et al., 2014:1479). Research shows that consumers are aware of the importance of limiting their sugar intake. However, this awareness is not reflected by their use of dairy products (DSM, 2015:2) and consumers may have the perception that all dairy products are healthy. Dairy products are widely consumed due to its health benefits, while the high sugar content of sugared dairy tends not to be taken into consideration (Chollet et al., 2013:5501). Various studies have investigated motives behind food choice, often based on sugared products. No research done in SA has however been found where a study based on both motives for food choice and SDPs has been conducted.

The motives of consumers who are employed at a nutrition company were explored in this study. Although it could not be assumed that all of these consumers are health conscious, it is a probability that they will have some kind of health awareness regarding sugar and added sugar in food products. It seemed likely that these consumers assume and regard flavoured milk and yoghurt products as healthy. Both consumer’s motives to choose and eat SDPs are however unclear and therefore were investigated. The influence of different socio-demographic characteristics on these motives was measured and a possible correlation between motives to choose and motives to eat SDPs was determined.

4.2. Inclusion criteria
Section A of the questionnaire (Appendix A) addressed the inclusion criteria of respondents which involved a series of screening questions. When the inclusion criteria (Chapter 3 section 6.4.1) were not met, the completion of the questionnaire was prohibited by the questionnaire program closing. Because this study involves the consumption of SDPs, respondents needed to either consume at least one of the three SDPs (flavoured milk or yoghurt or drinking yoghurt) regularly or have consumed it in the past. Lastly, respondents needed to indicate whether they are allergic to dairy and lactose intolerant. When consumers are allergic to dairy, it will most likely prevent them from consuming the involved products. While 90.4% of respondents who started the questionnaire were not allergic to dairy, 9.6% however were and they were therefore not allowed to proceed in participating in this study. When consumers are however lactose intolerant, they may still be able to consume certain
SDPs (such as yogurt) and the 9.8% of respondents who were lactose intolerant were therefore allowed to proceed with the questionnaire.

4.3. Demographic and general information

Section B of the questionnaire consisted of demographic information and questions regarding respondents’ general information relating to their health consciousness and awareness of sugar intake. Table 4.1 provides a summary of the demographic characteristics of the sample. Of the total of 75 respondents, 53.3% were male and 46.7% were female. The younger age groups were largely represented, with 96% being between the ages of 18 and 44. Population groups represented, consisted largely of white respondents (84%), followed by black (10.7%) and a small number of coloured (4%) and Indian (1.3%) respondents. In relation to this, respondents mostly indicated Afrikaans (69.3%) and English (21.3%) as home languages, with a few isiZulu (5.3%) and Xitsonga (1.3%) respondents. The sample represented a high socio-economic group as a large amount of respondents (46.7%) indicated their monthly income to be between R20 001 and R50 000 and 22.7% of respondents earn between R8001 and R20 000 per month. Lower income groups were in the minority – 24% earned between R0 and R8000 per month. High socio-economic groups are most often found in urban areas (Chan, 2016) – such as the offices targeted in the sample, thus supporting these findings. Lastly, respondents were more or less equally distributed according to marital status – 46.7% were single and 53.3% were married or living with a partner.

The Body Mass Index (BMI) scores of the respondents were determined to provide an indication of the health consciousness of the sample. The prevalence of obesity is measured by using the BMI, which takes into consideration a person’s height and weight (WHF, 2016). Excessive body weight is classified as obese once a BMI of 25 has been exceeded, both for men and women (Whitney & Rolfes, 2011:271). Please refer to Table E1 (Appendix E) for respondents’ BMI scores. The mean score for men and women combined was 25.6. Although this score may be classified as high, this information is supported with physical activity status, with reference to Table E2 (Appendix E). Respondents were asked to indicate the amount of times they participate in physical exercise per week. As were predicted, respondents lead an active lifestyle as 77.4% indicated that they exercise more than 3 times per week. Due to the fact that they are employed at a sports nutrition company whose products promote muscle building, it is also probable that high weight values may be due to muscle mass instead of high fat percentages.
Table 4.1: Frequencies and distribution of respondents’ demographics (n=75)

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>40</td>
<td>53.3</td>
</tr>
<tr>
<td>Female</td>
<td>35</td>
<td>46.7</td>
</tr>
<tr>
<td><strong>Age in years</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-24</td>
<td>21</td>
<td>28</td>
</tr>
<tr>
<td>25-34</td>
<td>35</td>
<td>46.7</td>
</tr>
<tr>
<td>35-44</td>
<td>16</td>
<td>21.3</td>
</tr>
<tr>
<td>45-54</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td><strong>Population group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>8</td>
<td>10.7</td>
</tr>
<tr>
<td>Coloured</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>White</td>
<td>63</td>
<td>84</td>
</tr>
<tr>
<td>Indian</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td><strong>Home language</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>16</td>
<td>21.3</td>
</tr>
<tr>
<td>Afrikaans</td>
<td>52</td>
<td>69.3</td>
</tr>
<tr>
<td>isiZulu</td>
<td>4</td>
<td>5.3</td>
</tr>
<tr>
<td>Xitsonga</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>2.7</td>
</tr>
<tr>
<td><strong>Approximate monthly income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R0-R4000</td>
<td>10</td>
<td>13.3</td>
</tr>
<tr>
<td>R4001-R8000</td>
<td>8</td>
<td>10.7</td>
</tr>
<tr>
<td>R8001-R20 000</td>
<td>17</td>
<td>22.7</td>
</tr>
<tr>
<td>R20 001-R50 000</td>
<td>35</td>
<td>46.7</td>
</tr>
<tr>
<td>Not disclosed</td>
<td>5</td>
<td>6.7</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/widow/widower/divorced</td>
<td>35</td>
<td>46.7</td>
</tr>
<tr>
<td>Married/living with a partner</td>
<td>40</td>
<td>53.3</td>
</tr>
</tbody>
</table>

The sample further did not contain any respondents who are classified as diabetics. Section B of the questionnaire also addressed respondents’ awareness of the actual sugar content of SDPs. Respondents thought that one serving of a sugared dairy product contains three to four teaspoons of sugar (Table E3, Appendix E). When referring to Table 2.1 in section 2.3 of chapter 2, it is evident that the sugar content of commercial SDPs is generally higher, as the average equivalent teaspoons of sugar per serving (4g per teaspoon) are 6. Respondents may therefore not be fully aware of the high sugar content in SDPs. As part of this section, respondents were asked to indicate how often they buy SDPs as a snack (Table E4, Appendix E). Results indicated that respondents do not buy these products often as a snack – 80% indicated that they only buy it once every two weeks or less. While this is in contrast with responses discussed in section 4.4 which indicate their food choice being due to them needing a snack at work, it may support findings in section 4.5 which indicate physical eating as the main motive to eat SDPs, which means that they eat it when they are
hungry. This may indicate that respondents view these products as part of a meal instead of a snack and do not classify these products together with other “snack foods”.

The second part of Section B in the questionnaire contained questions measuring health consciousness. These questions measured the extent to which respondents agree with eleven statements related to sugar; health and SDPs. Exploratory factor analysis was employed for the scales within the measurement instrument to determine construct validity. Table 4.2 depicts the factor loadings for the EFA for the scale used in Question 18 of the questionnaire regarding sugar intake and SDPs. These data yielded three factors which were labelled “Health awareness”, “NCDs” and “Product characteristics”. Health awareness was awareness and concern regarding sugar intake in general; NCDs were information regarding obesity and diabetes and the link with sugar consumption and Product characteristics were aimed at the sugar content of SDPs.

**Table 4.2: Summary of EFA of health awareness regarding sugar (Factor loadings from PCA)**

<table>
<thead>
<tr>
<th>Item in scale</th>
<th>Factor loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>I pay more attention to the amount of sugar added in a dairy product than I did 3 years ago</td>
<td>0.736</td>
</tr>
<tr>
<td>I care about my sugar intake</td>
<td>0.733</td>
</tr>
<tr>
<td>I am more concerned about the ingredients in dairy than I was 3 years ago</td>
<td>0.723</td>
</tr>
<tr>
<td>I am concerned about the amount of sugar in dairy</td>
<td>0.714</td>
</tr>
<tr>
<td>Do you think the consumption of sugar is unhealthy?</td>
<td>0.589</td>
</tr>
<tr>
<td>Dairy does not need additional sugar</td>
<td>0.437</td>
</tr>
<tr>
<td>Dairy with low or reduced sugar is better for my health</td>
<td>0.435</td>
</tr>
<tr>
<td>Do you think the intake of sugar causes diabetes?</td>
<td>0.739</td>
</tr>
<tr>
<td>Do you think the intake of sugar causes obesity?</td>
<td>0.739</td>
</tr>
<tr>
<td>I prefer dairy that is sweetened</td>
<td>0.809</td>
</tr>
<tr>
<td>Dairy is healthy, no matter the amount of sugar it contains</td>
<td>0.779</td>
</tr>
<tr>
<td><strong>Inter item correlation</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Cronbach alpha coefficient</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Mean factor score</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Standard deviation</strong></td>
<td></td>
</tr>
<tr>
<td><strong>KMO</strong></td>
<td></td>
</tr>
</tbody>
</table>

The extent to which a respondent agreed was measured on a Likert scale (1=Not at all; 4=To a great extent). The mean factor scores of respondents’ answers (Table 4.2) reflected
that they fairly agree with all these statements regarding Health awareness (mean=2.906), NCDs (mean=3.142) and Product characteristics (mean=1.880). Within the NCDs category, respondents agreed to a great extent with these statements, indicating that they are aware that overconsumption of sugar causes NCDs such as obesity and diabetes. Statements regarding Health awareness indicated that respondents care about their sugar intake (17.3% to some extent, 58.7% to a great extent, individual item in factor, Table E5 Appendix E) and within the Product characteristics category, 90% (48% not at all, 42.7% to some extent; individual item in factor, Table E5 Appendix E) of respondents indicated that they are aware that dairy with a high amount of added sugar is not healthy. Respondents however do not show a high concern for the amount of sugar in dairy – 60% only agreed to a small or some extent with this statement (41.3% to a small extent, 18.7% to some extent; individual item in factor, Table E5 Appendix E), while only 42.7% (22.7% to a great extent, 20% to some extent; individual item in factor, Table E5 Appendix E) indicated that dairy products do not need additional sugar. These findings support what the researchers suspected (chapter 1 section 1.2) that while these respondents show a health awareness regarding sugar and added sugar in food products, their motives to choose SDPs are in contrast with their health values and they may not be informed regarding the high sugar content in these products which they view as healthy.

By applying the KMO measure of sampling adequacy, the appropriateness of factor analysis is examined. High values (between 0.5 and 1.0) are considered to be acceptable (Field, 2009:647) and only values lower than 0.5 are considered unacceptable (Williams et al., 2010:5). The KMO value of 0.698 was therefore acceptable and deemed suitable to conduct a factor analysis by the SCS. Bartlett’s test for sphericity for correlation between items was also acceptable (value of 0.000) (Field, 2009:180). Health awareness had a mean inter-item correlation of 0.300, falling well within the recommended range of 0.15 to 0.55 (Pietersen & Maree, 2007b:227). Inter-item correlations for NCDs (0.608) and Product characteristics (0.425) also fell within this range and all the factors in this category therefore suggested a high correlation among the items.

Construct validity was therefore confirmed by the EFA and in doing so; the amount of data was successfully reduced. With regard to internal consistency, Cronbach’s alpha values closer to one indicate high levels of consistency, with a suggested cut off value of 0.6 (Delport & Roestenburg, 2011:177-178). This value is however lowered for psychological constructs, such as the constructs involved in this study (Pietersen & Maree, 2007a:216). According to the Cronbach alpha value, Health awareness (0.755) and NCDs (0.755) had an internal consistency with acceptable internal reliability, and Product characteristics (0.587), although lower was therefore still classified as acceptable in terms of internal reliability.
4.4. Consumers’ motives to choose SDPs

The first construct investigated in this study, was the motives of consumers to choose SDPs (section D in questionnaire, Appendix A) – therefore, the aspects acting as a motivation for food choice or the reasons why these consumers choose SDPs. These aspects were addressed according to nine different categories: sensory appeal, health, weight control, natural content, ethical concern, convenience, familiarity, mood and price as stipulated in the FCQ (Steptoe et al., 1995:272).

Exploratory factor analysis was used for the scales to determine construct validity and different loadings were however observed. When divided into four factors, factors did not yield according to factors from literature. Please refer to Table E6 (Appendix E) for factor loadings from PCA. It was therefore necessary to conduct Confirmatory factor analysis (Table 4.3) on the literature model and results obtained indicated a good fit among the factors according to the nine literature categories. Large correlations among factors were however evident, indicating that the factors can be grouped together statistically. A recommendation can be made to put this to the test by using a larger sample size in the future, by using a sample from SA.

**Table 4.3: Summary of Confirmatory factor analysis of motives to choose SDPs**

<table>
<thead>
<tr>
<th>Motives to choose</th>
<th>Inter item correlation</th>
<th>Cronbach alpha coefficient</th>
<th>KMO</th>
<th>Mean factor score (1=Never; 5=Always)</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>0.757</td>
<td>0.902</td>
<td>0.887</td>
<td>2.258</td>
<td>1.012</td>
</tr>
<tr>
<td>Weight control</td>
<td>0.586</td>
<td>0.809</td>
<td></td>
<td>1.950</td>
<td>0.872</td>
</tr>
<tr>
<td>Sensory appeal</td>
<td>0.622</td>
<td>0.822</td>
<td></td>
<td>3.179</td>
<td>0.974</td>
</tr>
<tr>
<td>Natural content</td>
<td>0.625</td>
<td>0.832</td>
<td></td>
<td>2.015</td>
<td>0.960</td>
</tr>
<tr>
<td>Ethical concern</td>
<td>0.590</td>
<td>0.816</td>
<td></td>
<td>1.920</td>
<td>0.968</td>
</tr>
<tr>
<td>Convenience</td>
<td>0.668</td>
<td>0.856</td>
<td></td>
<td>3.008</td>
<td>1.029</td>
</tr>
<tr>
<td>Familiarity</td>
<td>0.493</td>
<td>0.738</td>
<td></td>
<td>2.419</td>
<td>0.912</td>
</tr>
<tr>
<td>Mood</td>
<td>0.823</td>
<td>0.902</td>
<td></td>
<td>2.356</td>
<td>1.112</td>
</tr>
<tr>
<td>Price</td>
<td>0.600</td>
<td>0.750</td>
<td></td>
<td>2.508</td>
<td>0.975</td>
</tr>
</tbody>
</table>

The mean factor scores of respondents’ answers (Table 4.3) regarding these categories of motives to choose on the five point Likert scale (1=Never; 5=Always) reflected that these factors all have an influence on these respondents to some extent. Factors with a fairly greater influence were however indicated, which included Sensory appeal (mean=3.179), Convenience (mean=3.008) and Price (mean=2.508). The highest motivation for food
choice, Sensory appeal, indicated that respondents base their choice of SDPs on its taste and that a taste which they find acceptable and appealing, motivates them to choose this product. This supports research showing consumers’ preference for high levels of sucrose in food (Chollet et al., 2013:5501; Hoppert et al., 2013:6; Markey et al., 2015:138) including drinking yoghurt (Thompson et al., 2007:4980) and is also in line with SA consumers’ motives to choose dairy fruit beverages (Visser, 2007:70).

