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**A cross-cultural content analysis of the portrayal of food and  
nutrition, in television advertising and programmes  
in New Zealand and Japan in 2002/2003.**

**A thesis presented in partial fulfilment of the requirements for  
the degree of**

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## **Abstract**

The purpose of this study was to examine and compare the food-related messages that are presented to children on New Zealand and Japanese television. A sample of 25 programmes, including advertisements broadcast on New Zealand's main free-to-air network stations and a sample of 22 programmes, including advertisements broadcast on Japan's network stations were the basis of this study. Food-related messages, content and portrayed eating behaviours were analysed. The main finding of this study suggest that the advertising content of children's programmes contain a large proportion of food advertising, largely for foods high in fat and sugar. The children's programming environments in both New Zealand and Japan also contain a large proportion of food imagery, which does include a variety of healthy foods such as meat, rice, bread, fruit and vegetables. Of more concern is that whilst Japanese children are mainly watching children's programmes, in New Zealand, children are exposed to numerous unhealthy food related imagery during programmes of which they are heavy viewers, although they are not the target audience, i.e. peak viewing periods, typically 6pm -10:30pm daily. Furthermore the unhealthy eating imagery during peak viewing periods may be contributing towards shaping children's nutrition practices. It is recommended that marketers and policy makers consider these issues in regard to the claims that advertising is a contributing factor to obesity. Due to the high incidence of eating behaviours occurring during programme content it is recommended that an advertising ban during children's programmes in New Zealand and Japan would be inconsistent, ineffective and unjustifiable.

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## **Glossary of terms**

### **For the purpose of this study:**

#### **Children**

Are defined as being aged between four and fourteen unless otherwise stated. This combines the AC Nielsen (New Zealand) definition of children (aged 5-14) and the Video Research (Japan) definition of children (aged 4-12).

#### **Fat**

The Food Guide Pyramid (USDA, 2000) and other similar dietary guidelines recommend a diet low in fat. A “high fat” diet is one that consists of between 30% to 40% of a person’s total daily energy intake. A “low fat” intake is 20% to 25% of energy intake (WHO, 2000b).

#### **Food**

A variety of food terms have been used throughout this report, including “junk food”, “treat food” “unhealthy food” and “food of low nutritional value”.

Firstly, Kaufman’s (1980) definition of “food” was used and is as follows: “any article used for food or drink by humans, including chewing gum” (p.37).

“Junk food” is defined as: “food which is eaten in addition to or instead of regular meals, and which often has low nutritional value” (Collins Concise Dictionary, 2001, p.794).

It was not possible to obtain a standard definition of “treat food” per se. However, there are two seemingly generally agreed upon components that the term “treat food” encompasses: 1. treat foods are to be eaten occasionally, and

2. treat foods are foods high in fat, sugar and salt. The New Zealand Ministry of Health (NZMH) allude to this, stating, “foods that are high in fat, salt or sugar are best left for occasional treats” (NZMH, 1997, p.30).

The terms “unhealthy food” and “food of low nutritional value” are seemingly spin-off terms that generally refer to the same types of foods categorised as “junk food” and “treat food”. These colloquial phrases are used in this report interchangeably.

Whilst the definitions supplied qualify the nature of these foods i.e. foods high in fat, sugar and salt, there is no provision for specific “junk food” examples. Obesity and nutrition related literature suggests that the following foods could be classified by these terms: beverages with high sugar content e.g. some fruit juices, energy drinks and soft drinks, confectionery, e.g. chocolate, sweets and cakes and biscuits, potato crisps and fast food, e.g. fish and chips, burgers and fries. However, this list is by no means exhaustive. Furthermore, it is important to note that authorities such as the NZMH comment that moderation is very important and that no one food is inherently “bad” (NZMH, 1997). According to Xhles and Miles (1982, cited in NZMH, 1997, p.30), “if most of a child’s meals are nutritionally sound, occasional treats of potato chips, soft drinks, sweets and fast food are acceptable”.

## **Obesity**

Obesity, defined by the World Health Organisation (WHO, 2000b) is based on the Body Mass Index (BMI), calculated as the weight in kilograms divided by the square of the height in metres. A BMI equal to or greater than 25 is considered “overweight” and a BMI of 30 and above denotes “obesity”. Normal weights are in the range of 18.5-25.

However, in an alternative document the WHO (2000a) comment that although in some Asian populations the prevalence of obesity is lower than in Europe,

the health risks associated with obesity occur at a lower BMI in Asian populations. Furthermore, Polynesians tend to be more muscular with higher BMI's than Europeans, but have lower fat levels for the same BMI. Consequently, the WHO recognises that current criteria for defining obesity may not be appropriate for some nationalities. However, at the time of writing this report BMI is still the most widely used tool for obesity measurement.

### **Physical activity**

In 2001 the NZMH produced a document entitled, “New Zealand Health Strategy. DHB Toolkit: Physical Activity. Edition 1.” The document discusses in detail issues relating to physical activity. The definitions in this report are based on those provided by the NZMH.

Physical activity is defined as follows:

“Any bodily movement produced by skeletal muscles that results in energy expenditure. It comprises duration, frequency, intensity, type and context” (Caspersen, Powell and Christenson, 1985, cited in NZMH, 2001, p.13).

The NZMH also provides definitions for “exercise”, “physical fitness” and different levels of activity. These are contained in Appendix 1.

In 2001 The Hillary Commission developed physical activity guidelines for New Zealanders. These guidelines are also documented in the NZMH physical activity report, included in Appendix 1.

## **1 Introduction**

The increasing rate of obesity, particularly among children, is a topical issue worldwide because obesity can lead to serious, and even potentially fatal, health conditions such as:

- High blood pressure,
- Heart problems,
- Type 2 diabetes,
- Depression,
- Arthritis

(Wallace, Schulte, Nakeeb & Andris, 2001).

Marketing communication of food which is fatty and of low nutritional value is often identified as an influencing factor in unhealthy eating patterns. Advertising restrictions or bans on advertising during children's television programmes have been proposed as one means of addressing obesity rates (Fight the Obesity Epidemic, cited in NZPA (New Zealand Herald), 2002).

In order to address these issues, a cross-cultural comparison between New Zealand and Japan television content analysis was conducted as a partial replication of Kaufman's (1980) American television content analysis studies, using New Zealand and Japanese television broadcasts. This involved an examination of the food products advertised, categorisation of the food types, and analysis of the consumption situation, e.g. where the food is consumed, who it is consumed by, and the portrayed serving suggestion where applicable. Kaufman's studies also indicated that advertising was not solely responsible for presenting unhealthy eating patterns and accordingly examined the presentation of food/eating occurrences within programme content. This suggests that children are exposed to food imagery in both advertising and programme content. Therefore both advertising and programme content must be examined

in order to adequately assess the nature of food imagery broadcast to children on television.

This aim of this research is to examine and compare the food-related imagery broadcast to children on New Zealand and Japanese television. Earlier research conducted in New Zealand has been limited to date, as has cross-cultural research of this nature.

The decision to compare New Zealand and Japan was made for several reasons. New Zealand and Japan are both developed countries experiencing common obesity problems, yet the respective lifestyles, food preferences and media environments differ greatly. This suggests that a comparison of the two could provide valuable information in these topic areas. On a personal level, it is through experience and linguistic study in Japan, that Japan and the Japanese language have become particular fields of interest. Having knowledge in these fields and thus greater accessibility to data was also an important consideration.

This report therefore represents an attempt to address the empirical information shortfall, to provide a framework for policy discussions with government policy makers in this field, and to stimulate and inform debate in other countries, such as the United States of America, Australia, England and Sweden, that may be seeking measures to reduce childhood obesity.

The findings of this study indicate that the television viewing environment in Japan is vastly different from that in New Zealand. In both New Zealand and Japan a significant proportion of television advertising broadcast during children's programming is food related, with much of this advertising for foods of low nutritional value. However, compared to New Zealand, Japanese television advertising has greater occurrences of healthy foods such as fruit and vegetables.

Of greater concern, particularly in the New Zealand viewing environment, are not necessarily the advertisements themselves but rather the programme content. In both New Zealand and Japan, the children's programming environments show a variety of healthy foods including meat, rice, bread, fruit and vegetables. However, whilst Japanese children are mainly watching cartoons and children's programmes, New Zealand children are watching programmes such as soap operas and sitcoms, for which they are not the targeted audience. Furthermore it is during watching these soap opera and sitcom type programmes that New Zealand children are exposed to unhealthy foods and eating behaviours.

Due to the high incidence of eating behaviours occurring during programme content, this report therefore suggests that an advertising ban throughout children's programmes in New Zealand and Japan would be inconsistent, ineffective and unjustifiable. In order to address obesity issues it is recommended that alternative courses of action, such as health education be considered.



## **2 Literature Review**

### **2.1 Introduction**

Increasing rates of obesity, especially among children, is becoming a worldwide phenomenon. The WHO states that obesity is the greatest threat in developed countries (Telegraph Group Ltd., 2003). Kraak & Pelletier (1998) assert that nationwide surveys show the food consumption patterns of most American children do not meet American Dietary Guidelines. These guidelines recommend aiming for fitness, building a healthy food base and choosing foods sensibly (Dietary Guidelines for Americans, 2000. For further details see Appendix 2). In America, 60% of adults and 25% of children are either overweight or obese, and obesity is contributing to 15% of the country's two million deaths each year ("Come on in", 2002).

In 2000, US\$117 billion was spent treating Americans with diet related conditions such as cancer and heart disease ("Come on in", 2002). Obesity has been associated with a variety of other medical problems including high blood pressure; heart problems, diabetes, sleep apnoea, depression and arthritis, whilst severe obesity can lead to premature death (Wallace et. al., 2001).

Australian figures are also striking: the proportion of obese and overweight children has doubled since 1985. Other experts now estimate that one in five Australian children is obese or overweight ("Rising Calorie", 2002). Similarly, one in three Britons is overweight and one in five is obese (Telegraph Group Ltd., 2003).