Secondly, respondents are motivated by the convenience aspect of SDPs. This supports research involving yoghurt drinks, which were found to be chosen because they are portable and convenient to consume anywhere (Allgeyer et al., 2010:212). A large number of respondents in this study (65.1% - individual item in factor, Table E7 Appendix E) indicated that they sometimes (43.9%) and often (21.2%) choose SDPs when they need a quick snack at work and because it is easily available to them in shops and supermarkets (69.7% - 37.9% sometimes, 31.8% often; individual item in factor, Table E7 Appendix E). These respondents function in a corporate environment and may experience limited time to prepare and cook food (Marquis, 2005:62). SDPs therefore act as a convenient snack or meal which does not require any preparation.

Respondents were also motivated by the price of the product. As discussed in chapter 2 section 2.7.8, the price of a food product not only involves the amount of money paid for it, but relates to the value which includes the portion size and quality thereof (French, 2003:842). Monetary value is the primary motivation for food and beverage purchases among SA consumers (Euromonitor, 2016). Although the price of food products are generally found to be most important to consumers earning a low income (Visser, 2007:72), these respondents from a high socio-economic group also consider the price. It is therefore evident that respondents consider SDPs as high quality and good value in relation to its price.

Other motives with a moderate motivation for the choice of SDPs included Familiarity (mean=2.419), Mood (mean=2.356), Health (mean=2.258) and Natural content (mean=2.015). Familiarity is found to particularly influence older adults’ consumption behaviour (Van Til et al., 2015:525) - this younger sample (Table 4.1 section 4.3) of respondents is therefore only moderately influenced by it. This may be due to younger consumers being slightly lower dogmatic and less habit driven in their decision making (Schiffman & Kanuk, 2014:107; Van Til et al., 2015:525). Secondly, the Mood of respondents did not largely influence their choice of SDPs. Respondents may therefore rely on different food products when searching for something to improve a negative mood state, such as...
other foods high in added sugar and carbohydrates (Gardner et al., 2014:320). Although research indicates that consumers have become more health conscious (Nielsen, 2015:6) and that health claims on yoghurt labels motivate consumers to choose it (Miklavec et al., 2015:31), Health only showed a moderate influence. Lastly, although food authenticity is considered as highly important in milk and dairy products (Kamal & Karoui, 2015:44), respondents were only moderately motivated by the Natural content in their choice of SDPs. The authenticity of these products and claims on dairy labels are therefore not factors which have a major influence on these consumers' food choice. Consumers are in general found to not believe these claims and only view it as a selling strategy (Westerveld, 2017) – this may influence their decision to choose the product or not. In relation to Price as a motive with a higher influence than natural content, products containing claims of authenticity and natural content are often more expensive than products without it. Reduced sales have been noticed in these product categories which generally carries a premium due to its added benefits (Euromonitor, 2016). These consumers view the price and value of products as important, which may indicate that they will choose products without these added benefits and cost.

Motives with a low influence on the motivation to choose SDPs were Weight control (mean=1.950) and Ethical concern (mean=1.920). Respondents therefore do not choose these products with the aim to lose weight, which indicates that while they view these products as healthy, they think that it would not contribute to weight loss. Ethical concern had the least amount of influence on food choice of SDPs. Ethical concern also rated as lowest among nine first world European countries (Markovina et al., 2015:31). Recent research regarding ethical claims on food labels indicates that these claims have become questionable (Westerveld, 2017). Consumers are uninformed regarding these claims and deceptive marketing exploits this. A label indicating “no hormones added” for example leads consumers to believe that the dairy product contains no hormones at all, while hormones naturally occur in all animal products (Malekinejad & Rezabakhsh, 2015:743). The claim that a dairy product is “rbST free” indicates that cows have been supplemented with this hormone in order to increase milk production. Because it is involved in a cow’s natural means of milk production, there is no difference in milk from these cows compared to those without supplementation (Westerveld, 2017). This claim is however widely used as a marketing strategy which aims to position this product as superior to others. Because this causes consumers to only become more confused, these marketing claims are often disregarded (Kaya, 2016:150) – as can be seen among respondents in this study.

The KMO value of 0.887 (Table 4.3) exceeded the standard and was therefore suitable to conduct a factor analysis. Bartlett’s test for sphericity for correlation between items was
acceptable (0.000) (Field, 2009:180). Mean inter-item correlations (Table 4.3) were all within the recommended range and all have a high correlation among the items in each category. The highest correlation was witnessed for Mood (0.823), while the lowest was for Familiarity (0.493). The Cronbach alpha value (Table 4.3) for each category indicated internal consistency with highly acceptable internal reliability – all values were close to the recommended 0.8 and 0.9, with the lowest value of familiarity being 0.738 and highest value of health and mood being 0.902.

4.5. Consumers’ motives to eat SDPs

The second construct investigated in this study (section C in questionnaire, Appendix A) was the motives of consumers to eat SDPs – therefore, the aspects acting as a motivation for eating behaviour or the reasons why these consumers eat SDPs. These aspects were addressed according to four different categories: Emotional eating, Physical eating, Environmental eating and Social eating as stipulated in the MFES (Hawks et al., 2003:154). Exploratory factor analysis was employed for the scales within the measurement instrument to determine construct validity. Factor loadings for the EFA can be seen in Table 4.4. The exact same factors which were used in the standardised questionnaire were achieved, which is ideal. Four factors were yielded – “Physical eating”, “Emotional eating”, “Social eating” and “Environmental eating”. Physical eating was eating because of hunger or a desired physiological effect provided by food, Emotional eating due to emotions or an emotional connection, Social eating in a social situation and environmental eating due to being exposed to the product within the environment.

The mean factor scores for respondents’ answers (Table 4.4) regarding these categories of motives to eat on the five point Likert scale (1=Never; 5=Always) reflected that these factors all fairly have an influence on these respondents as they indicated a fairly greater influence of the motives Physical eating (mean=2.175) and Social eating (mean=2.150), which indicate that these motives have a higher influence on their decision to eat SDPs.
Table 4.4: Summary of EFA of motives to eat SDPs (Factor loadings from PCA)

<table>
<thead>
<tr>
<th>Item</th>
<th>Physical eating</th>
<th>Emotional eating</th>
<th>Social eating</th>
<th>Environmental eating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have forgotten to eat and am starved</td>
<td>0.875</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Am physically hungry and food sounds good</td>
<td>0.834</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Am weak/lightheaded because I haven't eaten</td>
<td>0.824</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Realise it's mealtime, so I automatically eat</td>
<td>0.740</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feel physical hunger pains</td>
<td>0.707</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need comforting</td>
<td></td>
<td>0.854</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overconsume when under stress</td>
<td></td>
<td>0.795</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Want to treat myself</td>
<td></td>
<td>0.736</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Want to cheer up</td>
<td></td>
<td>0.736</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feel it is connected to a memory of happiness</td>
<td></td>
<td>0.725</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once started to eat, it's hard to stop</td>
<td></td>
<td>0.704</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reward myself after a challenging task – I feel I &quot;deserve&quot; it</td>
<td></td>
<td>0.642</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feel irritable when I haven't eaten</td>
<td></td>
<td>0.372</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feel bored</td>
<td></td>
<td>0.407</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Am with friends who are eating it</td>
<td>0.748</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don't want to offend someone who bought it for me</td>
<td>0.353</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>See something good at a checkout stand</td>
<td></td>
<td>0.441</td>
<td></td>
<td></td>
</tr>
<tr>
<td>See an advertisement of the product</td>
<td></td>
<td>0.345</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have tempting food in front of me</td>
<td></td>
<td>0.587</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Am busy preparing food</td>
<td></td>
<td>0.530</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inter item correlation</strong></td>
<td>0.497</td>
<td>0.405</td>
<td>0.347</td>
<td>0.435</td>
</tr>
<tr>
<td><strong>Cronbach alpha coefficient</strong></td>
<td>0.857</td>
<td>0.857</td>
<td>0.513</td>
<td>0.757</td>
</tr>
<tr>
<td><strong>Mean factor score</strong></td>
<td>2.175</td>
<td>2.050</td>
<td>2.150</td>
<td>2.064</td>
</tr>
<tr>
<td><strong>Standard Deviation</strong></td>
<td>0.726</td>
<td>0.752</td>
<td>0.943</td>
<td>0.649</td>
</tr>
<tr>
<td><strong>KMO</strong></td>
<td>0.719</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Respondents are therefore primarily motivated by physical eating motives to eat SDPs – this indicates that respondents consume yoghurt, drinking yoghurt or flavoured milk when they are hungry. This may be important to consider when these products, high in sugar, are eaten as a meal instead of other nutritious foods. This type of motivation to eat often originates in the physiological effects of the specific food product on the body, such as food providing needed energy in order to fuel all activities (Whitney & Rolfes, 2011:9). It is possible that a similar effect is present in SDPs, due to its sugar content – this may provide consumers with needed energy and therefore the motivation to eat it.

Secondly, respondents are motivated by social eating motives to eat SDPs – they therefore eat these products in a social situation when they are with other people and friends who are eating it and they will also eat it when someone buys it for them. Sugared dairy products
may be shared among friends while reflecting values of friendship and hospitality (Ensaff et al., 2015:4624).

Respondents were thirdly motivated by Environmental eating (mean=2.064), followed by Emotional eating (mean=2.050). These mean factor scores (Table 4.4) indicate that these motives only moderately motivated respondents to eat SDPs. This means that environmental stimuli may not have as high influence in motivating respondents to eat these products as the high influence that Boyd (2014:45) found regarding SSBs. The choice to eat a SDP is further not motivated by their emotions and when respondents should respond with eating towards a negative emotional state such as stress (Boggiano, 2016:96), SDPs will not be their first choice.

The KMO value of 0.719 (Table 4.4) was considered close to the standard and deemed suitable to conduct a factor analysis by the SCS. Bartlett’s test for sphericity was found to be acceptable (0.000) (Field, 2009:180). Mean inter-item correlations (Table 4.4) were all within the recommended range and therefore all have a high correlation among the items in each category. Physical eating had the highest mean inter-item correlation (0.497) and Social eating the lowest (0.347). Construct validity was therefore confirmed by the EFA and in doing so; the amount of data was successfully reduced. The Cronbach alpha value for each category indicated internal consistency with acceptable internal reliability, with the lowest value of Social eating (0.513) and the highest value of Physical and Emotional eating (0.857) (Table 4.4).

4.6. Consumers’ motives according to socio-demographic characteristics

The third construct investigated in this study (section B in questionnaire, Appendix A), was the influence of consumers’ socio-demographic profile on their motives and determining whether these motives vary according to these characteristics. This was addressed by determining the demographic profile of each respondent (Table 4.1 section 4.3) and then exploring the motives of consumers unique to each characteristic. Non-parametric correlations and T-tests (Field, 2009:179;324) revealed correlations between specific socio-demographic characteristics and motives to choose and to eat SDPs (Table 4.5). Characteristics with an influence on motives include gender, population group and marital status.
Table 4.5: Motives according to specific socio-demographic characteristics

<table>
<thead>
<tr>
<th>Socio-demographic</th>
<th>Motive</th>
<th>Mean (1=Never; 5=Always)</th>
<th>Standard deviation</th>
<th>r</th>
<th>Effect size (d)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender: Men</strong></td>
<td>Price</td>
<td>2.694</td>
<td>1.023</td>
<td>0.088</td>
<td>0.40</td>
</tr>
<tr>
<td><strong>Population group: Black</strong></td>
<td>Health</td>
<td>2.761</td>
<td>1.013</td>
<td>0.200</td>
<td>0.52*</td>
</tr>
<tr>
<td></td>
<td>Sensory appeal</td>
<td>4.047</td>
<td>0.558</td>
<td>0.013</td>
<td>0.99**</td>
</tr>
<tr>
<td></td>
<td>Convenience</td>
<td>4.000</td>
<td>0.860</td>
<td>0.007</td>
<td>1.10**</td>
</tr>
<tr>
<td></td>
<td>Price</td>
<td>3.285</td>
<td>0.809</td>
<td>0.031</td>
<td>0.87**</td>
</tr>
<tr>
<td><strong>Population group: White</strong></td>
<td>Social eating</td>
<td>2.232</td>
<td>0.962</td>
<td>0.321</td>
<td>0.37</td>
</tr>
<tr>
<td><strong>Marital status: Single</strong></td>
<td>Weight control</td>
<td>2.156</td>
<td>0.954</td>
<td>0.061</td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td>Ethical concern</td>
<td>2.166</td>
<td>1.026</td>
<td>0.043</td>
<td>0.47</td>
</tr>
</tbody>
</table>

Effect size: 0.2 = small; 0.5 = medium*; 0.8 = large**

Firstly, the effects of respondents’ gender on their motives to choose SDPs were investigated. Although past research regarding food choice indicate that men and women prioritise differently when it comes to making a food choice, mostly due to their different health beliefs (Chao et al., 2016:43; Marquis, 2005:61; Wardle et al., 2004:108), the health beliefs of men in this study did not influence their choice of SDPs in any different way than women’s beliefs did. Gender however did influence Price as a motive to choose SDPs (mean=2.694; d=0.40), indicating that men are more motivated by the price of these products in order to make the food choice. This supports findings regarding shopping motives which describe women to pay attention to uniqueness and assortment of goods and men to participate in a more logical and efficient shopping process, while being motivated by Price and value for money (Lewis, 2017; Schiffman & Kanuk, 2010:346).

Population group influenced the highest number of motives. These correlations involved white and black respondents and medium to large effect sizes were indicated. Firstly, black respondents were motivated by Health (mean=2.761; d=0.52). Health beliefs and what is considered to be a healthy diet depends on cultural conventions (Lahteenmaki, 2003:348). The belief that SDPs are healthy, may link with the traditional African diet which has always included milk and fermented dairy products (Beukes et al., 2001:189; Ukeyima et al., 2010:299), which is now projected towards SDPs and indicates the replacement of traditional cultural values with more Western values which includes higher levels of added sugar (Temple & Steyn, 2013:100). Black consumers were further motivated by Sensory
appeal (mean=4.047; $d=0.99$), Convenience (mean=4.000; $d=1.10$) and Price (mean=3.285; $d=0.87$) to choose SDPs, which supports findings from a study involving general food choice of consumers in the USA (Zein et al., 2016:18). White respondents were motivated by Social eating (mean=2.232; $d=0.37$) to eat SDPs. This is in contrast with previous research on food choices of black and white consumers in the USA and UK, where black consumers showed a higher social influence than white consumers (Cannuscio et al., 2014:16; Granner et al., 2004:176). It can therefore be assumed that there is a higher social influence on white consumers, perhaps due to SDPs being part of their culture and more generally consumed within a social situation.

When researching food choice, marital status is generally involved in aspects such as Convenience as a motivation for food choices in general - consumers who are single or living alone often spend less time cooking and preparing food, therefore assigning a high priority towards convenience products (Flagg et al., 2013:2062; Marquis, 2005:56; Marquis & Manceau, 2007:309). Single respondents in this study did however not show a higher influence from this motive, but were rather motivated by Weight control (mean=2.156; $d=0.42$) and Ethical concern (mean=2.166; $d=0.47$) when choosing SDPs. Weight control was similarly found to be one of the main motivators of single consumers’ food choice among young adults (Marquis, 2005:57). Single consumers generally choose food products for themselves and their health and aspects such as Ethical concern therefore becomes important. Single consumers often also have a larger expendable income than consumers who are married and need to choose products for their children or household (Marquis & Manceau, 2007:309). They are therefore able to buy more expensive products with added ethical and natural benefits.

4.7. Correlation between consumers’ motives to choose and motives to eat SDPs

The last construct investigated in this study, was a possible correlation between consumers’ motives to choose and motives to eat SDPs. Because literature distinguishes between food choice and eating behaviour (Kearny et al., 2000:219; Naughton et al., 2015:2; Nestlé et al., 1998:51; Renner et al., 2012:118), and past research have indicated a positive and significant association between these motives - for example being motivated to eat healthily and choosing healthy food products, it was useful to investigate whether a correlation can be found between the motives to choose and to eat SDPs. If a relationship is seen between motives to eat and motives to choose, it indicates that the consumer is motivated to eat a SDP for a specific reason, and at the same time may be influenced to choose a SDP for another reason. These aspects were addressed through Spearman’s correlation coefficient as a non-parametric statistic which involves the application of Pearson’s equation (Field,
The significance value for coefficients is \( p<0.001 \) (Field, 2009:179). Correlations were found between several motives as indicated in Table 4.6. Similar to the indication in section 4.3 that Physical eating is the most common motive to eat SDPs; this category was present in all correlations except with Mood. Weight control was not present in any significant correlations.

**Table 4.6: Correlations between motives to choose and motives to eat**

<table>
<thead>
<tr>
<th>Motive to choose</th>
<th>Motive to eat</th>
<th>p-value</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>Physical</td>
<td>( p&lt;0.001^* )</td>
<td>0.51</td>
</tr>
<tr>
<td></td>
<td>Environmental</td>
<td>( p&lt;0.001^* )</td>
<td>0.46</td>
</tr>
<tr>
<td>Sensory appeal</td>
<td>Physical</td>
<td>( p&lt;0.001^* )</td>
<td>0.43</td>
</tr>
<tr>
<td>Natural content</td>
<td>Physical</td>
<td>( p&lt;0.001^* )</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>Environmental</td>
<td>( p&lt;0.001^* )</td>
<td>0.43</td>
</tr>
<tr>
<td>Ethical</td>
<td>Physical</td>
<td>( p&lt;0.001^* )</td>
<td>0.45</td>
</tr>
<tr>
<td>Convenience</td>
<td>Physical</td>
<td>( p&lt;0.001^* )</td>
<td>0.47</td>
</tr>
<tr>
<td>Familiarity</td>
<td>Physical</td>
<td>( p&lt;0.001^* )</td>
<td>0.63</td>
</tr>
<tr>
<td></td>
<td>Emotional</td>
<td>( p&lt;0.001^* )</td>
<td>0.43</td>
</tr>
<tr>
<td></td>
<td>Social</td>
<td>( p&lt;0.001^* )</td>
<td>0.52</td>
</tr>
<tr>
<td>Mood</td>
<td>Emotional</td>
<td>( p&lt;0.001^* )</td>
<td>0.51</td>
</tr>
<tr>
<td>Price</td>
<td>Physical</td>
<td>( p&lt;0.001^* )</td>
<td>0.46</td>
</tr>
<tr>
<td></td>
<td>Environmental</td>
<td>( p&lt;0.001^* )</td>
<td>0.50</td>
</tr>
</tbody>
</table>

*Correlation significant at 0.001 level (2-tailed)*

Firstly, there is a significant correlation between Health and Physical eating (\( p<0.001; r=0.51 \)). This means that while the consumer is motivated to eat something because they are hungry, they are influenced by a motivation to make a healthy food choice. As discussed in section 4.3, this motivation to eat also relates to the physiological effect the food product has – when these consumers therefore look for a source of energy but still want to make a healthy food choice, it leads to the choice of a SDP – respondents especially view yoghurt and yoghurt drinks as a healthy snack. Secondly, Health significantly correlated with Environmental eating (\( p<0.001; r=0.46 \)). When these consumers are therefore influenced by environmental stimuli such as food advertising or the product being available in a convenience store nearby, the motivation to make a healthy food choice once again directs the consumer towards making the choice of a SDP.

A correlation is further significant between Sensory appeal and Physical eating (\( p<0.001; r=0.43 \)). It has been established that respondents choose these products because they like its taste (section 4.2) and this correlation indicates that when respondents are hungry, the pleasant taste of SDPs motivate them to make the food choice. It may further also be
necessary to consider the physiological motivation involved here – the consumer is motivated to eat the product due to a certain effect it has on the body, giving a more comprehensive experience than merely the satisfaction of hunger. While consuming a SDP, the enjoyment of the taste and flavour releases endorphins which enhance positive states of mind and acts as an added benefit to the eating experience (Clark, 1998:639).

Natural content showed significant correlations with both Physical (p<0.001; r=0.50) and Environmental eating (p<0.001; r=0.43). This means that when these respondents are hungry and when they are influenced by environmental stimuli, they look for products that contain natural or authentic ingredients rather than synthetic ingredients which they view as being harmful and a possible risk (Kamal & Karoui, 2015:27; Lahteenmaki, 2003:348). This relates to the health consciousness of these respondents.

Ethical concern and Physical eating were significantly (p<0.001; r=0.45) correlated. Labels on dairy products which indicate that it is hormone or rBST free will therefore motivate the consumer’s choice of purchase (Chakraborty, 2005:637; Grunert et al., 2014:178), should the motive of ethical concern be present in the respondent’s decision making process. These consumers therefore choose differently when they eat the product themselves – while their motives to choose involved Price being more important than Ethical concern, their motive to eat indicates that they choose differently. Ethical concern therefore becomes more important to the consumer when eating the product themselves than when a product choice is made, therefore a correlation can be witnessed between these motives.

Convenience significantly correlated with Physical eating (p<0.001; r=0.47). When these respondents are hungry, they need something convenient to consume due to them functioning in a corporate environment and most likely not having much time to prepare and cook food. Sugared dairy products relate to this – as seen in section 4.2, a large amount of respondents in this study indicated that they choose SDPs when they need a quick snack at work. This indicates that when they are hungry, a SDP is a convenient meal which does not require any preparation.

Familiarity showed significant correlations with the highest amount of motives - with Physical eating (p<0.001; r=0.63), Emotional eating (p<0.001; r=0.43) and Social eating (p<0.001; r=0.52). Firstly, the correlation with Physical eating shows that when respondents look for a food product to eat to satisfy hunger, they search for something which is familiar to them or something which they normally eat. This indicates a kind of habit-driven consumption behaviour in the choice of SDPs which supports research among SA consumers indicating
that their choice of dairy fruit beverages was mainly motivated by the fact that it was familiar to them (Visser, 2007:69). Emotional eating secondly correlated with Familiarity, which then suggests that SDPs have an emotional connotation, such as a memory of growing up and consuming sweet dairy products as a child (Solomon et al., 2010:189). This is also in line with findings from Visser (2007:69), as a familiar food product provides a sense of security. The third correlation with Social eating may direct towards the correspondence of SDPs with the respondent’s cultural values. These values serve as a guideline for a consumer’s food choice and provide a sense of security through familiar foods (Visser, 2007:8), due to culture playing a significant role in the forming of dietary habits while growing up (Prescott et al., 2002:489).

Mood and Emotional eating were significantly correlated (p<0.001; r=0.51), which perhaps would be an expected correlation. It has already been established that respondents like the taste of SDPs and the pleasure experienced from eating a pleasant tasting food product has a positive effect on the mood state of an individual (Gardner et al., 2014:320; Lahteenmaki, 2003:347). It has also been found that consumers, who respond with eating towards being in a bad mood, tend to choose sweet tasting food products (Boggiano et al., 2014:164) in this case SDPs.

Price significantly correlated with both Physical eating (p<0.001; r=0.46) and Environmental eating (p<0.001; r=0.50). As discussed in section 4.2, respondents view commercial SDPs as good quality and good value for their money. When respondents therefore are looking to satisfy their need of hunger, they still would not choose a product without considering its price. At the same time, when influenced by environmental stimuli such as advertising or being exposed to the product within the environment, respondents will take the price and value of the product into consideration before making a choice.

4.8. Conclusion

The motives of consumers (n=75) who are employed at a nutrition company to choose and to eat SDPs were investigated in this study. It was found that these consumers are health conscious, lead an active lifestyle and have a health awareness regarding sugar, added sugar in food products and the health implications of the overconsumption of sugar. It is evident that they may however not be completely aware of the high added sugar content of SDPs. It is likely that these consumers assume and regard flavoured milk and yoghurt products as healthy.
The top three motives to choose SDPs in descending order of influence were Sensory appeal, Convenience and Price. Respondents were therefore primarily motivated by the taste of a SDP in order to choose it. Secondly, the convenience aspect of SDPs acted as motivation for food choice—these products are convenient to consume anywhere, such as at the office, and do not require any preparation. The price of these products further also motivated respondents’ choice. These respondents, although from a high socio-economic group, consider SDPs as high quality and good value in relation to its price.

Motives to eat SDPs with the highest influence included Physical eating and Social eating. Respondents therefore primarily eat SDPs when they are hungry, or when the physiological effect of sugar to supply energy is needed. These products, although nutritious, are high in sugar and are viewed by respondents as a meal rather than a snack, which may have negative health implications. Social situations further act as motivation for respondents to eat SDPs, which includes being around friends who are eating the product and receiving the product from someone who bought it for them.

Motives according to socio-demographic characteristics showed that gender, population group and marital status all influence the choice of SDPs. Male respondents were more motivated by the Price of these products in making their food choice (mean=2.694; d=0.40), black respondents were more motivated by Health (mean=2.761; d=0.52), Sensory appeal (mean=4.047; d=0.99), Convenience (mean=4.000; d=1.10) and Price (mean=3.285; d=0.87) than white respondents, while white respondents showed a higher motivation from Social eating (mean=2.232; d=0.37) to eat SDPs. Single respondents were more motivated by Weight control (mean=2.156; d=0.42) and Ethical concern (mean=2.166; d=0.47) than respondents who were married or living with a partner.

Correlations between motives to choose and motives to eat SDPs were determined. Significant correlations were present between Health and Physical eating (p<0.001; r=0.51) and Environmental eating (p<0.001; r=0.46). When respondents look for something to eat as a source of energy or when they have been influenced by environmental stimuli but still want to make a healthy food choice, it leads to the choice of a SDP. This supports the conclusion that respondents view SDPs as healthy. Secondly, a correlation was significant between Sensory appeal and Physical eating (p<0.001; r=0.43) – when respondents are hungry, the pleasant taste of SDPs motivate them to make the food choice. Natural content showed significant correlations with Physical (p<0.001; r=0.50) and Environmental eating (p<0.001; r=0.43). When these consumers are hungry and when they are influenced by environmental stimuli, they look for products that contain natural or authentic ingredients. Ethical concern
and Physical eating were significantly (p<0.001; r=0.45) correlated. This indicates an important conclusion that involving the ethical concern aspects of SDPs, there is a difference in the outcomes regarding the motives to choose and the motives to eat these products.

Convenience significantly correlated with Physical eating (p<0.001; r=0.47). When these respondents are hungry, they need something convenient to consume due to them functioning in a corporate environment and most likely not having much time to cook and prepare food. Significant correlations were further present between Familiarity and Physical eating (p<0.001; r=0.63), Emotional eating (p<0.001; r=0.43) and Social eating (p<0.001; r=0.52). It can be concluded that while being motivated by all these categories to eat, respondents search for a food product which is familiar to them or something which they normally eat. Further significant correlations include Mood and Emotional eating (p<0.001; r=0.51). Sweet tasting foods eaten due to a being in a bad mood may direct respondents toward SDPs. Lastly, Price significantly correlated with Physical eating (p<0.001; r=0.46) and Environmental eating (p<0.001; r=0.50). Respondents therefore still take the price and value of the product into consideration after being influenced by being hungry or being exposed to environmental stimuli.
References


WHF see World Heart Federation


Date of access: 11 January 2017.