As obesity climbs to epidemic levels, New Zealand health experts are becoming concerned with the effect this is having on New Zealand children (NZPA (New Zealand Herald), 2002). Childhood obesity can lead to serious health problems, including type 2 diabetes, high blood pressure and hip and joint problems.

Diabetes alone is predicted to cost New Zealand taxpayers more than \$1 billion in medical costs by 2021 (Thomson, 2003).

According to NZMH statistics, approximately 17% of New Zealand adults are obese. Obesity figures rose 55% between 1989 and 1997, the last year national figures were recorded (NZPA (New Zealand Herald), 2002). This is projected to increase a further 70% by 2011. By this time 29% of the New Zealand population could be obese (NZMH, 2002).

Despite the fact there is no nationally representative data on rates of obesity in New Zealand children, a study conducted in 2001 of Auckland school children aged 5 - 10.9 years found that 14.3% of children were obese using the recommended definition of obesity (a BMI of greater than  $30\text{kg/m}^2$ ) (Tyrrell et al. 2001, cited in NZMH, 2002). Obesity rates varied with age and ethnicity, being higher for older children (age not specified) and for Maori and Pacific Island children than for New Zealand European children (NZMH, 2002). A more recent study (Walsh, 2003b) has since revealed that one third of New Zealand children are overweight, 10% are obese. Overweight and obesity levels are highest for Pacific Island children, followed by Maori.

Whilst Western cultures are already struggling with obesity, Eastern cultures too are experiencing the emergence of obesity and obesity related diseases (Matsumura, 2001). Bassindale (2000) reports that in recent years Japan has seen a rapid rise in obesity for the first time. Japanese people weigh less than people of any other industrialised country in the world, even after taking into account their smaller body frames (Perlmutter, 1995). However in Japan, current lifestyles have been “westernised” and society has become highly industrialised (Kagamimori et al., 1999). Furthermore, the dietary habits of the Japanese have shifted during the last half century, from traditional to contemporary, and a large proportion of the Japanese population have turned to

a “westernised” diet which includes more calories and animal fat than traditional diets (Matsumura, 2001; Bassindale, 2000).

Inevitably this change has produced some effects on the nutritional status of children: excessive consumption relating to obesity is now one of the main problems for Japanese children (Kagamimori et al., 1999). The Japan Society for the Study of Obesity has warned the Japanese government that there may be major health implications in the future as a result of a “tidal wave” of obesity that is currently facing the country’s children (Lancet, 1999). The society also states that the number of overweight Japanese has more than quadrupled in the past three decades (Lancet, 1999). Furthermore this trend is being mirrored throughout Asia. International Obesity Task Force chairman, Professor Phillip James, warns of an obesity “explosion”, stating that Asia is facing a huge epidemic (Bassindale, 2000).

### **2.1.1 Social consequences of obesity**

The social consequences of obesity can be as alarming as their health concerns. Obese children may be ridiculed at school and find making friendships difficult. This rejection can lead to psychological disorders (Ferro, 2002). Overweight children face being unable to wear the so-called trendy clothes of their peers and often have problems playing sports and participating in physical activities (Ferro, 2002).

In a British documentary, (Oord, 2002) clinically obese adult individuals provided accounts of failed marriages, broken families, feelings of low self-esteem and self worth as a result of their weight. This was frequently claimed to have followed a “vicious” cycle where eating became both the cause of depression, and also a means of comfort. However there is a certain element of post-rationalisation in these cases. It is impossible to determine whether these individuals’ situations would have developed in the same way, or reached the

same end point, had those people not become obese. It must be questioned whether they were simply looking for an “external-to-their-real-identity” factor to blame.

Regardless of whether obesity is considered to be the cause or the effect of such psychological problems, for those who fall into the extremely obese category the situation is more serious. Whilst obesity may influence one’s health and social interactions, it is also likely to influence personal mobility, reducing weight loss options.

A range of means is used to attempt weight reduction including dieting, exercise, herbal and “alternative” remedies, through to more conventional medications (Eagle, Bulmer & Hawkins, 2003). However, not all methods are suitable for all obese people. For example, some exercise regimes may be too physically demanding for many obese people. Likewise, medical treatment or surgery is only an option up to a maximum weight, above which the procedures can become life threatening. This therefore suggests that obesity must be addressed at an early level, before cases reach an untreatable level.

## **2.2 Broader communication issues**

Advertising and marketing communications have become powerful and pervasive forces worldwide (Schultz & Kitchen, 2000). These activities are the presentation and promotion of ideas, goods and services by a given identifiable provider (Kotler & Armstrong, 1996). Eagle, Rose & Kitchen (2003) comment that the view of advertising as a strongly persuasive force is a major theme in both academic and practitioner literature, particularly that originating from the USA. However, their indepth study of mature markets actually concludes that advertising is unlikely to be a strongly persuasive force in many markets. Irrespective of this, considerable sums of money are spent on advertising each year: global advertising expenditures reached \$US 315 billion in 2000, a 7.2%

increase from the previous year (World Advertising Research Center [WARC], 2003). This suggests that regardless of the actual effect advertising may have, large sums of money are still being spent on advertising campaigns.

Whilst advertisers seek to communicate a message, consumers interpret messages based on their fields of experience: the sum total of an individual's knowledge, emotions, feelings, signs, symbols, gestures, – that have been accumulated during their lifetime (Schultz & Kitchen, 2000). McCracken (1986, p.75) discusses advertising as a potential method of meaning transfer “by bringing the consumer good (product) and a representation of the culturally constituted world together”. Individuals may use advertising as personal and social resources, “invested with specific meanings anchored in everyday life... which are then used to construct or maintain personal and social identities” (Elliott & Ritson, 1995, p.740).

Considering the perceived power of advertising, the way in which it can effect consumers' personal lives, combined with the vulnerability of children, based on childrens' limited cognitive ability to deal with the commercial activities that advertising represents (see, for example, Brucks, Armstrong, & Goldberg, 1988), marketers have a responsibility to ensure that the nature and content of advertising is ethically and morally appropriate. Kotler & Armstrong (1996) state that there is an increased awareness for marketers to take responsibility for the social and environmental impact of their actions.

## **2.2.1 Advertising**

### **2.2.1.1 Advertising expenditure**

Japan is the world's second largest advertising market, behind only the USA (Taylor and Raymond, 2000). Television is the leading media for advertising expenditure in Japan. Although the population is half the size of America, the population density is much higher, meaning local television stations have a much greater audience reach (Johansson, 1994). Whilst New Zealand may not be amongst the world's largest advertising markets, expenditure on advertising in New Zealand is increasing. Advertising expenditure is based on the cost of an advertisement as published by the television stations' ratecard and does not include any discounts that may apply (Nielsen Media Research, 2001). Total advertising expenditure, based on ratecard costs, dramatically increased from 1992 to 2002 (ASA, 2002). Television is the second largest media for advertising expenditure in New Zealand, having had a turnover of \$395M in 1992, which increased to \$516M in 2002. Clearly, in both New Zealand and Japan, television advertising is a well utilised media for message communication.

#### **2.2.1.2 Advertising style**

There is a large amount of research pertaining to Japanese advertising styles, in particular comparative analysis with American advertising (see for example Hong, 1987; Mueller, 1987; di Benedetto & Tamate, 1992; Ramaprasad & Hasegawa, 1992; Lin, 1993; Johansson, 1994). Japanese advertising reflects "Confucian" and collectivistic values, emphasising concepts of "face" and harmony, resulting in an indirect communication style (de Mooji, 1998). The Japanese resist hard sell advertising, favouring a soft-sell approach that gratifies the typical relationship between buyer and seller in Japan. The buyer is perceived as "almighty", high quality is taken for granted and the Japanese consumer is naturally suspicious of anyone who needs to extol the virtues of a product (Johansson, 1994). Di Benedetto & Tamate (1992) comment that avoidance of directness in expression is standard in all forms of communication among the Japanese. Many Japanese television commercials do not even

mention the desirable and positive aspects of the product or brand, instead showing the advertised product in use, allowing the audience to judge for themselves.

Whilst numerous authors have drawn comparisons between Western and Japanese advertising (see above), several key points are synonymous. These are best summarised by Kishii (1988, cited in di Benedetto & Tamate, 1992, p.2), who identified seven characteristics that distinguish Japanese creative strategy. They are:

1. Indirect rather than direct forms of expression are preferred in advertising messages
2. There is often little relationship between advertising content and the advertised product
3. Only brief dialogue is used in television advertisements, with minimal explanatory content
4. Humour is used to create a bond of mutual feelings
5. Famous celebrities appear as close acquaintances
6. Priority is placed on company trust rather than product quality
7. The product name is impressed on the viewer during short 15 second advertisements

The “style” of advertising in New Zealand is less documented in literature, however it does have much in common with other “western” style advertising (e.g. USA). According to Mueller’s 1987 analysis of Japanese and American advertising, cultural values, norms and characteristics are entrenched in advertising appeals. These appeals are designed to motivate the consumer to purchase. Mueller’s (1987) study considers the following advertising appeals as being distinctly “western”:

1. Individual and independence appeals – the individual is emphasised as being unique and is self sufficient.

2. Hard sell appeals – the brand name and product recommendations are emphasised.
3. Youth and modernity appeals – the youthful benefits and contemporariness of the products are emphasised.
4. Product merit appeals – the features and specific characteristics of the products are emphasised.
5. Manipulation of nature appeals – the notion of human superiority over nature and technological achievement are emphasised.

### **2.2.1.3 Regulation**

New Zealand, like many other OECD countries, is well provided for in terms of consumer protection legislation (e.g. Fair Trading Act, 1986; Consumer Guarantees Act, 1993). Additionally, the New Zealand Bill of Rights Act (1990) includes rights to free speech, which, again like many other countries, is held to provide the legal basis of the right to advertise (Eagle & de Bruin, 2001). Beneath this umbrella legislation, advertising on New Zealand television is also controlled via self regulation. The Advertising Standards Authority (ASA) governs this and advertisers must adhere to the ASA Advertising Codes of Practice. In Japan, advertising regulation is administered by the Japanese Fair Trade Commission (JFTC) (Taylor & Raymond, 2000).