Chapter 5: Conclusion

5.1. Introduction
This study targeted consumers employed at a nutrition company and employed a non-experimental study design, with a quantitative descriptive cross-sectional survey design and a purposive sampling method. By using surveys in the form of online questionnaires, this study aimed to investigate these consumers’ motives to choose SDPs. In doing so, these consumers’ motives to both choose and eat SDPs were investigated, where after it was measured whether these motives vary according to different socio-demographic characteristics. It was lastly determined whether motives to choose and motives to eat SDPs are correlated. The empirical findings are discussed in Chapter 4, with a synthesis provided in this chapter.

5.2. Conclusion
In order to understand the motives of consumers employed at a nutrition company to choose SDPs, it was necessary to comprehend all the aspects regarding sugar as an ingredient in food products, specifically sugared dairy, as well as consumer motivation and food choice as determining factors in consumer behaviour. Sugar is added to dairy products in order to improve its sensory qualities and make it more appealing to consume. While the consumption of milk and dairy products should be encouraged as part of a healthy diet, it is important to consider the amount of sugar added to these products. High amounts of added sugar intake have been linked with various NCDs, including obesity and type 2 diabetes. The reason why these consumers who have health awareness choose SDPs was not clear and was therefore investigated in this study. The factors having the highest influence on these consumers’ food choice and eating behaviour was identified and the reasons behind these decisions therefore became clear.

5.2.1. Health awareness of respondents
Although the respondents can be categorised as health conscious, it was found that they may not be fully aware of the high sugar content in SDPs. Respondents care about their sugar intake and indicated that they are aware that dairy with a high amount of added sugar is not healthy. They do however not show a high concern for the amount of sugar in dairy and indicated their preference for dairy containing additional sugar. These findings support what the researchers suspected that while respondents show a health awareness regarding sugar and added sugar in food products, their motives to choose SDPs are in contrast with
their health values and they may not be informed regarding the high sugar content in these products which they view as healthy.

5.2.2. Motives to choose sugared dairy products
Through investigating these consumers’ motives to choose SDPs, it was found that Sensory appeal; Convenience and Price have the highest influence on respondents' choice of SDPs. These consumers therefore choose SDPs because they like its taste, because it is a convenient snack or meal to consume anywhere and because these products are considered to be of high quality and good value in relation to its price. Categories with a moderate influence in choosing SDPs included Familiarity, Mood, Health and Natural content, while categories with the lowest influence were Weight control and Ethical concern. Familiarity often influences older consumers – thus only moderately influencing this younger sample. In relation to Emotional eating motives not highly influencing respondents’ eating behaviour, the mood of respondents did not highly influence their choice of SDPs. Health also showed only a moderate influence, indicating that health claims on these products perhaps do not have a high influence in motivating respondents to choose it. Products that contain claims of authenticity and natural content are often more expensive. These consumers view the price and value of products as important, which indicate that they will choose products without these added benefits and cost, therefore the moderate influence from Natural content. Categories with the lowest influence indicate that respondents think that these products do not contribute to weight loss and are also not influenced by ethical aspects regarding milk or dairy products. Similar to claims regarding Natural content, claims of Ethical concern are often disregarded and the consumers in this study are therefore not motivated by this aspect in choosing SDPs.

5.2.3. Motives to eat sugared dairy products
Respondents’ motives to eat SDPs revealed that Physical eating and Social eating motives have the highest influence. Respondents therefore consume yoghurt, drinking yoghurt or flavoured milk primarily when they are hungry, or when they need energy which the sugar provides. This is supported by results from section B in the questionnaire, which indicated that respondents view these products as part of a meal instead of a snack. Respondents also eat SDPs in a social situation when they are with friends who are eating it and they will also eat it when someone buys it for them. A moderate influence from Environmental eating and Emotional eating motives were reported. The choice to eat a SDP is therefore not strongly linked to these consumers’ emotions and SDPs are not eaten as a response to a negative emotional state.
5.2.4. Motives according to socio-demographic characteristics

Characteristics with an influence on motives include gender, population group and marital status. Gender correlated with Price, indicating that men are more influenced by the price of SDPs when choosing it. Men are generally more motivated by aspects such as Price and value for money in order to conduct a logical and efficient shopping experience, as were respondents in this study. Population group was found to influence several motives. Black respondents were motivated by Health, Sensory appeal, Convenience and Price to choose SDPs. The belief that SDPs are healthy, may link with the traditional African diet which has always included milk and fermented dairy products. This is now projected towards SDPs and indicates the replacement of traditional cultural values with more Western values which includes higher levels of added sugar. White respondents were motivated by Social eating to eat SDPs, and therefore show a higher social influence from these products. Marital status lastly correlated with two motives to choose SDPs - single respondents were motivated by Weight control and Ethical concern. Single consumers generally choose food products for themselves and their health and aspects such as Ethical concern therefore becomes important. Because they have a larger expendable income, they are able to buy more expensive products with added ethical and natural benefits.

5.2.5. Correlations between motives to choose and motives to eat sugared dairy products

Concluding the study, it was determined whether a correlation is evident between motives to choose and to eat SDPs. A significant (p<0.001) correlation was found between Health and Physical eating. Respondents therefore view SDPs as healthy to eat when they are hungry. Health also significantly (p<0.001) correlated with Environmental eating. When respondents are therefore influenced by environmental stimuli such marketing or the product being easily accessible, the motivation to make a healthy food choice directs the consumer towards choosing a SDP. A correlation is further significant (p<0.001) between Sensory appeal and Physical eating. It has been established that respondents choose these products because they like its taste and when respondents eat SDPs, the enjoyment of the taste and flavour releases endorphins which could motivate future choice. Natural content showed significant (p<0.001) correlations with both Physical and Environmental eating. When respondents are hungry and when they are influenced by environmental stimuli, they look for products that contain natural or authentic ingredients. This relates to the health consciousness of these respondents. Ethical concern and Physical eating were significantly (p<0.001) correlated. Although Ethical concern was found to have a low influence on the choice of SDPs, these consumers choose differently when they eat the product themselves. Ethical concern
becomes more important to the consumer when the product is eaten themselves than when a product choice is made.

Convenience was significantly (p<0.001) correlated with Physical eating. When these respondents are hungry, they need something convenient to consume due to them functioning in a corporate environment and most likely not having much time to prepare and cook food. Familiarity showed significant (p<0.001) correlations with the most motives - with Physical eating, Emotional eating and Social eating. When respondents look for food to eat to satisfy hunger, they search for something which is familiar to them or which they normally eat. The Emotional eating motive indicates that a familiar food product provides a sense of security when it is eaten. The correlation with Social eating may indicate the correspondence of SDPs with respondents’ cultural values, which plays a role in the forming of dietary habits. Mood and Emotional eating were significantly (p<0.001) correlated, which indicates that the when respondents eat these products which they find pleasant in taste, it has a positive effect on their mood state. Price significantly (p<0.001) correlated with both Physical eating and Environmental eating. When respondents therefore are looking to satisfy hunger, they would not choose a product without considering its price. When influenced by environmental stimuli, respondents will take the price and value of the product into consideration before making a choice.

5.3. Contribution of the study
This study contributed to health research regarding sugar consumption and consumer behaviour research in SA. Insight on consumers’ food choice was provided, which may be beneficial for both the consumer and industry. This can provide the dairy industry with better insight regarding the behaviour of the consumer, enable better product positioning and provide guidance in new food product development. It was evident through respondents’ answers that they view these products as part of a meal instead of a snack. These products can therefore be positioned in this way if companies aim to appeal to this specific target market. Information obtained can be used as a basis to educate consumers regarding their choice of SDPs and more specifically, the sugar content of these products. Through the dissemination of results, the employees who participated in this study will obtain awareness regarding the high sugar content of sugared dairy, which it was evident that they are not fully aware of, as well as the health implications of consuming it too frequently. A better understanding of their own food choice motives will further enable them to make an informed decision regarding the products they choose. This could make the transition towards healthier dietary habits possible. The results of this study will be made available to the company in the form of processed data, which may be used for research and/or marketing.
purposes (see Appendix C). Because this study is the first of its kind in SA, the results of this research serve as baseline research for future studies. As discussed in chapter 4, many of the results differ from previous research done regarding the food choice of other food products or among other samples of consumers. The results obtained can also aid in developing wellness and awareness programs, especially regarding added sugar in dairy products. Results from this study indicated the lack of knowledge in terms of the sugar content of SDPs among consumers who are health-conscious – this will complement the dietary survey and health outcome data in process of the FBDG evaluation and revision in the future.

5.4. Limitations
Because this study made use of a non-probability, purposive sampling method which targeted specifically consumers employed at a nutrition company, these results cannot be generalised. In order to generalise the results to a wider population, it can be recommended to use a different sampling method such as random sampling. Although the nutrition company is multi-cultural, the majority of respondents were white (84%). In order to conduct a more comprehensive investigation on the influence of population group on food choice, it can be recommended that a sample is used which is more diverse in terms of population groups.

Surveys can be vulnerable to sources of bias, such as socially desirable responses, and it is therefore a limitation in this study. When conducting health research, it is necessary to consider the influence of perceptions and prejudices of consumers and the society they function in. A perceived social pressure to respond in a certain way is often experienced. Respondents may have felt uncomfortable during the research where behaviour generally considered as the norm or being acceptable is challenged, such as questioning their sugar consumption. Because the FCQ and MFES have never been combined nor has it been applied in a SA context, it is recommended for these questionnaires to be used in further research. This will aid in the confirmation of validity and reliability of these questionnaires when applied to SA consumers. A last important limitation is the low response rate in the completion of questionnaires, causing results to be based on a small research sample (n=75). Although data analysis could be successfully done and yielded meaningful results, it is recommended that a larger sample is used.
5.5. Recommendations for future research

The questionnaire addressed many factors influencing food choice, including various socio-demographic characteristics and numerous factors according to both the MFES and FCQ. In order to conduct a more comprehensive study on each of these factors’ influence on the food choice of SDPs, a recommendation can be made to conduct a more in-depth focus on each of these factors by only studying certain factors, such as those from the FCQ alone. This is recommended especially because research has not been done among SA consumers regarding their food choice of these involved SDPs. Different SDPs could further be applied in future research – yoghurt and drinking yoghurt should perhaps be studied separately from flavoured milk, due to the difference in sensory characteristics and consumption patterns. The findings of this study can therefore be applied to further research and it could be determined how the results vary among different samples or involving different SDPs.
Chapter 6: Research article

6.1. Title page

UNDERSTANDING THE MOTIVES OF CONSUMERS EMPLOYED AT A NUTRITION COMPANY FOR CHOOSING SUGARED DAIRY PRODUCTS

(Article prepared according to the NWU Harvard reference style)

Jolindi Botha; Annchen Mielmann; Heleen Dreyer; Susanna Ellis
North-West University, Potchefstroom Campus.
bothajolindi@gmail.com

6.2. Abstract

Sugar consumption has been proven to be too high worldwide, with statistics indicating that sugar consumption within South Africa to be similarly problematic. A constant high intake of sugar can lead to obesity, which increases the risk for developing type 2 diabetes. Dairy products are popularly consumed and viewed by consumers as a nutrient-dense food which forms part of a healthy diet. High concentrations of sugar (sucrose) are however added to these products, posing a risk to its healthfulness. Food choice is the process of decision making within the consumer involving the selection and consumption of food and beverages, further concerning their eating behaviour. Consumers will not make a food choice or behave in a certain way without being motivated to do so. The motivation of a consumer to choose or to eat a specific food product will therefore act as the reason why the consumer makes this choice. This research study aimed to investigate the motivations of consumers employed at a nutrition company – therefore consumers with health awareness – to choose and to eat sugared dairy products. The study was conducted through the distribution of online questionnaires containing questions regarding food choice, eating behaviour and the socio-demographic influence on the food choice of flavoured milk, yoghurt and drinking yoghurt, collectively referred to as sugared dairy products. The sample consisted of males (53.3%) and females (46.7%) from a high socio-economic group. The sample was found to be health conscious as frequent physical exercise was reported, BMI scores were normal, none of the respondents were diabetics and the majority of respondents showed a high awareness regarding sugar intake and its related non-communicable diseases. The results showed that motives to eat were physical and social eating. Motives to choose were sensory appeal, convenience and price. Significant correlations between motives to choose and
motives to eat were found and the influence of the socio-demographic characteristics of respondents on their motives to choose and motives to eat was determined. Gender, population group and marital status were found to influence the food choice and eating behaviour of sugared dairy products. Significant (p<0.001) correlations were present between Physical eating and Health, Sensory appeal, Natural content, Familiarity, Convenience, Ethical concern and Price; Environmental eating and Health, Natural content and Price; Emotional eating and Familiarity and Mood; and Social eating and Familiarity. Results from this study indicate the lack of knowledge regarding the sugar content of sugared dairy products among health-conscious consumers. Information obtained can be used as the first of its kind within a South African context as a basis to educate consumers regarding their choice of sugared dairy products and aid in the development of health and wellness programs, as well as provide useful information to the dairy industry.

Keywords: Sugar; Dairy; Food choice; Motivation; Consumer; Health

6.3. Introduction
Non-communicable diseases (NCDs), a collective term for diseases such as cardiovascular disease, diabetes, obesity and certain cancers (Eksteen & Mungal-Singh, 2015:9), contribute to a global increase in health problems and is currently one of the leading causes of death worldwide (DSM, 2015:2; WHO, 2014:2). Non-communicable diseases are most commonly caused by poor diet quality e.g. high sugar intake and inactivity, with an impact that is devastating in social, economic and public health contexts (WHO, 2014:ix). Although sugar acts as a good source of energy and is necessary in maintaining the human metabolism, a constant oversupply of sugar through the diet can lead to diseases (Chollet et al., 2013:5501; WHO, 2015:1) such as obesity and diabetes (Steyn et al., 2003:599; Temple & Steyn, 2013:101; WHO, 2014:11). Reducing the risks for these diseases has traditionally included decreasing intake of sodium and fat, but added dietary sugars have more recently been associated with these health conditions (Temple & Steyn, 2013:103; Kell et al., 2014:46).

The use of added sugars has risen steadily over the past decades (Whitney & Rolfes, 2011:112). Sugar consumption has been proven to be too high worldwide, with statistics indicating sugar consumption within SA to be similarly problematic (Ronquest-Ross et al., 2015:5; Sheehy et al., 2013:446). A constant high intake of sugar can lead to weight gain and ultimately obesity due to sugar-rich foods providing poor satiety and inducing an increased energy intake (Chollet et al., 2013:5501; Temple & Steyn, 2013:102). The risk for developing type 2 diabetes is further substantially increased by obesity, poor dietary habits
and physical inactivity, with obesity being present in 90 to 95% of diabetes cases (Whitney & Rolfes, 2011:622). Adding sugar to food products for the sake of sensory pleasure should therefore be done while considering these health risks (Whitney & Rolfes, 2011:112). A strong recommendation by the World Health Organisation (WHO, 2015:4) is made to reduce the daily intake of sugar to less than 10% of the total energy intake, with a conditional recommendation of a further reduction to less than 5%.

6.4. Literature review
6.4.1. Sugared dairy products (SDPs)
Dairy products are popularly consumed (Hoppert et al., 2013:1) and viewed by consumers as a nutrient-dense food which forms part of a healthy diet (DSM, 2015:2). High concentrations of sugar (sucrose) are however added by the food industry to these products in order to improve its taste (Chollet et al., 2013:5501). The USA dietary guidelines advise consumers to consult the ingredient list to find out if sugars have been added (Kyle & Thomas, 2014:2483). American consumers are found to implement this practise and consult nutrition labels for information such as sugar content in order to make a healthy food choice (Kyle & Thomas, 2014:2481), while South African consumers in certain areas were found to mostly consult nutrition labels for information regarding fat and cholesterol content (Jacobs et al., 2010:520). In addition, a study exploring worldwide consumers’ preferences concerning flavoured milk and drinking yoghurt (DSM, 2015:2) revealed an increase in the consumption of SDPs within the last three years. Due to the high sugar content in some dairy products, it necessitates research to understand their motivation for including this in their diet.

The three types of SDPs relevant to this study were flavoured milk, yoghurt and drinking yoghurt. Although these milk-based drinks contribute to human nutrition (Andrés et al., 2015:1106), it is necessary to consider the high sugar content of SDPs which may lessen its health benefits (Pohjanheimo & Sandell, 2009:459). While the addition of sugar to dairy products improves its sensory characteristics and makes it more appetising to consume, it only adds to the total energy content from a nutritional point of view (WHF, 2016). The consumption of milk and dairy products are encouraged by dietary guidelines worldwide and while the benefits thereof should not be overlooked, it is necessary to consider the amount of sugar that is being consumed in the process (Li et al., 2015:1455). Dairy products have for example been proven to aid in promoting dental health due to its ability to neutralise acid in the mouth (Whitney & Rolfes, 2011:114). Adding sugar to dairy however compromises this function and high rates in dental cavities caused by sugar have been reported to be problematic worldwide (Moynihan & Kelly, 2013:16). The WHO’s recommendations to limit
sugar intake to 10% of total energy would then suggest that consuming one serving of a popular flavoured milk product available in SA would supply the consumer with their total sugar intake for an entire day. The addition of more natural sweeteners to yoghurt, such as honey, further tends to influence consumers in thinking that it will be healthier – when in fact honey is typically not used to replace sucrose and is mostly used as a flavouring (Popa & Ustunol, 2011:451). Furthermore, some of the most widely available commercial dairy products in SA contain high levels of added sugar, not subjective to its fat content – it is clear that a lower fat content does not necessarily indicate a lower sugar content. This supports the importance of consumers consulting the sugar content together with the fat content of SDPs in order to make healthy food choices.

6.4.2. Food choice and motivation

Food choice is the process of decision making within the consumer involving the selection and consumption of food and beverages, further concerning their eating behaviour involving what, when, where, how and with whom consumers eat (Sobal et al., 2006:1). Consumers will not make a food choice or behave in a certain way without being motivated to do so. When a need arises within an individual that has not yet been fulfilled, it gives rise to a motivation to act in a certain way which will fulfil or eliminate this need. Motivation can be defined as the force within an individual, created by an unfulfilled need, which influences the behaviour of the consumer (Botha, 2013:28; Schiffman & Kanuk, 2014:74) or an arousal within the inner state of a consumer which leads to achieving a goal (Hoyer et al., 2013:45). The motivation a consumer experiences is therefore a process which causes consumers to behave in the way that they do – acting a certain way and making certain choices (Solomon et al., 2010:177; Thuy, 2015:6). It is not always clear why consumers make the food choices they do. Consumers have different lifestyles and unique characteristics which influence the way in which they behave and the choices they make (Sobal et al., 2006:1). Together with the specific physical properties related to a food product, the psychological factors unique to every individual influence which food choices they make (Thuy, 2015:1). Consumers therefore choose these food products due to various influences which motivate them to do so. By exploring the consumer’s motivation behind making the food choice of consuming SDPs, research will be aimed towards why consumers make this specific food choice instead of what they choose to consume. Understanding the reasons behind the food choice of the consumer can be helpful in changing eating behaviour to be more sustainable and to encourage healthier food choices, contributing to health research and ultimately consumer well-being (Thuy, 2015:1).
The motives of consumers who are employed at a nutrition company were explored in this study. Although it could not be assumed that all of these consumers are health conscious, there is a probability that they have some kind of health awareness regarding sugar and added sugar in food products. It is likely that these consumers assume and regard flavoured milk and yoghurt products as healthy. Their motives to choose SDPs were however unclear and were investigated in this study. In doing so, these consumers’ motives to both choose and eat SDPs were determined, where after it was measured whether these motives vary according to different socio-demographic characteristics. It was lastly determined whether motives to choose and motives to eat SDPs are correlated. This research aimed to investigate whether consumers fail to make informed and healthy choices regarding SDPs even though they are employed at a company with strong health values. The researchers suspected that these employees’ motives to choose SDPs, are in contrast with their health values and that they are not informed regarding the high sugar content in these products which they see as healthy.

6.5. Methodology
6.5.1. Study procedure
This quantitative study employed a non-experimental study design and a descriptive cross-sectional survey design. Ethical approval was acquired from the Health Research Ethics Committee (HREC) of the Faculty of Health Sciences of the North-West University (NWU) (Reference number: NWU-00339-16-S1). This study was conducted by means of an online questionnaire. Adapted standardised questionnaires were used, which were distributed online. Questionnaires contained a series of questions to determine which factors influence respondents’ motives for choosing and eating SDPs and the results obtained were descriptive in nature. The questions that were asked determined the food choice motives according to the categories used in the Food Choice Questionnaire (FCQ) and the Motivation for Eating Scale (MFES), as will be discussed briefly in the following section.

6.5.2. Measurement Instrument
There are various scales aiming to organise the wide variety of determinants for a consumer’s food choice, including the FCQ and MFES. The FCQ, developed by Steptoe et al. in 1995, aims to investigate consumers’ motives for food choice based on nine different aspects: sensory appeal, health, weight control, mood, convenience, natural content, price, familiarity and ethical concern (Steptoe et al., 1995:272). The MFES was created to evaluate the primary motives for the consumer’s eating behaviour by using five point Likert-type scale and statements (Hawks et al., 2003:154). Scores were classified according to four
categories: emotional eating, physical eating, environmental eating and social eating (Hawks et al., 2004:309).

A combination of these open source models was used in this study, providing a more comprehensive explanation for the motives in choosing and eating SDPs. Food choice can further also be influenced by different socio-demographic aspects; therefore the questionnaire included a socio-demographic profile of each respondent including gender, age, population group as well as financial and marital status.

The questionnaire consisted of four sections. Section A addressed the inclusion criteria; Section B addressed the demographic and general information, as well as the health consciousness of the respondents. These questions are not from standardised questionnaires, but have been formulated by consulting literature (Boggiano, 2016:96; Hawks et al., 2003:154; Jackson et al., 2003:298; Merrill, 1997:32). Included in this section were respondents’ diabetic, Body Mass Index (BMI) and physical activity status. This information was included to explore any possible link between SDPs and these diseases within the target population. Section B further contained questions regarding the respondents’ sugared dairy preference and intake, and their awareness or knowledge of these SDPs, which further provided an indication of respondents’ health consciousness. Section C (Motivation) followed and Section D (Food Choice) concluded the questionnaire which consisted of questions from the adapted MFES and FCQ respectively.

6.5.3. Study area and sampling
A non-probability purposive sampling method was used since the respondents required to take part in this study needed to comply with the inclusion and exclusion criteria (Maree & Pietersen, 2007:176-178). The sample group was from regional offices of a sports nutrition company in SA. The targeted offices are situated in urban environments namely Centurion (Gauteng), Durban (KwaZulu-Natal), Stellenbosch (Western Cape), Bloemfontein (Free State) and Port Elizabeth (Eastern Cape). Because these offices are distributed across the country, a wide variety of respondents were reached who provided useful information regarding the motives for food choice within the SA culture. All permanent employees of this company acted as the targeted population to conduct this research. The study sample ultimately included 75 respondents (n=75). This small sample size was the result of inclusion criteria not being met by the respondents and a low response rate during data collection. Various employees were not allowed to continue with the questionnaire due to indicating a dairy allergy. Data analysis was however deemed successful by the Statistical Consultation Services (SCS) and yielded meaningful results.
6.5.4. Data analysis

The questionnaire consisted of closed ended structured questions which are easy to understand (Creswell, 2008:397). Data analysis was performed with the assistance of the SCS of the NWU. Data was entered into an Excel spreadsheet and the Statistical Package for Social Science (SPSS) was used to analyse the data. Descriptive statistics analysis was applied to all sections of the questionnaire, which included frequencies, mean scores and standard deviations. Inferential statistics included exploratory factor analysis (EFA), Cronbach’s alpha coefficient, T-tests and non-parametric correlations. Effect sizes were considered for all statistics. Differences between variables were calculated by using Cohen’s d-values. Associations between variables were calculated by using Spearman’s rank correlation coefficient (r). The demographic variables of respondents were analysed for descriptive statistics. Correlations and differences were then determined between these demographic variables and the factors relating to the objectives of the study. The correlation between motives to choose and motives to eat SDPs was further determined. T-tests and non-parametric correlations were therefore used in order to indicate the relationships between a respondent’s socio-demographic characteristics and their motives, as well as the correlation between motives to choose and motives to eat SDPs. All data were tested for validity and reliability. Cronbach’s alpha coefficient (α) was used to describe the data’s internal consistency reliability (Pietersen & Maree, 2007:216). Cronbach’s alpha values closer to one indicate high levels of consistency, with a suggested cut off value of 0.6 (Delport & Roestenburg, 2011:177-178). Cronbach alpha values indicated an internal consistency with acceptable internal reliability for all sections (Table 1). The construct validity was confirmed by conducting EFA. By consulting Kaiser-Meyer-Olkin (KMO) values, the EFA indicated a high reliability for all factors in the questionnaire. High values (between 0.5 and 1.0) are considered to be acceptable (Field, 2009:647) and only values lower than 0.5 are considered unacceptable (Williams et al., 2010:5). Values for all sections were therefore considered acceptable (Table 1).

6.6. Results and discussion

6.6.1. Demographics

The sample consisted of a near-equal gender distribution (53.3% male; 46.7% female). The younger age groups were largely represented, with 96% being between the ages of 18 and 44. Population groups represented, consisted largely of white (84%), followed by black (10.7%) and a small number of coloured (4%) and Indian (1.3%) respondents. In relation to this, respondents mostly indicated Afrikaans (69.3%) and English (21.3%) as home languages, with a few isiZulu (5.3%) and Xitsonga (1.3%) respondents. The sample represented a high socio-economic group as a large amount of respondents (46.7%)
indicated their monthly income to be between R20 001 and R50 000 and 22.7% of respondents earn between R8001 and R20 000 per month. Lower income groups were in the minority – 24% earned between R0 and R8000 per month. Lastly, respondents were more or less equally distributed according to marital status - 46.7% were single and 53.3% were married or living with a partner.

6.6.2. Health awareness

The sample was found to be health conscious. The mean BMI score for men and women combined was 25.6. Although this score may be classified as high, this information is supported with their physical activity status. Respondents indicated the amount of times they participate in physical exercise per week. As were predicted, respondents lead a relative active lifestyle as 77.4%% indicated that they exercise more than 3 times a week. Due to the fact that they are employed at a sports nutrition company whose products promote muscle building, it is probable that high weight values are due to muscle mass instead of high fat percentages. The sample did not contain any respondents who are classified as diabetics.