In New Zealand, the ASA recognises the United Nations Convention on the Rights of the Child, particularly a child's right to "freedom to seek, receive and impart information and ideas of all kinds, ...through any media of the child's choice" (Television Broadcasters' Council, 2001, p.1). Whilst acknowledging this right, the Convention also seeks to provide children "extra protection' from violence, unsafe practices, indecency, offensive language or bad taste" (Television Broadcasters' Council, 2001, p.1). No advertising is permitted during preschool television and advertising is limited during school-age (5-13 year olds) children's television. Repetition of advertisements is strictly



controlled, advertising must be clearly separable from programmes and character merchandise must not be promoted within that programme (Television Broadcasters' Council, 2001). Treat food is given special mention in the Codes of Practice: advertisements for treat food should not encourage children to consume them near bedtime, to consume them frequently throughout the day or to substitute main meals with them (ASA, Code for Advertising of Food, 2001. For further details see Appendix 3).

A search of the literature indicated that no document was found to contain a single set of explicit codes of practice for Japanese television advertisers. Taylor and Raymond (2000) comment that in respect of advertising regulation the JFTC generally allows private trade associations to establish their own guidelines for advertising and promotion. The JFTC has had some involvement in establishing guidelines for monitoring deception and comparative advertising; however industry associations are generally allowed to set their own restrictions on product categories (Kilburn, 1988, cited in Taylor & Raymond, 2000).

This implies that the advertising regulations in New Zealand are stricter, more comprehensive and more strongly enforced than in Japan. For example, tobacco and alcohol advertising is prohibited during children's programmes in New Zealand; this is not the case in Japan. Taylor and Raymond (2000) comment that cigarette advertising in any media in Japan has never been formally banned by the JTFC. They do however note that voluntary bans are generally upheld due to business relationships and cultural values. Similarly, advertising of alcohol is permitted in all major media vehicles in Japan. This suggests that it is acceptable to advertise alcohol or cigarettes during children's programmes in Japan. However, whilst regulation of what is acceptable is limited, some restrictions are imposed by the Japanese public (Taylor & Raymond, 2000).

Considering the contrasting nature of the advertising environments in New Zealand and Japan it is valuable to examine how food is presented to children in each environment. In New Zealand, where restrictions on advertising are already in place, some groups (see, for example, New Zealand Labour Party, 1999; Fight the Obesity Epidemic, cited in NZPA (New Zealand Herald), 2002) believe that more aggressive restrictions are required for advertising targeted at children. The debate on the harmful health effects of advertising has centred principally on controversy surrounding advertising of food products that lead to unhealthy dietary habits and nutrition problems (Eagle & de Bruin, 2001). Ironically, in Japan where restrictions are seemingly less regulated, there are few calls for such action.

## **2.3 Likely causes of obesity**

### **2.3.1 Obesity and genetics**

As concerns regarding obesity and related diseases increase, so does the debate regarding the causes of obesity. European evidence suggests that obesity results from multiple interactions between genes and environment, and that parents' obesity is the most important risk factor for childhood obesity (Maffeis, 2000). This is supported by studies of adopted children, which have shown that as adults, people who were adopted as children, are closer in weight to their biological parents than to their adoptive parents (Stunkard, 1986, cited in Nevid, Rathus & Rubenstien, 1998). Heredity may also influence metabolism - the rate at which the body burns calories to maintain itself (Nevid, Rathus & Rubenstien, 1998). Metabolic rates do vary, and according to set point theory an individual's body weight is genetically set within a given weight range, or set point, that the body works to maintain (Nevid, Rathus & Rubenstien, 1998). This suggests that some individuals may have a biological propensity towards obesity, which implies that a different set of solutions may be required for these cases.

The NZMH (2002) suggests that New Zealanders, both adults and children address the issue of energy balance to minimise the risk of obesity developing. One key to balancing energy is responding to a child's hunger signals (NZMH, 1997). The NZMH (1997) asserts that energy balance is variable depending on the individual child, and is influenced by the child's rate of growth, increasing body size, gender and level of physical activity. Alternatively, Egger & Swinburn (1997) present an ecological model of energy balance where fat stores are equal to energy intake minus energy expenditure plus a physiological adjustment. An integral part of this model is the influence that biology, behaviour and the environment have on energy intake and energy expenditure.

The NZMH (2002) comments that some population sectors are at a higher risk of developing obesity (calculated using the Body Mass Index [BMI]); an index number that shows body weight adjusted for height) than others, and that prevention and treatment interventions should be directed at these particular groups. High-risk groups include overweight and obese people, as defined by the NZMH as: a BMI of 25-30 for NZ European and Other and a BMI of 26-32 for Maori and Pacific races is considered overweight. A BMI greater than 30 for New Zealand European and Other and a BMI greater than 32 for Maori and Pacific races is considered obese. The high risk groups identified by the NZMH are children, particularly those who are already overweight or obese or have overweight or obese parents, Maori, Pacific Islanders, people in lower socio-economic groups, people with physical disabilities, ex-smokers, women post-pregnancy, physically inactive people and formerly obese people (NZMH, 2002).

### **2.3.2 Television watching, exercise and obesity**

Whilst the exposure to food advertised on children's television may reinforce poor eating habits, the act of watching television itself is also seen as a

contributing factor to obesity. Spokesperson Robyn Toomath of the New Zealand "Fight the Obesity Epidemic" organisation believes the reasons behind soaring obesity rates are obvious: fewer children are walking to school and they are eating more "junk food" (food of low nutritional value) while they are attending school. Lack of exercise is attributed to a lack of interest in athletic endeavours and to the lifestyles some children lead (Nutrition Tips, 1997). Although at this time specific New Zealand research establishing the link between crime, poverty and safety versus physical activity is lacking, American researchers such as Lino et.al (2002) study of Latino children found that crime and poverty were also contributing factors, restricting children to indoor activities. It is also likely that in situations where both of a child's parents are working, the child will not walk or cycle to school because being unaccompanied by an adult may be considered unsafe. Whilst this study was conducted with Latino children, the same crime, poverty and safety factors may be considered relevant to similar socio-economic groups of New Zealand children, for example, some Maori and Pacific Islanders.

At home, New Zealanders are watching more television than previously. ACNielsen data shows that in 2002 New Zealanders aged 5+ spent on average 171 minutes per day viewing television; an increase of three minutes over 2001, and an increase of ten minutes on 1992 when New Zealanders spent 161 minutes per day viewing television (ACNielsen, 2003). However, television viewing among children aged 5 – 14 years appears to be static. Interestingly children's use of free-to-air (commercial) channels has actually declined over the last decade, with subscription-based, largely advertising free channels (Sky, with more than 30 channels) increasing (Eagle, Bulmer & Hawkins, 2003).

Regardless of how much time is spent viewing television, New Zealand viewers are being "bombarded" with advertising messages of high fat and sugar content foods ("Obesity hitting younger", 2002). Television has been identified as one of the major causes of childhood obesity; Sell (1999) asserts that young

television “addicts” are playing less sport, are more likely to “snack” and be influenced by junk food (food of low nutritional value) advertisements. Children in the United States spend more time watching television than they do in any other activity except sleeping (Dietz & Strasburger, 1991, cited in Kotz & Story, 1994). Therefore, while it is implausible to render the act of sitting, and actually watching television as a cause of obesity, it seems reasonable to assume that a passive activity such as television viewing is replacing other high energy expenditure activities (Sylvester et. al, 1995). Similarly, technological advancements in children’s entertainment - games consoles, DVD players, computers and the Internet - are likely to be contributing to the lack of exercise and laziness. These activities may be keeping children busy but sedentary (Nutrition Tips, 1997).

### **2.3.3 Lifestyles and eating choices**

A plethora of sociocultural and demographic factors have resulted in significant changes in lifestyle and environment for the present generation of children born after 1980 (Marquis, 1994). These lifestyle factors play an important rôle in the food consumption practices children develop. Divorce rates have increased, as have single parent families, and more mothers are in the workforce (Marquis, 1994). It is therefore not uncommon nowadays for children to be fending for themselves, preparing their own school lunches and after school snacks. This gives rise to the issue of whether children are capable of making wise food choices on their own. The American Academy of Paediatrics believe the responsibility of educating children in these matters should lie with parents, stating, “Parents rather than children should determine what children should eat. Children are unprepared to make appropriate food choices and do not understand the relationship of food choices to health maintenance and disease prevention” (cited in Kotz & Story, 1994).

However, the issue may have more to do with children's freedom of choice rather than their overall nutritional knowledge; despite knowing what constitutes a healthy diet, most children's present dietary practices do not reflect this knowledge (Hitchings & Moynihan, 1998). This may relate to "reactance behaviour", a concept that refers to the motivational state that results from threats to personal freedom (Brehm, 1966, cited in Rummel, Howard, Swinton & Seymour, 2000). According to Rummel et al. (2000), parental disapproval may be interpreted by children as threatening their freedom of choice, thus motivating them to purchase rather than avoid the products in question. Accordingly children may be motivated to purchase low nutrition foods rather than avoid them, based on their parents' disapproval of those foods.

Whilst children may not always be capable of making their own wise food choices, there are no guarantees that parents' or caregivers' choices are any wiser. Furthermore, the food industry is as "market driven" as it is "market driving" (Sheth & Sisodia, 1999). That is, whilst it would seem that advertisers are promoting products (market driving), consumers are also demanding products (market driven). As lifestyles now include more time at work and commuting, less time to cook at home and fewer meals at home, convenient cost effective meals are becoming more appealing ("Come on in", 2002). These changes are paralleled, particularly in lower socioeconomic groups, with trends in the availability of fast food, loss of historical cultural eating traditions and less traditional cooking (Zwiauer, 2000).

With the demand for cost effective meals increasing, it may seem that marketers are merely providing the public what they want. Incidentally, junk food is seemingly more affordable - for New Zealanders two litres of Coca Cola is cheaper than two litres of milk (Toomath, cited in Catherall, 2002). Fast food establishments such as McDonald's are not only more economically democratic (cheaper, offering better value for money), they are also far more child friendly than other cafés or restaurants ("Rising Calorie", 2002). For those in lower

socio-economic groups especially, healthy eating can be costly. As Lino et al. found in their recent (2002) study of the quality of young (aged 2- 9) American children's diets, a number of factors including age, gender, household income, food stamp receipt, food sufficiency and place of residence all had a significant impact on the quality of the diet. It was those in low-income households who received food stamps, or had insufficient food who had the worst dietary habits.