The second part of Section B in the questionnaire contained questions measuring health consciousness of the respondents. These questions measured the extent to which respondents agree with statements related to health awareness regarding added sugar, the link with NCDs and the sugar content of SDPs, therefore the product characteristics. The mean factor scores of respondents’ answers (Table 1) reflected that they agree with all these statements regarding Health awareness (mean=2.906), NCDs (mean=3.142) and Product characteristics (mean=1.880) to some extent. Within the NCDs category, respondents agreed to a great extent with these statements, indicating that they are aware that overconsumption of sugar causes NCDs such as obesity and diabetes. Statements regarding Health awareness indicated that respondents care about their sugar intake and within the Product characteristics category, respondents indicated that they are aware that dairy with a high amount of added sugar is not healthy. Respondents however do not show a high concern for the amount of sugar in dairy - 60% only agreed to a small or to some extent with the statement that they are concerned about the amount of sugar in dairy. These findings support what the researchers suspected that while these respondents show a health awareness regarding sugar and added sugar in food products, their motives to choose SDPs are in contrast with their health values and they may not be informed regarding the high sugar content in these products which they view as healthy.
Table 1: Summary of sections in questionnaire with applicable factors, mean factor scores and Likert scales used in each section

<table>
<thead>
<tr>
<th>Section in questionnaire</th>
<th>Factors within sections</th>
<th>Mean factor score</th>
<th>Likert Scale*</th>
<th>α</th>
<th>KMO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section B: Health awareness</td>
<td>Health awareness</td>
<td>2.906</td>
<td>1</td>
<td>.755</td>
<td>0.698</td>
</tr>
<tr>
<td></td>
<td>NCDs</td>
<td>3.142</td>
<td></td>
<td>.755</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Product characteristics</td>
<td>1.880</td>
<td></td>
<td>.587</td>
<td></td>
</tr>
<tr>
<td>Section C: Motivation</td>
<td>Physical eating</td>
<td>2.175</td>
<td>2</td>
<td>.857</td>
<td>0.719</td>
</tr>
<tr>
<td></td>
<td>Emotional eating</td>
<td>2.050</td>
<td></td>
<td>.857</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Social eating</td>
<td>2.150</td>
<td></td>
<td>.513</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Environmental eating</td>
<td>2.064</td>
<td></td>
<td>.757</td>
<td></td>
</tr>
<tr>
<td>Section D: Food choice</td>
<td>Health</td>
<td>2.258</td>
<td>2</td>
<td>.902</td>
<td>0.887</td>
</tr>
<tr>
<td></td>
<td>Weight control</td>
<td>1.950</td>
<td></td>
<td>.809</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sensory appeal</td>
<td>3.179</td>
<td></td>
<td>.822</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Natural content</td>
<td>2.015</td>
<td></td>
<td>.832</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ethical concern</td>
<td>1.920</td>
<td></td>
<td>.816</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Convenience</td>
<td>3.008</td>
<td></td>
<td>.856</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Familiarity</td>
<td>2.419</td>
<td></td>
<td>.738</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mood</td>
<td>2.356</td>
<td></td>
<td>.902</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Price</td>
<td>2.508</td>
<td></td>
<td>.750</td>
<td></td>
</tr>
</tbody>
</table>

*Type of Likert scale used:
1: 1=Not at all; 4=To a great extent
2: 1=Never; 5=Always

6.6.3. Motives to choose SDPs

Mean factor scores (Table 1) reflected that all of the motives to choose SDPs have an influence on these respondents to some extent. Factors with a fairly greater influence were however indicated, which included Sensory appeal (mean=3.179), Convenience (mean=3.008) and Price (mean=2.508). The highest motivation for food choice, Sensory appeal, indicates that respondents base their choice of SDPs on taste and that a taste which they find acceptable and appealing motivates them to choose the product. This supports research showing consumers’ preference for high levels of sucrose in food (Chollet et al., 2013:5501; Hoppert et al., 2013:6; Markey et al., 2015:138) including drinking yoghurt (Thompson et al., 2007:4980) and is also in line with SA consumers’ motives to choose dairy fruit beverages (Visser, 2007:70).

Categories with a moderate influence included Familiarity (mean=2.419), Mood (mean=2.356), Health (mean=2.258) and Natural content (mean=2.015) and categories with the lowest influence were Weight control (mean=1.950) and Ethical concern (mean=1.920). Familiarity often mainly influences older consumers (above the age of 60) – thus only moderately influencing this younger sample (below the age of 54). In relation to Emotional eating motives (section 6.6.4) not having a high influence on respondents’ eating behaviour,
the mood of respondents did not highly influence their choice of SDPs. Health also showed only a moderate influence, indicating that health claims on these products perhaps do not have a high influence in motivating them to choose it. The authenticity of these products and claims on dairy labels are therefore not factors which have a major influence on these consumers’ food choice. Consumers are in general found to not believe these claims and only view it as a selling strategy (Westerveld, 2017). Products containing claims of authenticity and natural content are often more expensive. These consumers view the price and value of products as important, which may indicate that they will choose products without these added benefits and cost.

Categories with the lowest influence, Weight control (mean=1.950) and Ethical concern (mean=1.920), indicate that respondents think that these products do not contribute to weight loss or weight gain and are also not influenced by ethical aspects regarding milk or dairy products. Recent research regarding ethical claims on food labels indicates that these claims are often disregarded by consumers (Kaya, 2016:150; Westerveld, 2017), as can be seen among respondents in this study.

6.6.4. Motives to eat SDPs

It was reflected by mean factor scores (Table 1) that the different motives to eat SDPs all have an influence on these respondents and they indicated a fairly greater influence of the motives Physical eating (mean=2.175) and Social eating (mean=2.150), which indicate that these motives have a higher influence on their decision to eat SDPs. Respondents are therefore primarily motivated by physical eating motives to eat SDPs – respondents therefore eat yoghurt, drinking yoghurt or flavoured milk when they are hungry. This may be important to consider when these products, high in sugar, are eaten as a meal instead of other nutritious foods. This type of motivation to eat often originates in the physiological effects of the specific food product in the body, such as food providing needed energy in order to fuel all activities (Whitney & Rolfes, 2011:9). It is possible that a similar effect is present in SDPs, due to its sugar content – this may provide consumers with needed energy and therefore the motivation to eat it. Respondents are also motivated by Social eating motives to eat SDPs – they therefore eat these products in a social situation when they are with other people and friends who are eating it and they will also eat it when someone buys it for them. Sugared dairy products may be shared among friends while reflecting values of friendship and hospitality (Ensaff et al., 2015:4624).

A moderate influence from Environmental eating (mean=2.064) and Emotional eating (mean=2.050) motives were reported. The choice to eat a SDP is therefore not strongly
linked to these consumers’ emotions and SDPs are not eaten as a response to a negative emotional state by respondents in this study.

6.6.5. Motives according to social-demographic characteristics
Correlations were revealed by T-tests between gender, population group and marital status and respondents’ motives to choose and to eat SDPs (Table 2). Gender influenced price as a motive to choose SDPs (mean=2.694; \(d=0.40\)), indicating that men are more motivated by the price of these products than women.

Table 2: Motives according to socio-demographic characteristics

<table>
<thead>
<tr>
<th>Socio-demographic</th>
<th>Motive</th>
<th>Mean (1=Never; 5=Always)</th>
<th>Standard deviation</th>
<th>r</th>
<th>Effect size ((d))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender: Men</td>
<td>Price</td>
<td>2.694</td>
<td>1.023</td>
<td>0.088</td>
<td>0.40</td>
</tr>
<tr>
<td>Population group: Black</td>
<td>Health</td>
<td>2.761</td>
<td>1.013</td>
<td>0.200</td>
<td>0.52*</td>
</tr>
<tr>
<td></td>
<td>Sensory appeal</td>
<td>4.047</td>
<td>0.558</td>
<td>0.013</td>
<td>0.99**</td>
</tr>
<tr>
<td></td>
<td>Convenience</td>
<td>4.000</td>
<td>0.860</td>
<td>0.007</td>
<td>1.10**</td>
</tr>
<tr>
<td></td>
<td>Price</td>
<td>3.285</td>
<td>0.809</td>
<td>0.031</td>
<td>0.87**</td>
</tr>
<tr>
<td>Population group: White</td>
<td>Social eating</td>
<td>2.232</td>
<td>0.962</td>
<td>0.321</td>
<td>0.37</td>
</tr>
<tr>
<td>Marital status: Single</td>
<td>Weight control</td>
<td>2.156</td>
<td>0.954</td>
<td>0.061</td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td>Ethical concern</td>
<td>2.166</td>
<td>1.026</td>
<td>0.043</td>
<td>0.47</td>
</tr>
</tbody>
</table>

Effect size: 0.2 = small; 0.5 = medium*; 0.8 = large**

Population group influenced the highest amount of motives. These correlations involved white and black respondents and medium to large effect sizes were indicated. Black respondents were motivated by Health (mean=2.761; \(d=0.52\)). Health beliefs and what is considered to be a healthy diet depends on cultural conventions (Lahteenmaki, 2003:348). The belief that SDPs are healthy, may link with the traditional African diet which has always included milk and fermented dairy products (Beukes et al., 2001:189; Ukeyima et al., 2010:299), which is now projected towards SDPs and indicates the replacement of traditional cultural values with more Western values which includes higher levels of added sugar (Temple & Steyn, 2013:100). Black consumers were further motivated by Sensory appeal (mean=4.047; \(d=0.99\)), Convenience (mean=4.000; \(d=1.10\)) and Price (mean=3.285; \(d=0.87\)) to choose SDPs. White respondents were motivated by Social eating (mean=2.232; \(d=0.37\)) to eat SDPs. This is in contrast with previous research on food choices of black and white consumers in the USA, where black consumers showed a higher social influence than white consumers (Cannuscio et al., 2014:16; Granner et al., 2004:176). It can therefore be
assumed that there is a higher social influence on white consumers, perhaps due to SDPs being part of their culture and more generally consumed within a social situation.

When researching food choice, marital status is generally involved in aspects such as Convenience as a motivation for food choices in general - consumers who are single or living alone often spend less time cooking and preparing food, therefore assigning a high priority towards convenience products (Flagg et al., 2013:2062; Marquis, 2005:56). Single respondents in this study were however rather motivated by Weight control (mean=2.156; d=0.42) and Ethical concern (mean=2.166; d=0.47) when choosing SDPs. Weight control was similarly found to be one of the main motivators of single consumers’ food choice among young adults (Marquis, 2005:57). Single consumers generally choose food products for themselves and their health and aspects such as Ethical concern therefore becomes important. Single consumers often also have a larger expendable income than consumers who are married and need to choose products for their children or household (Marquis & Manceau, 2007:309). They are therefore able to buy more expensive products with added ethical and natural benefits.

6.6.6. Correlation between motives to choose and motives to eat SDPs
Spearman’s correlation coefficient as a non-parametric statistic revealed several correlations, with a significance value of p<0.001 for all coefficients (Table 3). Firstly, there is a significant correlation between Health and Physical eating (p<0.001; r=0.51). This means that while respondents are motivated to eat something because they are hungry or look for a source of energy, they are influenced by a motivation to make a healthy food choice and choose a SDP. Respondents especially view yoghurt and yoghurt drinks as a healthy meal. Health also significantly correlated with Environmental eating (p<0.001; r=0.46). When these consumers are therefore influenced by environmental stimuli such as food advertising or the product being available in a convenience store nearby, the motivation to make a healthy food choice once again directs the consumer towards making the choice of a SDP.

A correlation is further significant between Sensory appeal and Physical eating (p<0.001; r=0.43). It has been established that respondents choose these products because they like the taste and this correlation indicates that when respondents are hungry, the pleasant taste motivates the choice of a SDP. While consuming a SDP, the enjoyment of the taste and flavour releases endorphins which enhance positive states of mind and acts as an added benefit to the eating experience (Clark, 1998:639).
Table 3: Correlations between motives to choose and motives to eat SDPs

<table>
<thead>
<tr>
<th>Motive to choose</th>
<th>Motive to eat</th>
<th>p-value</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>Physical eating</td>
<td>p&lt;0.001*</td>
<td>0.51</td>
</tr>
<tr>
<td></td>
<td>Environmental eating</td>
<td>p&lt;0.001*</td>
<td>0.46</td>
</tr>
<tr>
<td>Sensory appeal</td>
<td>Physical eating</td>
<td>p&lt;0.001*</td>
<td>0.43</td>
</tr>
<tr>
<td>Natural content</td>
<td>Physical</td>
<td>p&lt;0.001*</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>Environmental</td>
<td>p&lt;0.001*</td>
<td>0.43</td>
</tr>
<tr>
<td>Ethical</td>
<td>Physical</td>
<td>p&lt;0.001*</td>
<td>0.45</td>
</tr>
<tr>
<td>Convenience</td>
<td>Physical</td>
<td>p&lt;0.001*</td>
<td>0.47</td>
</tr>
<tr>
<td>Familiarity</td>
<td>Physical</td>
<td>p&lt;0.001*</td>
<td>0.63</td>
</tr>
<tr>
<td></td>
<td>Emotional</td>
<td>p&lt;0.001*</td>
<td>0.43</td>
</tr>
<tr>
<td></td>
<td>Social</td>
<td>p&lt;0.001*</td>
<td>0.52</td>
</tr>
<tr>
<td>Mood</td>
<td>Emotional</td>
<td>p&lt;0.001*</td>
<td>0.51</td>
</tr>
<tr>
<td>Price</td>
<td>Physical</td>
<td>p&lt;0.001*</td>
<td>0.46</td>
</tr>
<tr>
<td></td>
<td>Environmental</td>
<td>p&lt;0.001*</td>
<td>0.50</td>
</tr>
</tbody>
</table>

* Correlation significant at 0.001 level (2-tailed)

Natural content showed significant correlations with both Physical (p<0.001; r=0.50) and Environmental eating (p<0.001; r=0.43). When respondents are hungry and when they are influenced by environmental stimuli, they look for products that contain natural or authentic ingredients rather than synthetic ingredients which they view as being harmful and a possible risk (Kamal & Karoui, 2015:27; Lahteenmaki, 2003:348). This relates to the health consciousness of these respondents.

Ethical concern and Physical eating were significantly (p<0.001; r=0.45) correlated. Although ethical concern was found to have a low influence on respondents’ choice of SDPs, this correlation indicates that should this motive be present, it will function together with the physical eating motive. Labels on dairy products which indicate that it is hormone or rBST free will therefore motivate the consumer’s choice of purchase (Chakraborty, 2005:637; Grunert et al., 2014:178), should the motive of ethical concern be present in the respondent’s decision making process.

Convenience significantly correlated with Physical eating (p<0.001; r=0.47). When these respondents are hungry, they need something convenient to consume due to them functioning in a corporate environment and most likely not having much time to cook and prepare food. Sugared dairy products relate to this - when respondents are hungry, a SDP is a convenient meal which does not require any preparation.
Familiarity showed significant correlations with the highest amount of motives - with Physical eating (p<0.001; r=0.63), Emotional eating (p<0.001; r=0.43) and Social eating (p<0.001; r=0.52). The correlation with physical eating shows that when respondents look for a food product to eat to satisfy hunger, they search for something which is familiar to them or something which they normally eat. This indicates a kind of habit-driven consumption behaviour in the choice of SDPs which supports research among SA consumers indicating that their choice of dairy fruit beverages was mainly motivated by the fact that they were familiar to them (Visser, 2007:69). Emotional eating secondly correlated with familiarity, which suggests that SDPs have an emotional connotation, such as a memory of growing up and consuming sweet dairy products as a child (Solomon et al., 2010:189). This is also in line with findings from Visser (2007:69), as a familiar food product provides a sense of security. The third correlation with Social eating may direct towards the correspondence of SDPs with the respondent's cultural values. These values serve as a guideline for a consumer's food choice and provide a sense of security through familiar foods (Visser, 2007:8), due to culture playing a significant role in the forming of dietary habits while growing up (Prescott et al., 2002:489).

Mood and Emotional eating were significantly correlated (p<0.001; r=0.51), which perhaps would be an expected correlation. It has already been established that respondents like the taste of SDPs and the pleasure experienced from eating a pleasant tasting food product has a positive effect on the mood state of an individual (Gardner et al., 2014:320; Lahteenmaki, 2003:347). It has also been found that consumers, who respond with eating towards being in a bad mood, tend to choose sweet tasting food products (Boggiano et al., 2014:164) in this case SDPs.

Price significantly correlated with both Physical eating (p<0.001; r=0.46) and Environmental eating (p<0.001; r=0.50). As discovered among respondents' motives to choose SDPs, respondents view commercial SDPs as good quality and good value for their money. When respondents therefore are looking to satisfy their need of hunger, they still would not choose a product without considering its price. At the same time, when influenced by environmental stimuli, respondents will take the price and value of the product into consideration before making a choice.

6.7. Conclusion
The motives of consumers (n=75) who are employed at a nutrition company to choose and to eat SDPs were investigated in this study. It was found that these consumers are health conscious, lead an active lifestyle and have a health awareness regarding sugar, added
sugar in food products and the health implications of the overconsumption of sugar. It is evident that they may however not be completely aware of the high added sugar content of SDPs. It is likely that these consumers assume and regard flavoured milk and yoghurt products as healthy. Findings from this research support what the researchers suspected that while these respondents show a health awareness regarding sugar and added sugar in food products, their motives to choose SDPs are in contrast with their health values and they may not be informed regarding the high sugar content in these products which they view as healthy.

Motives to choose SDPs with the highest influence included Sensory appeal, Convenience and Price. Motives to eat SDPs with the highest influence included Physical eating and Social eating. Motives according to socio-demographic characteristics showed that gender, population group and marital status all influence the choice of SDPs. Significant correlations were present between Health and Physical eating as well as Environmental eating; Familiarity and Physical, Emotional and Social eating; Mood and Emotional eating and lastly Price and Physical as well as Emotional eating.

This study obtained insight on consumers’ food choice of SDPs, which may be beneficial for the consumer and the dairy industry. Because it has been found that these health conscious consumers view these products as part of a meal instead of a snack, SDPs can be positioned in this way if companies aim to appeal to this specific target market. Information obtained can be used as a basis to educate consumers regarding their choice of SDPs. A better understanding of food choice motives will enable consumers to make informed decisions, promote healthier food choices and ultimately contribute towards consumer well-being. It is recommended for future research to conduct the methods used in this study by using a larger sample, and to use a random sampling method in order to make results more generalizable among all consumers. The findings of this study can be applied to future research and the variation of results can be determined among different samples or involving different SDPs.
References


Appendix A:
Questionnaire
Dear Mr/Mrs/Miss/Other,

Thank you for your willingness to participate in this study. The aim of this study is to understand consumers’ motives to choose sugared dairy products.

The questionnaire will take approximately 15 minutes to complete. The data gathered will be filed and stored as confidential information, and only members of the research project will have access to the data. Your participation in this study is completely voluntary and by completing the questionnaire, you give your consent that the data generated may be used by the researchers for scientific purposes as they see fit. Any published data will however not contain any confidential information which may reveal the identification of respondents. While you may withdraw from the study at any time, you are kindly requested not to do so without careful consideration. Should you require more information, please contact Jolindi Botha (Master of Consumer Sciences student) at 082 082 5202 or Annchen Mielmann (supervisor) at 018 299 2474.

Thank you very much for your participation.

Please click on the following link to complete the questionnaire:

https://www.questionpro.com/t/ALT2HZUzWw
ONLINE QUESTIONNAIRE

Please familiarise yourself with the following terms regarding sugared dairy products. Sugared dairy products refer to products containing sugar (sucrose) and not artificial sweeteners:

Please note: You can refer back to these terms any time while completing the questionnaire

Flavoured milk is defined as milk that contains added sugar (sucrose), colourants and flavourings which makes it more appetising:

These pictures serve as examples of commercial flavoured milk products:

Yoghurt is defined as a fermented dairy product with a tart flavour and sweetened yoghurt contains added sugar (sucrose), colourants and flavourings, providing the product with a pleasant colour and taste:

These pictures serve as examples of commercial yoghurt products:

Drinking yoghurt is defined as a drinkable yoghurt product with added sugar (sucrose), colourants and flavourings which provides it with a pleasant colour and taste:

These pictures serve as examples of commercial drinking yoghurts:
Please read the following questions carefully and follow the instructions provided.

Section A: Inclusion criteria

Please answer the following questions by selecting the applicable option.

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Are you 18 years or older?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Are you a permanent employee of USN?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Do you use / Have you ever used flavoured milk?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Do you use / have you ever used flavoured yoghurt?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Do you use / have you ever used drinking yoghurt?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Are you lactose intolerant?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Are you allergic to dairy products?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please insert your personnel number:

Section B: Demographic and general information

For the following questions, please select the applicable option by clicking on the relevant block.

8. Please indicate your gender:

<table>
<thead>
<tr>
<th>Gender</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1</td>
</tr>
<tr>
<td>Female</td>
<td>2</td>
</tr>
</tbody>
</table>

9. Please indicate your age category

<table>
<thead>
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<th>Age Category</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>18-24 years old</td>
<td>1</td>
</tr>
<tr>
<td>25-34 years old</td>
<td>2</td>
</tr>
<tr>
<td>35-44 years old</td>
<td>3</td>
</tr>
<tr>
<td>45-54 years old</td>
<td>4</td>
</tr>
<tr>
<td>55-64 years old</td>
<td>5</td>
</tr>
<tr>
<td>65 or older</td>
<td>6</td>
</tr>
</tbody>
</table>
10. Please indicate your population group:

<table>
<thead>
<tr>
<th>Population Group</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>1</td>
</tr>
<tr>
<td>Coloured</td>
<td>2</td>
</tr>
<tr>
<td>White</td>
<td>3</td>
</tr>
<tr>
<td>Indian</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
</tr>
</tbody>
</table>

11. Please indicate your home language

<table>
<thead>
<tr>
<th>Language</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>1</td>
</tr>
<tr>
<td>Afrikaans</td>
<td>2</td>
</tr>
<tr>
<td>Sesotho</td>
<td>3</td>
</tr>
<tr>
<td>Setswana</td>
<td>4</td>
</tr>
<tr>
<td>Sepedi</td>
<td>5</td>
</tr>
<tr>
<td>isiZulu</td>
<td>6</td>
</tr>
<tr>
<td>isiXhosa</td>
<td>7</td>
</tr>
<tr>
<td>isiNdebele</td>
<td>8</td>
</tr>
<tr>
<td>Tshivenda</td>
<td>9</td>
</tr>
<tr>
<td>SiSwati</td>
<td>10</td>
</tr>
<tr>
<td>Xitsonga</td>
<td>11</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
</tr>
</tbody>
</table>

12. Please indicate your approximate monthly income (in South African Rand)

<table>
<thead>
<tr>
<th>Income Range</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>R0-R4000</td>
<td>1</td>
</tr>
<tr>
<td>Between R4001 and R8000</td>
<td>2</td>
</tr>
<tr>
<td>Between R8001 and R20 000</td>
<td>3</td>
</tr>
<tr>
<td>Between R20 001 and R50 000</td>
<td>4</td>
</tr>
<tr>
<td>Between R50 001 and R100 000</td>
<td>5</td>
</tr>
<tr>
<td>More than R100 001</td>
<td>6</td>
</tr>
<tr>
<td>I would prefer not to disclose this information</td>
<td>7</td>
</tr>
</tbody>
</table>

13. Please indicate your marital status

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single/ widow /widower / divorced</td>
<td>1</td>
</tr>
<tr>
<td>Married/ living with a partner</td>
<td>2</td>
</tr>
</tbody>
</table>
14. Are you a diabetic?  
<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

15. If yes, please indicate which type  
|   | Type 1 | Type 2 |

Please note: All information will be confidential

16.1. Please indicate your height

16.2. Please indicate your weight

16.3. If you perform any exercise, please indicate how often you do so per week:

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 2 times per week</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3 to 4 times per week</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>5 to 6 times per week</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Every day</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

17.1. How much do you like the following sugared dairy products?

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>To a small extent</th>
<th>To some extent</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.1.1 Flavoured milk</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17.1.2 Yoghurt</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17.1.3 Drinking yoghurt</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
17.2. How much sugar (in teaspoons) do you think are in one serving of your preferred product? Please note: one serving = one cup (250ml) to one and a half cup (375ml)

<table>
<thead>
<tr>
<th>Sugar Amount</th>
<th>Ticks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 teaspoon</td>
<td>1</td>
</tr>
<tr>
<td>2 teaspoons</td>
<td>2</td>
</tr>
<tr>
<td>3 teaspoons</td>
<td>3</td>
</tr>
<tr>
<td>4 teaspoons</td>
<td>4</td>
</tr>
<tr>
<td>5 teaspoons</td>
<td>5</td>
</tr>
<tr>
<td>6 teaspoons</td>
<td>6</td>
</tr>
<tr>
<td>7 teaspoons</td>
<td>7</td>
</tr>
<tr>
<td>8 teaspoons</td>
<td>8</td>
</tr>
<tr>
<td>9 teaspoons</td>
<td>9</td>
</tr>
<tr>
<td>10 teaspoons</td>
<td>10</td>
</tr>
<tr>
<td>More than 10 teaspoons</td>
<td>11</td>
</tr>
</tbody>
</table>

17.3. How many servings of sugared dairy products do you consume in a week? Please note: one serving = one cup (250ml) to one and a half cup (375ml)

<table>
<thead>
<tr>
<th>Servings</th>
<th>0-1</th>
<th>2-3</th>
<th>4-5</th>
<th>More than 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

17.4. Do you ever read the sugar content on sugared dairy products?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

17.5. If yes, do you find the sugar content clearly indicated on the food label of sugared dairy products?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Yes</th>
<th>No</th>
<th>I don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
17.6. How often do you buy sugared dairy products as a snack?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Once a month</th>
<th>Once every 3 weeks</th>
<th>Once every 2 weeks</th>
<th>Once a week</th>
<th>2-3 times a week</th>
<th>Almost every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

Please indicate the extent to which you agree with the following statements by choosing the applicable option. There are no correct or incorrect answers.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Not at all</th>
<th>To a small extent</th>
<th>To some extent</th>
<th>To a great extent</th>
<th>I don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.1. Do you think the consumption of sugar is unhealthy?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18.2. Do you think the intake of sugar causes obesity?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18.3. Do you think the intake of sugar causes diabetes?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18.4. Dairy with low or reduced sugar is better for my health</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18.5. I am more concerned about the ingredients in dairy than I was 3 years ago</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18.6. I pay more attention to the amount of sugar added in a dairy product than I did 3 years ago</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18.7. Dairy does not need additional sugar</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18.8. Dairy is healthy, no matter the amount of sugar it contains</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18.9. I am concerned about the amount of sugar in dairy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18.10. I care about my sugar intake</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18.11. I prefer dairy that is sweetened</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
**Section C: Motivation**

Please indicate how often the following statements occur by choosing the applicable option. There are no correct or incorrect answers.

**19. The situations or conditions that most often exist when I eat sugared dairy products (milk/yoghurt/drinking yoghurt) are when I...**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Never</th>
<th>Almost never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>19.1. Need physical energy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.3. Feel bored</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.4. Am with friends who are eating</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.5. Want to cheer up</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.6. Feel physical hunger pains</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.7. Have tempting food in front of me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.8. Am preparing food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.9. Feel irritable when I haven't eaten</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.10. See something good at a checkout stand</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.11. See an advertisement of food</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.12. Am physically hungry and food sounds good</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.13. Am weak/lightheaded because I haven't eaten</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.14. Realise it's mealtime, so I automatically eat</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.15. Need comforting</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.16. Don't want to offend someone who bought it for me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.17. Want to treat myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.18. Have forgotten to eat and am starved</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.19 Feel it is connected to a memory of happiness</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.21. Once started to eat, it's hard to stop</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.22. Overconsume when under stress</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19.23. Reward myself after a challenging task – I feel I “deserve” it</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Section D: Food Choice

Please indicate how often the following statements exist by choosing the applicable option. There are no correct or incorrect answers.

20. I choose sugared dairy products (milk/yoghurt/drinking yoghurt) because:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Never</th>
<th>Almost Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.1. It contains a lot of nutrients</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.2. It cheers me up</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.3. It is readily available</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.4. It tastes good</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.5. It contains no additives</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.6. It is low in calories</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.7. It is what I usually eat</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.8. It indicates on the label that it does not contain hormones</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.9. It is not expensive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.10. It keeps me healthy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.11. It makes me feel good</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.12. It does not require preparation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.13. It looks nice</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.15. It is low in fat</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.16. It is familiar to me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.17. The label contains an animal welfare logo</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.18. It is good value for money</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.19. It is good for my teeth/bones/skin/nails etc.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.20. It is easily available in shops and supermarkets</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.21. It has a pleasant texture</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.22. It is part of my weight control plan</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.23. It is like the food I ate when I was a child</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20.24. It comes from a country I approve of politically</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Question</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>20.25. It contains no artificial ingredients</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.26. It is packaged in an environmentally friendly way</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.27. I need a quick snack at work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE
Appendix B:
Informed consent documentation
INFORMED CONSENT DOCUMENTATION FOR CONSUMERS OF SUGARED DAIRY PRODUCTS

TITLE OF THE RESEARCH STUDY:

Understanding the motives of consumers employed at a nutrition company for choosing sugared dairy products

ETHICS REFERENCE NUMBERS:
NWU-00339-16-S1

PRINCIPAL INVESTIGATOR:
Dr A. Mielmann

POST GRADUATE STUDENT:
Jolindi Botha
You are being invited to take part in a research project that forms part of my Master’s study. Please take some time to read the information presented here, which will explain the details of this study. Please ask the researcher any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied, that you clearly understand what this research entails and how you might be involved. Also, your participation is entirely voluntary and you are free to say no to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part now.