A further issue is that people outside the nuclear family may be making children's food choices. The responsibility of assisting children with their dietary practices may no longer be solely the rôle of their parents. Decisions regarding food choices that were once a family process are now often made by caregivers and peers, with many eating habits occurring outside the home (Crockett & Sims, 1995). This may limit the extent to which eating practices are controlled, or can lead to poor judgment food choices.

In many cases children now have an influence over family purchasing decisions. Their consumer habits may be affected by peer influence, ethnicity and culture, the school environment and commercialism (cited in Kraak & Pelletier, 1998). Kraak & Pelletier (1998) report that a survey of American families indicated that nearly 50% of parents believe that their children have an influence over meal and grocery choices, and restaurant selections. The corollary of this is that television influences peer choice and culture, which suggests that advertising creates a materialistic, consumerist mentality. This can have environmentally damaging implications (see, for example, Higham, 1999; Denny, 1999; Kirkpatrick, 1986).

Marquis (1994) attributes the influence children have on food purchases to "pester power". That is, children wail and stamp their feet until their parents relent and give them what they want. Parents however, seemed more concerned with toy advertising than food advertising. The Independent Television Commission conducted a study (1993) that showed very few advertisements

received specific complaints. The general gripe usually related to the volume of toy advertising (cited in Marquis, 1994). In addition, parents were not concerned about the food products advertised to their children. Their reasoning was that they were buying their children snacks, sweets and breakfast cereals anyway and were happy to let the children choose between brands (Marquis, 1994).

Irrespective of who is making the food choices for children, a greater problem may be that people are misinformed about what constitutes a healthy diet. This issue is multi-faceted. Whilst the public have seemingly poor basic knowledge of how to eat well, controversy surrounds the nutritional messages being promoted to the public, particularly in regard to the Food Guide Pyramid (U.S. Department of Agriculture, 1992, see Appendix 4 for details).

The critics of the pyramid are now claiming it is imperfect, lacking guidance on the specifics of each food group, when certain foods should be eaten, what other foods they should be served with and the recommended portion sizes. Willet & Stampfer (2002) imply that the Food Guide Pyramid released in 1992 by the U.S Department of Agriculture, aimed at helping the American public make informed dietary choices, is in fact grossly flawed. They support this assertion with the fact that the traditional pyramid is based on a high consumption (six to eleven servings per day) of complex carbohydrates – bread, cereals, pasta, and rice, and that scientists had found little evidence to show that such a high intake of carbohydrates is beneficial to health. Therefore by promoting the consumption of all complex carbohydrates while encouraging people to abstain from fats and oils, the pyramid is misleading (Willet & Stampfer, 2002). However, it should be considered that health professionals and policy makers have always advocated variety and balance in the diet, trying to encourage consumption of various foods within the levels of the pyramid in order to promote better nutrition.



The main point Willet & Stampfer (2002) raise is that not all fats are bad and, equally, not all carbohydrates are beneficial. Similarly, Hall (2001) believes that the Food Guide Pyramid is both too simplistic and too complex in its classification of foods to be of benefit. This means that whilst the foods are categorised correctly from an origin perspective, Hall (2001) notes that the actual nutrient content and biological effects of the food can vary greatly: half a cup of celery and half a cup of scalloped potatoes are both considered “one serving of vegetables”. This is despite the fact that the celery contains only about 20 calories and has no effect on blood sugar, blood lipids or hunger, while the potatoes contain about 150 calories and will dramatically increase blood sugar and lipids.

Hall (2001) also comments on two further “oversights” of the Food Guide Pyramid: there is no explanation of preferable meal timing (including intervals between meals and time of day meals are consumed) as well as the size of meals in the explanation of how to use the pyramid. There is also no explanation as to how servings within each food category should be combined. Therefore, as far as the guide is concerned, all the recommended servings for one day could potentially be eaten as a large evening meal before bed, or all servings of meat could possibly be eaten for breakfast, followed by all servings of bread consumed for dinner (Hall, 2001). However, these eating practices contradict nutrition guidelines set by other groups such as the NZMH (1997), which recommends eating mini-meals and eating a variety of foods.

Perhaps one of the most important issues is serving size. The serving sizes in the pyramid could probably be considered outdated, and no longer realistically reflect what Americans are serving themselves: “...Americans are eating in triple-sized servings and mistakenly thinking they are consuming just one serving” (Schieszer, 2001, p.122). This suggests that although people may be attempting to eat the right food groups, they are simply consuming too much food in one sitting.

Willet & Stampfer (2002) affirm that the Food Guide Pyramid is being reassessed by the USDA's Center for Nutrition Policy and Promotion, however this report is not expected to be completed until 2004. An additional challenge will be to ensure that the information given to the public regarding nutrition is based on scientific evidence. Willet & Stampfer (2002) suggest the food pyramid be reconstituted in a setting unaffected by political and economic interests.

Whilst the food guide pyramid is an American initiative, New Zealand dietary guidelines (NZMH, 1997, Appendix 5) recommends similar advice for New Zealanders. Accordingly, with such diverse dietary information available, and changing theories regarding healthy eating, such as fat versus carbohydrates, or choosing carbohydrates based on the Glycaemic Index (method of rating carbohydrates in food based on their effects on blood sugar levels in the body) it could reasonably be assumed that New Zealanders are also experiencing difficulty in understanding and adhering to sound nutrition practices.

#### **2.3.4 Advertising, children and obesity**

Although genetics play a significant rôle in the propensity to obesity, external food cues may also be responsible for triggering unnecessary or unhealthy food consumption (Nevid, Rathus & Rubenstein, 1998). Health advocates are therefore questioning the food related messages being presented to children on television advertising and through other advertising media. The central claim by critics is that advertising of high fat, high sugar food products is a major cause of unhealthy eating patterns, nutritional problems and obesity (Eagle, de Bruin & Bulmer, 2002).

The cause for concern lies in the fact that advertising targeting children is a high growth area, as is children's buying power (Eagle & de Bruin, 2001). Marketers target this youth market, hoping to establish early trends of brand

loyalty and influence parents' buying decisions (Dobrow, 2002). Furthermore, whilst children may influence their parents' spending habits, advertisers recognise that children also have their own money to spend (Strasburger, 2001). Influencing how children spend their own and their parents' money is a controversial issue, with young children perceived as cognitively and psychologically defenceless against television advertising (Strasburger, 2001). In addition, television advertising is still considered to be the primary mass market medium to target children (Marsh, 1999). Children are exposed to the sales messages of advertisers via television every day (Pine & Nash, 2002). In the USA children are exposed to a "barrage" of some 40,000 advertisements per year (Strasburger, 2001). Strasburger (2001) concludes that children have no defences against advertisements, while older children and teens can be manipulated and misled by them.

In order to address such claims about the unfair manipulation of children via advertising, research has explored children's cognitive defences (see, for example, Boush, 2001; Brucks, Armstrong & Goldberg, 1988; Rossiter & Robertson, 1974). "Cognitive defenses" are children's understanding of the selling intent of commercials and an associated distrust of advertisements (Brucks et.al., 1988). Studies, such as those mentioned above, have shown that many children can understand the selling intent of advertisements. According to Boush (2001) children acquire some cognitive defences at a very young age, evidence a high level of general scepticism about advertisements by early adolescence and continue to improve their understanding about the intent of advertising as they move through adolescence. However, Brucks et al. (1988) comment that knowledge of selling intent does not necessarily equate to resistance against persuasive advertising appeals. The Brucks et al. (1988) study found that children were more sceptical and critical of advertising when they were given a cue (e.g. an instructional film about advertising) that activated their advertising knowledge. This implies that some children do have cognitive defences but perhaps do not use them when exposed to advertising.

Brucks et al. (1988) suggest that prior instruction and cues may be required to aid 8-12 year old children effectively use cognitive defences against advertising. Boush (2001) comments that parents play an important rôle in the way children and adolescents develop cognitive defence skills.

There is also some debate over the age at which children are able to understand an advertiser's motive to sell a product, and when they can distinguish television programmes from advertisements (Pine & Nash, 2002). Influencing children's purchasing habits may be a primary objective for marketers; however children may often look to the television for rôle models and "life" learning. Whilst it is a widely held belief that young people learn about life primarily through their parents and teachers (Quesada & Lockwood-Summers, 1998), according to the American Medical Association (in a 1996 report), children in the 1990's "spend more than twice as much time learning from media as they do from the combined time with parents and teachers each year" (cited in Quesada & Lockwood-Summers, 1998).

Therefore, because television advertisers see children as a highly influential market, targeted by advertisers' primarily through television, the correlation between television food advertisements and unhealthy eating practices is seen as a contributing factor to obesity.

#### **2.3.4.1 Communication theory**

Various communication theories may explain children's relationships with mass media, particularly vicarious learning (learning by observing the behaviour of others) and rôle modelling. Vicarious learning by selective exposure to a limited range of foods on television (both advertising and programme content) may shape children's perceptions of the available food options. A case in point is that television exposes children to breakfast cereals high in sugar as opposed to more traditional, home-style breakfast choices such

as toast, eggs, fresh fruit, "healthy" cereals, porridge or yoghurt. This could result in children believing that the advertised foods they are exposed to are the only options available to them.

Rôle modelling concepts revolve around the processes through which children try to identify with television characters and personalities, then seek to imitate them. Hoffner and Cantor (1991, cited in Harrison, 2000) conducted work in this field and found that children are especially likely to emulate behaviours and affectations of characters with whom they identify and to whom they are interpersonally attracted. This is also consistent with the work of Bandura (1994, cited in Harrison, 2000) who argued that attractiveness facilitates attention and serves as a vicarious incentive to emulate popular media personalities. Thus future modelling of children's behaviour can be linked to their exposure to these personalities. Harrison (2000) asserts that according to social cognitive theory, behaviours performed by attractive, popular or similar people, and behaviours that are rewarded are especially likely to be modelled.

The implications of this assertion are that children could be learning unhealthy eating practices from television characters. Harrison (2000), with a focus on television viewing and its connection to dysfunctional eating patterns, commented that television viewing increases children's exposure to dieting imagery, ideas and behaviours. Changes to eating related cognitions and behaviours could result. This is the central claim used by health advocates criticising television for its rôle in contributing to the increasing rate of obesity. However as yet there is unsubstantiated proof that there is a direct cause and effect relationship between viewed behaviour and reality.

#### **2.3.4.2 Television content analyses**

Television content analyses are a frequently utilised method of investigating the types of messages and imagery presented to audiences through advertising and

programming. Kaufman's (1980) content analysis of American television is one such example (see Appendix 6). Kaufman (1980) has taken an all-inclusive approach that encompasses food and eating behaviours in programme content including:

- Describing the characters involved,
- Scene location,
- Eating environment,
- Type of food consumed,
- Apparent emotions expressed,
- Any specific food related or body image-related comments, as well as,
- Analysing commercial content.

This in depth analysis is particularly significant and unique, as Kaufman (1980) is one of few authors who have researched so thoroughly in this manner. However, her study is now dated; changes that have occurred in society over the past two decades and the current concern over the increasing prevalence of obesity suggest that there is a need for new research in this area.

Kaufman's (1980) study of American television commercials and programming revealed that the television "diet" is weighted heavily toward the consumption of perceived "low-nutrition" foods and features behaviours which are inconsistent with the generally agreed on principles of sound nutrition. Desserts, sweets, and sugar-based beverages comprised a large proportion of the television programming diet. Television characters were often seen eating between meal snacks, eating to satisfy social and psychological needs, eating "on the go", eating to reward or punish themselves and consuming alcoholic drinks.

Kaufman's research (1980) included both programme content and commercial content, seeking to identify, analyse and describe messages and imagery, relating to food, eating behaviour and body image presented on prime time American television. Kaufman (1980) found that there were more food

references during programming than in commercials. The foods shown were primarily beverages (31%, of which 8% were alcoholic drinks) and although fruit and vegetables were more than three times more likely to appear in commercials than in programme content, the preponderance of “low-nutrition” food both in commercials and programmes was evident. Characters were usually happy in the presence of food; rarely dined alone, snacked often, and frequently food was primarily used for social and emotional purposes such as to bribe others or to bring about social introductions (Kaufman, 1980). Furthermore characters were rarely depicted as being obese or overweight despite the fact that the patterns of food choice and eating behaviours were those often associated with nutrition and weight control problems (Kaufman, 1980). Kaufman (1980) concluded that television presented conflicting messages and imagery about diet, health and body image.

Television content analysis studies conducted since 1980 (see for example Story & Faulkner, 1990; Kunkel & Gantz, 1992; Kotz & Story, 1994; Taras & Gage, 1995; Avery, Mathios, Shanahan & Bisogni, 1997; Hill & Radimer, 1997; Byrd-Bredbenner & Grasso, 1999; and Tseng, 2001) have also provided similar evidence to suggest that a large proportion of television advertising is related to the promotion of foods high in fat and sugar and that the foods presented on television exemplify poor nutritional practices.

However these studies are not without limitations: some authors studied only children's weekend programming excluding weekday and prime time viewing (Story & Faulkner, 1990; Kotz & Story, 1994; Tseng, 2001). Others studied advertisements only without reviewing the programme content (Byrd-Bredbenner & Grasso, 1999; Hill & Radimer, 1997; Taras & Gage, 1995; Tseng, 2001). Several studies focussed on the contents of the other advertisements such as toys, a select range of foods, or categorised foods into broad, simple categories (Kotz & Story, 1994; Tseng, 2001). Furthermore, television content analyses studies dating back to the 1980s and 1990s no

longer reflect the attitudes and behaviours of the current media environment (e.g. the nature and content of television programmes and advertisements has changed).

Documented content analyses relating to New Zealand media are limited. Wilson, Quigley & Mansoor (1999) analysed advertisements using a similar methodology to the current study. This consisted of recording advertisements during one week periods, covering weekday time slots of 3:30pm - 6:30pm, and weekend mornings from 8am to 11am, with the intention of examining the nutritional quality of food in television food advertisements targeted at children. The advertised foods were then assessed as a diet. Whilst the study concluded that if children ate only the advertised foods they would be consuming a diet too high in fat, protein, free sugars and sodium, the authors (Wilson et al., 1999, p.648) recognise that "the creation of an 'advertised diet' out of foods advertised is a hypothetical construct that is unlikely to reflect the average child's diet". However, the study does provide a basis for comparing advertising patterns over time. Wilson et al. (1999) comment that cultural attitudes influencing parents, individual tastes of parents and children, and levels of energy expenditure are also likely to play a rôle in eating patterns and behaviours. Additionally, the study did not include any programme content or analysis of eating episodes, situations, locations or behaviours.

Similarly, Hammond, Wylie & Casswell (1999) examined the extent to which New Zealanders aged between nine and seventeen were exposed to advertising of different food groups. The results showed that the majority of food they were exposed to was sweet snacks, soft drinks, fast food/takeaways and breakfast cereals. These results were compared to an Australian study and a thirteen-country study, which showed similar patterns. However, this study is likely to have been limited by similar factors to the Wilson et al. (1999) study of cultural attitudes, individual tastes, energy expenditure, which also did not include programme content.



#### **2.3.4.3 Television advertising and nutrition practices**

Television advertising may influence children's nutrition practices, particularly in regard to food requests, purchases and consumption (see for example, Hutchings & Moynihan, 1998; Kotz & Story, 1994; Borzekowski & Robinson, 2001). Story & Faulkner (1990) state that television exposure *may* impact on actual eating behaviour however this is speculative and further research is required. Similarly, Kotz & Story (1994) note that television is such a ubiquitous medium that it is difficult to measure its behavioural effects. Their report concluded that it was not possible to prove that food advertisements aimed at children cause poor eating habits. Whilst these and other such studies report a positive correlation between television viewing and food requests, purchases and consumption, there is limited conclusive evidence to support a direct cause and effect relationship between the messages portrayed and the actual eating patterns of children. That is, it is difficult to determine whether behaviour displayed by children in a controlled study reflects actuality. Lvovich (2003, p.39) comments, "To date there is no research that directly links advertising and the development of weight problems or obesity". However, absence of evidence is not necessarily evidence of absence. The need to provide "conclusive evidence" is seen in some respects as an excuse to continue with what is clearly not a positive influence on healthy eating practices.

#### **2.4 Proposed public policy changes to reduce obesity**

In order to reduce the prevalence of obesity, public policy makers worldwide are proposing legislative changes. In New Zealand, government officials have proposed such legislature changes as taxes on high fat and sugar foods and subsidising fruit and vegetables (Deuchrass, 2003b). A childhood obesity symposium, themed "The Way Forward", was held on September 2<sup>nd</sup> 2003, at Massey University, Auckland to discuss these and other obesity related issues

New Zealanders are now facing. The symposium included delegates representing the government, food and beverage industries, sports and fitness industries, health and nutrition professionals, and the media and computer entertainment industries (Walsh, 2003a). The purpose of the symposium was to create a plan for future change and to allow people from different backgrounds to express their views (Birkbeck, cited in Deuchrass, 2003b). Attendees stressed the need for immediate action, more nutrition education, better communication across all sectors and a holistic environmental approach (Walsh, 2003a). A report based on this symposium and the initiatives proposed is yet to be released.

#### **2.4.1 Fat/Sin taxes**

One proposed solution to combat obesity problems is a tax on "so called" fatty foods. A survey conducted among Canadian consumers in 2001 found that more than half of Canadians believe that high fat foods should be taxed at a higher rate than nutritious foods (Worldsources Inc., 2001). Worldsources Inc. (2001) states that countries such as Great Britain, the United States and New Zealand are reported to be seriously considering trying to use a snack tax as a means of discouraging people from eating foods that may cause them to gain weight. Some health professionals certainly see this as a positive step. Kelly Brownell, director of Yale University's Center for Eating and Weight Disorders, believes that a substantial government "sin tax" on high fat, low nutrition foods will hit "junk food junkies" where it hurts: in their wallets (Ahmad, 1997). The support presented for this argument is again a parallel to the steps taken to reduce alcohol and tobacco consumption such as advertising bans or restrictions (see, for example, New Zealand Labour Party, 1999; Fight the Obesity Epidemic cited in NZPA (New Zealand Herald), 2002) or taxes (see, for example, Ahmad, 1997; Jacobson & Brownell, 2000; WorldSources Inc., 2001).

Brownell (cited in Ahmad, 1997) believes that when the tax is high enough to sharply increase the price of a product, fewer of those products are consumed. He argues that studies on price increases on alcohol and tobacco suggest a correlation between cost and consumption, and that a tax on "junk food" would have a similar effect (Ahmad, 1997). Similarly, health economist, Schaafsma (cited in WorldSources Inc., 2001) sees a fat tax as a means of not only discouraging the consumption of fat but also as a way of raising revenue for the health care system.

However, others see snack taxes as fattening wallets – the wallets of the public health activists and lawyers who are advocating them, without necessarily making anyone thinner (Rauch, 2002). Dent (cited in Worldsources Inc., 2001), an obesity specialist, sees fat taxes as absurd. He believes obesity is a medical problem and argues that as salt is not taxed for patients with hypertension, why should fat be taxed to try and prevent obesity?

American legislators are now beginning to act on the fat tax concept. A "soda tax" on sweetened drinks is being considered in California, which would not be the first American state to impose such a tax (Food Management, 2002). The American Journal of Public Health (2001) reported that 17 states already have some special levies, such as sales tax, on soft drinks and/or snack foods (Food Management, 2002). The soft drink industry's response to this is to argue that it is over simplistic to say that if soft drinks are removed from the food supply people will be healthy (Food Management, 2002). Furthermore, Rosin (1998) notes that a version of fat tax has been tried, and it failed. In California, Maryland and Maine where taxes were introduced on junk food such as candy bars, potato chips and soda, the (American) Snack Food Association eventually withdrew the taxes in those states (Rosin, 1998). This suggests that such a measure is perhaps inappropriate and ineffective for addressing the consumption of unhealthy foods. Now, five years further on, perhaps such taxes could be more successful. However Rosin (1998) notes that a few cents

surcharge on fat foods is unlikely to deter sufficient consumers from purchasing such foods.