This study has been approved by the Health Research Ethics Committee of the Faculty of Health Sciences of the North-West University (NWU-00339-16-S1) and will be conducted according to the ethical guidelines and principles of Ethics in Health Research: Principles, Processes and Structures (DoH, 2015) and other international ethical guidelines applicable to this study. It might be necessary for the research ethics committee members or other relevant people to inspect the research records.

**What is this research study all about?**

- This study will be conducted at the different offices of the company and will involve the completion of online questionnaires distributed online with experienced health researchers trained in health research and consumer behaviour. Two hundred and eleven (211) respondents will be approached to participate in this study.

- We plan to explore consumers’ motives to choose and to eat sugared dairy products; to determine whether these motives to choose and motives to eat are correlated within the consumer’s choice of sugared dairy products; as well as to measure the influence of socio-demographic characteristics on these motivations.
Why have you been invited to participate?

- You have been invited to participate because you are an employee of the involved company.
- You will not be able to take part in this research if you are: not above the age of 18; not a permanent employee of the involved company; allergic to dairy or are not a consumer of at least one of the sugared dairy products involved in this study.

What will be expected of you?

- You will be expected to answer the online survey questionnaire provided to you as honestly and as thoroughly as possible. The questionnaire will take approximately 15 minutes to complete and it will therefore require you to take this time from your work schedule.

Will you gain anything from taking part in this research?

- By taking part in this study, you have the opportunity to contribute towards health research and raise awareness regarding the subject.
- You will be able to provide insight regarding your choice of sugared dairy products, therefore providing information which will be beneficial for the dairy industry, the consumer and the health research community.

Are there risks involved in your taking part in this research and what will be done to prevent them?

- The risks in this study are minimal due to the topic being of an intellectual nature.
- The questionnaire will take approximately 15 minutes to complete
- You will be able to complete the questionnaire within your daily office environment and it will therefore not require you to travel to a different location
- The questionnaire can be completed at any time which you feel convenient.
- Data obtained will be handled confidentially; therefore no personal information will be made public.
- There are more gains for you in joining this study than there are risks.

How will we protect your confidentiality and who will see your findings?

- Anonymity will be ensured by researchers removing your personnel number from the questionnaires once it is sent for data analysis. Your identity will therefore not be made known. Only the researchers will have access to the data. Data will be kept
safe and secure by storing it on a hard drive and keeping it in locked cupboards in the researcher’s office and it will be password protected. Data will be stored for seven years and accessing it will require the permission of the NWU.

What will happen with the findings?

➢ The findings of this study will only be used for this study.

How will you know about the results of this research?

➢ We will give you the results of this research when the dissertation has been completed by 2017
➢ You will be informed of any new relevant findings by receiving an e-mail, or you may request an electronic copy of the dissertation from the researchers.

Will you be paid to take part in this study and are there any costs for you?

No, you will not be paid to take part in the study. Once you have completed the questionnaire, you will however be entered into a lucky draw and stand a chance to be one of ten (10) employees to win a Woolworths voucher worth R100. Completion of the questionnaire will take place in your daily office environment and will therefore not involve travelling costs. You will make use of office computers and internet access, there will therefore be no costs involved for you in taking part.

Is there anything else that you should know or do?

➢ You can contact Jolindi Botha (Master’s student) at 082 082 5202 or Dr Annchen Mielmann (supervisor) at 018 299 2474 if you have any further queries or encounter any problems.
➢ You can contact the Health Research Ethics Committee via Mrs Carolien van Zyl at 018 299 1206 or carolien.vanzyl@nwu.ac.za if you have any concerns that were not answered or complaints about the research.
Appendix C:

Requirements of the company
05 September 2016

To whom it may concern,

CONSENT TO USE USN EMPLOYEES TO COMPLETE ONLINE QUESTIONNAIRE FOR MASTERS STUDY

We hereby consent that Ms. Joinelle Esto (Student Number: 23448015) in Consumer Sciences at the North West University Potchefstroom campus may conduct research by using Ultimate Sports Nutrition (Pty) Ltd (USN) employees in the research sample.

USN is a company concerned with health and well-being and is at the forefront of nutrition research. The Company therefore corresponds with the aim of this study to understand adult consumers’ motivation for their choice of sugar-free dairy products.

Before commencement of the study, ethical approval will be obtained from the Health Research Ethics Committee (HREC) of the Faculty of Health Sciences at the North-West University. USN will require a copy of the necessary permission obtained from such Committees prior to any research by the student.

Respondents will not be named, nor will any information regarding the study be withheld from them. The completed questionnaires will be handled with confidentiality and personal information about the respondents will not become public. No information of the Company, the company name or its respondents will be disclosed in the dissertation or research article.

It must also be noted that all USN’s intellectual property vested in the company or any of the group of companies, will remain and are exclusively the property of USN and does not constitute any form of waiver or consent to make use of such intellectual property, including but not limited to all registered or non-registered trademarks, patents, etc.

The said permission is also subject to USN having the sole right to make use of the research and the results and/or conclusions from such research to its benefit, for example, in its own research and/or marketing purposes. Subsequently the student is requested to provide USN with a copy of her final thesis or dissertation as the case may be.

Should you require any further information, please contact Vinette Vrey (HR Officer) at vinette@usn.co.za or Ona-Van der Wyver (R&D Technologist) at ona@usn.co.za.

Signed on behalf of USN,

[Signatures]

[Seals]

CHALLENGE YOURSELF

[Address Details]

WEB: WWW.USN.CO.ZA
Appendix D:

Ethical approval
ETHICS APPROVAL CERTIFICATE OF STUDY

Based on approval by Health Research Ethics Committee (HREC) on 17/11/2016 after being reviewed at the meeting held on 20/10/2016, the North-West University Institutional Research Ethics Regulatory Committee (NWU IREC) hereby approves your study as indicated below. This implies that the NWU IREC grants its permission that provided the special conditions specified below are met and pending any other authorisation that may be necessary, the study may be initiated, using the ethics number below.

Study title: Understanding the motives of consumers employed at a nutrition company for choosing sugared diary

Study Leader/Supervisor: Dr A Mielman
Student: J Botha

Ethics number: NWU.01.035.10.16.A01

Application Type: Single study
Commencement date: 2010-11-17

Continuation of the study is dependent on receipt of the annual (or as otherwise stipulated) monitoring report and the concomitant issuing of a letter of continuation up to a maximum period of three years.

Special conditions of the approval (if applicable):

- Translation of the informed consent document to the languages applicable to the study participants should be submitted to the HREC (if applicable).
- Any research at governmental or private institutions, permission must still be obtained from relevant authorities and provided to the HREC.
- Ethics approval is required before approval can be obtained from these authorities.

General conditions:

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

- The study leader (principal investigator) must report in the prescribed format to the NWU IREC via HREC:
  - annually (or as otherwise requested) on the monitoring of the study, and upon completion of the study
  - without any delay in case of any adverse event or incident (or any matter that interrupts sound ethical principles) during the course of the study.
- Annually a number of studies may be randomly selected for an external audit.
- The approval applies strictly to the proposal as stipulated in the application form. Would any changes to the proposal be deemed necessary during the course of the study, the study leader must apply for approval of these amendments at the HREC, prior to implementation. Would there be deviation from the study proposal without the necessary approval of such amendments, the ethics approval is immediately and automatically forfeited.
- The date of approval indicates the trial date that the study may be started.
- In the interest of ethical responsibility the NWU IREC and HREC retains the right to:
  - request access to any information or data at any time during the course of the study;
  - to ask further questions, seek additional information, require further modification or monitor the conduct of your research or the informed consent process.
  - withdraw or postpone approval if:
    - any unethical principles or practices of the study are revealed or suspected;
    - it becomes apparent that any relevant information was withheld from the HREC or that information has been false or misrepresented;
    - the required amendments, annual (or otherwise stipulated) report and reporting of adverse events or incidents was not done in a timely manner and accurately;
    - new institutional, national legislation or international conventions deem it necessary.

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

Yours sincerely

Prof Linda du Plessis
Chair NWU Institutional Research Ethics Regulatory Committee (IERC)
Section 4.3: Demographic and general information

Table E1: Summary of BMI scores

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>1.72</td>
<td>0.10522</td>
</tr>
<tr>
<td>Weight</td>
<td>76.5</td>
<td>19.331</td>
</tr>
<tr>
<td>BMI</td>
<td>25.6</td>
<td>4.44245</td>
</tr>
</tbody>
</table>

Table E2: Frequency of physical activity

<table>
<thead>
<tr>
<th>Exercise per week</th>
<th>% of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>6.7</td>
</tr>
<tr>
<td>1-2 times</td>
<td>16</td>
</tr>
<tr>
<td>3-4 times</td>
<td>32</td>
</tr>
<tr>
<td>5-6 times</td>
<td>30.7</td>
</tr>
<tr>
<td>Every day</td>
<td>14.7</td>
</tr>
</tbody>
</table>

Table E3: Awareness of sugar content in sugared dairy products

<table>
<thead>
<tr>
<th>Statement</th>
<th>n</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>How much sugar (in teaspoons) do you think are in one serving of your</td>
<td>75</td>
<td>3.90</td>
<td>4.44</td>
</tr>
<tr>
<td>preferred product?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you ever read the sugar content on the food label of sugared dairy</td>
<td>75</td>
<td>1.36</td>
<td>0.48</td>
</tr>
<tr>
<td>products?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If yes, do you find the sugar content clearly indicated on the food label</td>
<td>68</td>
<td>1.81</td>
<td>0.92</td>
</tr>
<tr>
<td>of sugared dairy products?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table E4: Frequency of food choice of sugared dairy products as a snack

<table>
<thead>
<tr>
<th>How often do you buy sugared dairy products as a snack?</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Once a month</td>
<td>50.7</td>
</tr>
<tr>
<td>Once every 3 weeks</td>
<td>16.0</td>
</tr>
<tr>
<td>Once every 2 weeks</td>
<td>13.3</td>
</tr>
<tr>
<td>Once a week</td>
<td>10.7</td>
</tr>
<tr>
<td>2-3 times a week</td>
<td>6.7</td>
</tr>
<tr>
<td>Almost every day</td>
<td>2.7</td>
</tr>
</tbody>
</table>

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Table E5: Individual items in factors regarding health consciousness (%)

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>To a small extent</th>
<th>To some extent</th>
<th>To a great extent</th>
<th>I don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>I care about my sugar intake</td>
<td>5.3</td>
<td>16.0</td>
<td>17.3</td>
<td>58.7</td>
<td>2.7</td>
</tr>
<tr>
<td>Dairy is healthy, no matter the amount of sugar it contains</td>
<td>48.0</td>
<td>42.7</td>
<td>8.0</td>
<td>1.3</td>
<td>-</td>
</tr>
<tr>
<td>I am concerned about the amount of sugar in dairy</td>
<td>8.0</td>
<td>41.3</td>
<td>18.7</td>
<td>32.0</td>
<td>-</td>
</tr>
<tr>
<td>Dairy does not need additional sugar</td>
<td>6.7</td>
<td>44.0</td>
<td>20.0</td>
<td>22.7</td>
<td>6.7</td>
</tr>
</tbody>
</table>
Section 4.4: Consumers’ motives to choose SDPs

Table E6: Summary of EFA of motives to choose SDPs (Factor loadings from PCA)

<table>
<thead>
<tr>
<th>Item in scale</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is what I usually eat</td>
<td>0.849</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It contains a lot of nutrients</td>
<td>0.828</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It contains no additives</td>
<td>0.823</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It keeps me healthy</td>
<td>0.740</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is part of my weight control plan</td>
<td>0.704</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is good for my teeth/bones/skin/nails etc.</td>
<td>0.652</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is low in calories</td>
<td>0.650</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It indicates on the label that it does not contain hormones</td>
<td>0.622</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The label contains an animal welfare logo or indicates organic practise</td>
<td>0.615</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is good value for money</td>
<td></td>
<td>0.344</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is easily available in shops and supermarkets</td>
<td></td>
<td>0.802</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It tastes good</td>
<td></td>
<td>0.797</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is readily available</td>
<td></td>
<td>0.719</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It does not require preparation</td>
<td></td>
<td>0.707</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It has a pleasant texture</td>
<td></td>
<td>0.692</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I need a quick snack at work</td>
<td></td>
<td>0.672</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It looks nice</td>
<td></td>
<td>0.618</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is not expensive</td>
<td></td>
<td>0.610</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is familiar to me</td>
<td></td>
<td></td>
<td>0.478</td>
<td></td>
</tr>
<tr>
<td>It comes from a country I approve of politically</td>
<td></td>
<td></td>
<td></td>
<td>0.904</td>
</tr>
<tr>
<td>It contains no artificial ingredients</td>
<td></td>
<td></td>
<td></td>
<td>0.723</td>
</tr>
<tr>
<td>It is packaged in an environmentally friendly way</td>
<td></td>
<td></td>
<td></td>
<td>0.601</td>
</tr>
<tr>
<td>It is low in fat</td>
<td></td>
<td></td>
<td></td>
<td>0.547</td>
</tr>
<tr>
<td>It is like the food I ate when I was a child</td>
<td></td>
<td></td>
<td></td>
<td>0.481</td>
</tr>
<tr>
<td>It contains natural ingredients</td>
<td></td>
<td></td>
<td></td>
<td>0.477</td>
</tr>
<tr>
<td>It cheers me up</td>
<td></td>
<td></td>
<td></td>
<td>0.831</td>
</tr>
<tr>
<td>It makes me feel good</td>
<td></td>
<td></td>
<td></td>
<td>0.758</td>
</tr>
<tr>
<td>Table E7: Individual items in factors regarding food choice (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I need a quick snack at work</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>Almost never</td>
<td>Sometimes</td>
<td>Often</td>
<td>Always</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------</td>
<td>------------</td>
<td>-------</td>
<td>--------</td>
</tr>
<tr>
<td>21.2</td>
<td>4.5</td>
<td>43.9</td>
<td>21.2</td>
<td>9.1</td>
</tr>
<tr>
<td>It is easily available in shops and supermarkets</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>Almost never</td>
<td>Sometimes</td>
<td>Often</td>
<td>Always</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------</td>
<td>------------</td>
<td>-------</td>
<td>--------</td>
</tr>
<tr>
<td>9.1</td>
<td>7.6</td>
<td>37.9</td>
<td>31.8</td>
<td>13.6</td>
</tr>
</tbody>
</table>