One alternative to fat taxes is a subsidy on nutritious foods. Otago University is using an experimental research approach by introducing a subsidy on healthy foods at six schools (in 2003) in a world first study into the effect lifestyle changes have on childhood obesity (NZPA (New Zealand Herald), 2002). Dr Toomath (of the Fight the Obesity Epidemic group) states research shows that our food choices are determined by price and availability, and that children would be more likely to choose healthy over non healthy food at school if healthy food was cheaper. The subsidising of nutritious foods is also viewed as being a better option than taxing fatty foods, as low-income people are considered more likely to continue to consume junk food (Toomath, cited in NZPA (New Zealand Herald), 2002). However, it is expected that multiple interacting effects affect obesity, not single factors. Furthermore, it will be some considerable time before the Otago study results are available for assessment.

#### **2.4.2 Health education**

Nutrition education is also seen as a means of reducing obesity rates and encouraging a healthier lifestyle. Lord (2000) suggests numerous methods parents can use to encourage healthy eating at home, such as involving children in meal preparation, giving them choices rather than open ended offerings, dining together, monitoring portion sizes and setting an example by their own behaviour. Nevid, Rathus & Rubenstein (1998) recommend cutting back on fat and sugar consumption and exercising regularly as a means of preventing obesity. They also suggest initiatives specifically aimed at meeting the needs of socially and economically disadvantaged groups. These include increased access to health education, health education curricula in all public schools (USA), guaranteed universal access to treatment of obesity (USA) along with

increased access to healthy foods and recreational opportunities (Nevid, Rathus & Rubenstein, 1998). Whilst some of these steps may not currently be operative in New Zealand, these initiatives provide possible alternatives other than advertising bans as a means to address childhood obesity.

Limiting television viewing is also recommended. Sell (1999) reports that a New Zealand campaign, organised by the Royal Australasian College of Physicians, to promote safe viewing encourages parents to supervise their children's viewing habits in the same manner as for their schooling and nutrition. Furthermore, children can benefit from television if they watch in moderation, much of it educational, and their families discuss their viewing (Sell, 1999). Some television programmes do promote healthy, sensible eating and other socially responsible messages such as fire safety, pool/swimming safety and power saving measures. One such programme is WNTV (What Now Television), a New Zealand made children's television programme that screens on a free to air television network station. Also, New Zealand public advertising campaigns during these programmes often show "5+ a Day", promoting the consumption of five or more servings of fruit and vegetables each day and "healthy start", promoting the importance of starting each day with a healthy breakfast. However, activists such as Toomath (FOE) suggest that present education is not working, and more dramatic measures are called for.

A number of schools have introduced nutrition initiatives to promote healthier eating for children. California based Project LEAN (Leaders Encouraging Activity and Nutrition) is one such initiative, operating in 30 American high schools to train their students as advocates for healthier eating (Foodservice Director, 2000). This organisation is looking at solutions and ways to promote more healthy alternatives in food choices available to students (Foodservice Director, 2000). Some schools have taken more extreme measures, banning "junk food" from school cafeterias along with introducing salad bars, and sowing vegetable gardens (Lord, 2000). In New Zealand it is common practice

in primary schools to limit the consumption of "junk food", both those sold in the school cafeteria and brought from home. Parents are now often instructed not to allow their children treat foods such as potato chips and sweets, at school. "Health-promoting schools" is another initiative that 45 schools in Auckland (New Zealand) are participating in (Deuchrass, 2003a). The programme was developed by the World Health Organisation in the 1980's and approaches health from physical, mental, social and environmental aspects. The school encourages healthy eating by providing healthy snack options such as fruit at the school cafeteria. The children also participate in regular physical activities such as aerobics (Deuchrass, 2003a).

Some New Zealand high schools are also following suit. In May 2002, Lower Hutt's Taita College became the first school in the country to be awarded a Gold Heartbeat Award by the National Heart Foundation for its healthy food programme (NZPA (New Zealand Herald), 2002). However, making such changes to school cafeteria menus may not be beneficial to school profits. Taita College still makes a profit, but less than from selling processed food (NZPA, (New Zealand Herald) 2002). One New Zealand school estimated it would lose up to \$19,000.00 a year by changing its cafeteria selection (NZPA (New Zealand Herald), 2002). This suggests that profit making in schools may be an underlying issue detracting from schools' moves to healthier cafeteria options.

Whilst these steps may seek to educate children into making healthier food choices, critics warn that parents play the most important rôle in determining what children eat at home, how much and how often they exercise (Lord, 2000).

#### **2.4.3 Advertising restrictions**

Many European countries – Sweden, Italy, Denmark and Ireland, have already restricted television advertising to children in an attempt to protect young

viewers, presumably from a variety of material that may relate to food, violence, sex or general persuasion (Independent, 2002). Policy makers in these countries are pushing further still, calling for bans on advertising during children's programmes. Advertisers, worldwide are now facing the threat of restrictions regarding advertising aimed primarily at children. However, it is difficult to determine the effectiveness of such measures.

In New Zealand in 2001, a revised set of voluntary broadcast guidelines was developed in consultation with main television stations and advertising groups. The guidelines, presented by New Zealand's Broadcasting Minister, introduced stricter regulations for advertisers. The report recommends that during preschool children's viewing times no advertising is permitted, nor is it permitted on Sunday mornings (Samson, 2001). The advertising codes (see Appendix 3) in existence place particular emphasis on observing a high standard of social responsibility, not actively encouraging children to eat or drink treat foods near bedtime, not to eat or drink these foods frequently through the day or replace main meals with treat foods (Advertising Standards Authority, 2001). Even with these restrictions in place as set out by the Advertising Standards Authority Codes of Practice (2001), critics are demanding tighter controls, urging a total ban of food advertising during children's television hours ("Obesity hitting younger", 2002).

The merit of banning advertising during children's programming is that it will eliminate food advertising exposed to children during some, but not all, of the programmes they are likely to watch. However it would also eliminate advertising of other products such as toys, clothes and healthy foods. A total ban could well reduce the means by which to disseminate positive information to the public. Advertising could be used to raise awareness of some positive aspects such as healthy eating and exercise. Furthermore, the revenue generated by advertising supports television programming and allows more locally produced content to be broadcast (Eagle et al., 2002). Therefore an advertising

ban could result in a reduction of locally made programmes and lead to a greater number of imported content. Consequently this would impact on the aims of the Television New Zealand Charter that states TVNZ shall “support and promote the talents and creative resources of New Zealanders and of the independent New Zealand film and television industry”.

Dignam (cited Eagle et al., 2002) comments that banning television advertisements targeting children will not prevent children from viewing advertising in other media or during other viewing times. When researching exposure to alcohol advertising in New Zealand, Walters and Zwaga (2001, cited by Group Against Liquor Advertising (GALA), 2002) found that on Friday nights 51% of children (age range not specified) watched television after 8:30pm, on Saturday nights 62%, while 31% are still watching after 10pm (see Appendix 8 for details relating to the current study). This suggests that children are watching programmes, and therefore advertising, aimed at a different target audience.

It is difficult to determine whether an advertising ban would be successful in reducing the consumption of unhealthy foods, and ultimately be successful in reducing the number of cases of obesity. The only case located during this review where advertising to children has been banned was in Sweden (“Rising Calorie”, 2002). The ban was introduced there 10 years ago, but has thus far failed to arrest obesity rates among adolescents (“Rising Calorie”, 2002). However, the Swedish data is somewhat “contaminated” due to the availability of satellite television containing broadcasts originating outside Sweden.

Alcohol and tobacco advertising has previously been subject to similar criticism which unhealthy food advertisements is now receiving. Research into the effect of advertising on alcohol consumption suggests that whilst advertising may be influential, it has far less impact on behaviour than family and friends (Bozell, 1994). Furthermore, alcohol abuse is seen by some as a result of social and



cultural factors rather than as a result of advertising (Charen, cited in Bozell, 1994).

In 1997 the Federal Trade Commission (FTC) (US) stated that the influence of television liquor advertisements on children was not sufficient cause to initiate enforcement action (Fleming, 1997). The FTC prohibits liquor advertisements from being directed at children and comments that the advertisements are simply intended to promote brand switching, or to differentiate one brand from another.

Likewise, Katham's 1991 article regarding the proposed tobacco advertising ban in the European Community clearly shows divided views on the impact of advertising tobacco. Katham (1991) states that tobacco advertisers defend themselves by claiming that advertisements merely promote competition between tobacco firms and encourage brand switching among smokers. Pressure groups claim that advertising encourages new smokers, whilst industry representatives are adamant that advertising alone does not have sufficient influence to introduce people to smoking. However, despite the disparity of opinion, advertising bans have been spreading, as the health problems associated with smoking are becoming more widely recognised.

The removal of freedom of speech for both alcohol and tobacco advertising has become an issue, from which a valid point is raised: why should the advertising of legal products be banned? The argument that follows is that if a product is legal to sell it should be legal to advertise; therefore in order to ban advertising of a product the sale of that product must also be banned (Koop, 1989). Despite the fact that this argument may be seen as over simplistic, it does have major implications for advertisers: banning the sale of certain products may be setting a dangerous precedent in determining any number of products unsuitable to be advertised. This also raises the question of who is responsible for making such decisions.

In terms of television advertising of unhealthy foods - high in fat and/or sugar, a ban would appear to be not only difficult to regulate, but also futile. Despite regulations on New Zealand television restricting alcohol advertising to certain times (e.g. liquor advertisements are not permitted on television between 6.00 am and 8.30 pm), liquor is still prevalent in other advertising media, just as unhealthy food products are. Furthermore, how food products would be categorised as healthy or unhealthy is problematic in the extreme. This suggests a variety of issues for marketers and policy makers as to whether an advertising ban is an adequate measure, or whether regulations need to be introduced on all marketing activities. This would be likely to have a major impact on the regulatory environment of such activities.

## **2.5 Summary of literature and research aims**

As can be seen in the literature discussed, the areas of child nutrition, obesity and public policy options worldwide are highly topical. Furthermore, whilst this study has aimed to discuss the relevant issues relating to obesity, new literature has emerged during the writing of this report, and will continue to emerge. Whilst these emerging theories are beyond the scope of this study, clearly, as childhood obesity concerns continue to increase, so will research regarding the potential causes and solutions.

In New Zealand, television content analysis studies by Hammond et al. (1999) and Wilson et al. (1999) provide an interesting overview of the television “advertisement diet” of the time. However, both relate only to advertising, and do not address the areas of programme content or the context in which eating behaviours occur. Therefore, the need for a more comprehensive study is recognised. This has been the purpose of this study; to address the empirical information shortfall by taking an all-inclusive approach similar to that used by

Kaufman (1980), encompassing food and eating behaviours in television programme and advertisement content.

In New Zealand, advertising is often alleged to be a contributing factor to the prevalence of obesity, with advertising bans being proposed by some as a means to address this issue. However in Japan, another country concerned with increasing prevalence of obesity, there have been few attempts to ban advertising. In view of these facts, this study not only seeks to analyse the food imagery presented to children on New Zealand television, but also seeks to compare this imagery with the food imagery presented to children on Japanese television. This study seeks to provide insights gained from comparing the commonalities and differences of two culturally diverse children's' media environments.

This study also represents an attempt to provide a framework for policy discussions with government decision makers in this field, and to stimulate and promote debate in countries that may be seeking measures to cope with obesity. Specifically, this study aims to address the following research questions:

1. How much food related advertising is presented during children's programmes in New Zealand compared to Japan?
2. How much food related imagery is presented within children's programmes in New Zealand compared to Japan?
3. What types of foods feature in food related imagery, both in advertising and in children's programmes in New Zealand compared to Japan?
4. How are food and eating related behaviours presented, both in advertising and in children's programmes in New Zealand compared to Japan?
5. What images are being presented, both in advertising and in children's programmes in New Zealand compared to Japan, in regard to eating habits and scene locations?

### **3 Research methodology**

A content analysis was conducted in order to examine the portrayal of food and eating patterns presented both on New Zealand and Japanese television during advertising and programme content most watched by children.

A sample of 25 New Zealand television programmes was selected from the top 50 programmes viewed by children aged 5 to 14. AC Nielsen, who collects data relating to New Zealand's main free-to-air network channels, supplied this data. (For further information on AC Nielsen, see Appendix 9). These programmes were recorded during a two week period in November 2002 from which food related messages, imagery, content and depicted eating behaviours were analysed.

Similarly, a sample of 22 Japanese television programmes was selected from the top 50 programmes viewed by children aged 4 to 12. This data, courtesy of DDB Japan, was supplied by Video Research, who collects data relating to Japan's television network channels. (For further information on Video Research, see Appendix 10). These programmes were recorded during July 2003. Food related messages, imagery, content and depicted eating behaviours were then analysed.

#### **3.1 Content analysis**

A content analysis was conducted in order to examine the food related messages and imagery presented to children on New Zealand and Japanese television. Content analysis is a systematic technique for analysing message content and message handling. It is a tool for observing and analysing the overt communication behaviour of selected communicators (Budd, Thorpe & Donohew, 1967, p.2, cited in Kassarian, 1977). Kassarian (1977) states that

the distinguishing characteristics of content analysis are that it must be objective, systematic and quantitative.

Content analysis is often divided into manifest and latent content analysis (Lasswell, 1941, cited in Ahuvia, 2001). Ahuvia (2001) distinguishes between the two in the following manner: manifest content analysis is concerned with the most obvious and straightforward meaning presented, whereas latent content analysis seeks to elicit more subtle meanings. The difference between manifest and latent content can also be described as the denotative and connotative messages in media. The denotative meanings (manifest content) of a message are those that are commonsense and obvious, whilst connotative meanings (latent content) are arrived at by combining individual elements to understand the meaning of the whole - the connotations of the content (Ahuvia, 2001).

However, despite these definitions of content analysis, particularly that it must be quantitative, the researcher recognises that this study will employ some elements of both quantitative and qualitative analysis. Whilst quantitative and manifest methods will be used to determine the frequency of food consumption habits and eating behaviours, an interpretive approach is required to investigate the context specific elements of the data.

As this study is on a small scale only, and confined by budget and time constraints, the content analysis methods used will be principally manifest content analysis.

Kolbe and Burnett (1991, cited in Tseng, 2001) found the benefits of content analysis to consist of:

1. The unobtrusiveness of the communication evaluation,
2. The assessment of the environmental variables of the communication/message,

3. The empirical onset of new research evidence on the nature of communication, and
4. The ability to provide statistical information for multi-method studies.

Furthermore, this method is a well accepted procedure employed in many studies relating to the nature of the messages and imagery presented on television (Story & Faulkner, 1990; Kunkel & Gantz, 1992; Kotz & Story, 1994; Taras & Gage, 1995; Avery et al., 1997; Hill & Radimer, 1997; Byrd-Bredbenner & Grasso, 1999; and Tseng, 2001).

The content analysis conducted by this researcher, included analysis of the food products advertised, categorisation of the food types, and analysis of the suggested consumption situation, where appropriate. This is a partial replication and extension study of Kaufman's (1980) American television content analysis studies, in this instance using New Zealand and Japanese advertisements. As previously noted, in New Zealand, limited content analyses have been conducted regarding New Zealand television programmes and advertising (Hammond, Wylie & Casswell, 1999).

Previous Japanese television studies have focussed largely on the Japanese advertising style (see, for example, Ramaprasad & Hasegawa, 1990; Lin, 1993). In the process of the current study no New Zealand or Japanese research was located which covered both the representation of food within commercials and within programmes in the same extensive manner used by Kaufman (1980). Therefore Kaufman's (1980) study was selected as the basis of this research as it was found to be one of the most comprehensive content analysis studies conducted.

For the purpose of this study, Kaufman's (1980) study was adapted to suit the New Zealand and Japanese viewing environment. Basic coding schedules from her work were combined with those of Avery et al. (1997) (See Appendix 6 and

7 respectively). Avery et al.'s (1997) study used manifest and latent content analyses to determine the nutritional content of foods appearing on prime time television. Coding schedules were selected for this study on the basis that Kaufman's (1980) complete coding schedules were unavailable, and the Avery et al. schedules incorporate best practice methods for analysing programme content.

### **3.2 Selection methods/criteria**

In order to perform the content analysis, a series of children's television programmes, including advertisements, were recorded. The New Zealand sample of 25 programmes was recorded during November 2002 and the Japanese sample of 22 programmes was recorded during July 2003. These time periods were chosen in order to avoid any seasonal or holiday programming schedules that may have biased the sample with respect to increased food advertisements being screened. (For example, there may be increased chocolate advertising and increased chocolate consumption during programmes broadcast up to and over Easter).

The basis for selecting the sampled programmes was the top 50 programmes viewed by children aged 5-14, on New Zealand's main free-to-air television stations (TV1, TV2, TV3). The data was supplied by AC Nielsen (refer to Appendix 9). The majority of recordings were Saturday and Sunday morning children's programmes and after school/evening programmes commencing at approximately 3pm and concluding at 9.30pm on the weekdays that they were broadcast. (Note that Sunday morning television, with programmes targeted at children has no advertising). The AC Nielsen data was used as an indicator of popularity and formed the basis of which programmes during the previous week's viewing were used to select programmes to be recorded during the following week. Programmes that were recorded were selected for personal convenience (based on the times the programmes were broadcast and how

many programmes could be recorded in succession on any one day, so the video tapes could be left unattended whilst recording).

The top 50 programmes viewed by children aged 4-12, on Japan's television stations (ANB, CX, NHK, NTV, TBS, TX) was the basis for selecting the sampled programmes. The data was supplied by Video Research (refer to Appendix 10), courtesy of DDB Japan. The majority of recordings were evening programmes commencing at approximately 6pm, and concluding at approximately 10pm on the days that they were broadcast (both week days and weekends). In contrast to the New Zealand sample, there were no weekend morning children's programmes or specific after school programmes in this sample. The Video Research data relating to television viewing during the week May 5th -11th 2003 was used as an indicator of popularity and formed the basis for selecting programmes to be recorded. This information was then provided to a Japanese acquaintance that recorded the selected programmes in Japan and mailed the videotapes to the researcher in New Zealand.

### **3.3 Procedures**

The 25 New Zealand programmes with advertisements were viewed initially as a preliminary analysis (refer to Appendix 8) in order to gain insights into the nature of the programme imagery and advertising messages presented on New Zealand television. Following this the taped programmes were viewed again and occurrences of food and beverages were coded. Two individuals: the researcher and an assistant coder, completed this coding.

The researcher primarily performed coding, with support from the assistant coder. The assistant coder received a briefing on the coding schedules, which are to be discussed in the following section, and then had several training sessions, involving practice with selected sections of tape to ensure that both the researcher and the assistant coder were coding in a similar manner. The



assistant coder was also given an opportunity to raise any enquiries regarding the coding of the tapes prior to commencing formal analysis. Both the researcher and the assistant coder completed the majority of coding in tandem. Both watched the videotapes, and although the researcher entered the data onto the coding schedule, the assistant coder was responsible for reviewing the programme and advertisement content, verifying and cross checking coding decisions. This involved noting how many food and non-food advertisements occurred per commercial break, and rewinding segments of tape in order to review the material again if more information was required.

Any incomplete segments of tape were disregarded, that is if the tape started or ended with an incomplete advertisement, that advertisement was disregarded. Announcements and previews for other television programmes, promotions or giveaways relating to programmes or the television channel, and for public services or community services were also discounted. This is recognised as best practice and has been utilised in previous content analyses, particularly Tseng (2001). Each of the tapes were analysed twice and coding discrepancies were assessed immediately. If the researcher and assistant coder did not agree on the classification of a food or food episode it was discussed until an agreement was reached. Any questionable material that was coded by one individual alone was then cross examined by the other coder. Multiple episodes of programmes and occurrences of advertisements were included so that the frequency of occurrences could also be analysed.

The 22 Japanese programmes, with advertisements, were viewed and coded in a similar manner. However coding was completed solely by the researcher, as the researcher has the relevant Japanese language skills required to perform the coding. All other procedures, such as discarding incomplete segments of tape and not removing multiple episodes of the same programmes were consistent with those used in the analysis of the New Zealand sample.

### **3.4 Coding schedules**

The coding sheets for this study have been adapted from previous studies, in particular Kaufman (1980) and Avery et al. (1997). Firstly Kaufman's (1980) definition of food was used and is:

Food was defined as “any article used for food or drink by humans, including chewing gum”.

From the Avery et al. (1997) study food episode descriptions were used. These include the type of food setting, the location in which the food episode occurred and the type of situation. These are discussed in detail on the following page.

Kaufman's (1980) food categories for coding advertisements and food television programmes were also used. However, some changes were made after the preliminary analysis identified elements specific to New Zealand television. These included the addition of food categories that were more frequently accentuated on New Zealand television, and the removal of foods that were presented less. For example, waffles, French toast and pancakes are not presented regularly enough on New Zealand television to warrant a separate food category. Similarly, nominal changes were made to use New Zealand terms for food groups e.g. the word “candy” was changed to “sweets” as this term is more frequently used in New Zealand.

Also, the schedules were reviewed after the first viewing of the Japanese sample to identify any elements specific to the Japanese viewing environment. This resulted for example, with the inclusion of an individual category for tea and coffee. These were previously grouped with other beverages, however these products feature more regularly on Japanese television than on New Zealand television. It is also noted that Japanese tea and coffee products are

often sold as chilled in bottles rather than as hot beverages, more commonly consumed in New Zealand.

Each advertisement and programme food episode was coded using the following categories:

- Meat (beef and pork), fish (including all types of seafood), and poultry (chicken)
- Beverages (alcohol (beer, wine, sake, spirits), soft drinks, juices, sweetened instant fruit flavoured drinks, milk, water (tap or bottled), tea, coffee, drinking chocolate, sports drinks, energy drinks, vitamin drinks)
- Fruit and vegetables (tinned, frozen, preserved, cooked, fresh)
- Bread, cereals and grains (including bagels, sandwiches, filled rolls, breakfast cereals, muesli bars, crackers, pasta, rice and sushi)
- Dairy products (butter, margarine, cheese and yoghurt)
- Snacks, sweets and desserts (including cakes, meat and fruit pies, cookies, snack chips, chewing gum, mints, sweets, ice cream, ice blocks)
- Microwave meals and snacks
- Fast food (takeaways)
- Miscellaneous foods (eggs, soup, condiments such as sauces, spices, salt and pepper)

These food categories were selected as they encompass basic food groups that are similar to those found in the food guide pyramid. For example, all types of meat (i.e. protein) were combined into a single category, all types of fruit and vegetables (i.e. vitamins and nutrients) were combined into a single category, and all major carbohydrate foods such as breads, cereals, grains, pasta and rice were also combined. The snacks, sweets and desserts category encompasses high fat and sugar foods which are deemed by the pyramid to be of the “eat

less” type. Items such as microwave meals and fast food were categorised into individual categories, as literature suggests that these types of meals are becoming increasingly popular due to their convenience. This method of categorisation is of particular relevance as the food guide pyramid was aimed at helping the public make informed dietary choices, and analysis of these categories will indicate which groups are presented more frequently on television.

Multiple occurrences of food were also categorised in this study. The tables in the results section of this report indicate the occurrence of up to four types of the same food group. For example, the “occurrence of each of two types of bread, cereals or grains” indicates that two types of those foods occurred within the same food episode. This would occur if a character was eating both cereal and toast for breakfast. Similarly, “occurrence of each of three types of snacks, sweets and desserts” indicates that a character could be eating cookies, sweets and ice cream during the same occurrence. Such exposure is considered relevant as multiple occurrences of certain food groups could reinforce consumption.

As Kaufman (1980) identified, nutritionists and other groups may be too hastily blaming advertising as the major culprit in the promotion of poor nutrition practices. It is seen that there is a need to analyse not only the advertising during programming, but also the food occurrences during programmes. Categorising not only foods, but also eating behaviours is considered particularly relevant as vicarious learning and rôle modelling literature suggests that viewing how and when people eat is as important as what they eat. That is, the programme content may be providing examples of behaviours that could then be copied by children. Such behaviours may include receiving food as a reward, consuming food or alcohol when depressed or stressed, or dieting in order to gain a better self image. Furthermore, children may not be cognitively

equipped to understand the implications and surrounding issues of such behaviours (e.g. alcoholism, eating disorders).

Food occurrences were coded into the type of food setting, the location in which the food episode occurred and the type of food situation. Kaufman's coding sheets were unobtainable for this, however, coding systems employed by Avery et al. (1997) were used (see Appendix 7). In particular, the codes used for programme descriptions and food episode descriptions are:

1. Food episode (food and beverage, food only, beverage only)
2. Setting (eating alone, eating with one other, eating in a group, eating as a family, food handling/ preparation/ purchase, other)
3. Location (home, workplace, retail establishment, public facility, "on the run", other)
4. Situation (regular meal, between meal eating or snack, not a meal or snack)

Each scene or segment of a particular programme that included a direct, visual food reference was then classified as per the categories outlined above. This included television programme characters eating, preparing, handling, purchasing or being in the presence of food. For the scope of this research, indirect or non-visual food references were excluded in order to focus on direct visual content. Exclusions included conversational references such as to a previous or upcoming meal or eating situation. Therefore the absence of a food type was coded as 0, and the presence of direct visual food occurrences was coded as 1. The location, situation, setting and episode details were also coded.

Whilst advertising and programme content were both analysed, it is noted that advertising was analysed irrespective of which programme it appeared in. That is, it is beyond the scope of this study to compare advertising messages broadcast during a programme with content from that specific programme. For example, whilst some programmes could hypothetically show binge drinking or

other similar behaviours, advertisements for support groups such as Alcoholics Anonymous could feature during the advertisement breaks of that programme, thus providing additional information surrounding alcoholism. This is an interesting factor that provides an avenue for further research.

### **3.5 Statistical calculation**

The significance of the results of this study has been calculated using hypothesis-testing methods. The purpose of hypothesis testing is to determine whether the patterns visible in a sample also exist in the population in general. When a hypothesis test pronounces a sample pattern significant, it is most likely that this pattern exists in the population in general (Page & Meyer, 2000). In this study the significant patterns found in the sampled television programmes will indicate the patterns that are likely to exist in overall television viewing environments.

In this study the hypotheses being tested relate to the occurrence of each type of food within each type of programme. That is, this will indicate which groups of food, if any, are more or less predominant in particular types of programmes. In order to determine the presence of food patterns a Chi-squared test (cross tabulation test) was performed. Chi-square is a standard statistical method used to measure the association between variables. These tests were performed in order to determine the significance of any association (relationship) between different types of food within each type of programme.

The null ( $H_0$ ) and alternative ( $H_1$ ) hypotheses for this test are as follows:

$H_0$ = No association between food type X and programme type

$H_1$ = Not  $H_0$  (i.e. there is an association between food type X and programme type)

The Chi-Square test produces a (significance) p-value. A p-value is defined as “the probability of obtaining results no more supportive of  $H_0$  than those found in the sample, when the null hypothesis is true” (Page & Meyer, 2000, p.167). The p-value is the possibility that the null hypothesis is true.

If the p-value is less than 0.05 (5%), then it is unlikely that the null hypothesis is correct. The null hypothesis will then be rejected producing a significant test result. In this case rejecting the null hypothesis means that there is a significant relationship between the occurrence of food type X and programme type.

Significant relationships between a type of food and a type of programme indicate that all programmes of this type in the overall television viewing environment will be likely to show the same types of foods. For instance, hypothetically the results of the sampled programmes may indicate a significant pattern between the occurrence of fast food and reality TV programmes. The implications of such results would suggest all reality TV programmes in the overall viewing environment have frequent occurrences of fast food.

## **4 Results**

### **4.1 New Zealand television**

#### **4.1.1 Summary of New Zealand programmes analysed**

The total sample of New Zealand material viewed consisted of 25 programmes, with 119 food advertisements, 204 non-food advertisements and 323 advertisements total, excluding programme previews. The programmes were classified by the researcher as being reality TV, drama, soap opera, cartoon/children's programme or news/current events. The following table lists the programmes viewed, by programme type and broadcast time.



**Table 1: Summary of New Zealand programmes analysed**

<b>Programme type</b>	<b>Time slot</b>	<b>Number of programmes</b>	<b>Programmes</b>
Reality TV	Week day evening (7:30pm onwards)	3	Mitre 10 Dream Home, Police 10-7, City Beat
Drama	Week day evening (8:30pm onwards)	2	The Guardian, McLeod's Daughters
Soap Opera	Week day evening (5pm onwards)	3	Shortland Street (2 episodes) Neighbours
Cartoon / children's programme	Saturday and Sunday mornings Week day afternoon (3-5pm)	13	Jimmy Neutron, Squirt, X- Men, Dan Dare, Justice League, Noddy, Digimon, Angry Beavers, What Now, WNTV, Rugrats, Courage Dog, Rocko's Modern Life.
Sitcom	Week day evening (5pm onwards)	3	Friends, Sabrina the Teenage Witch The Fresh Prince of Bel Air
News/Current Events	Week day evening (5pm onwards)	1	Flipside
<b>TOTAL</b>		<b>25</b>	

#### **4.1.2 Frequency of New Zealand food advertisements**

For the purpose of this study, advertisements were categorised as either advertising a food product or some other product. The majority of advertisements were 30 seconds in length. The table on the following page shows the scheduling of food advertisements compared to non-food advertisements by programme type.

The proportion of food advertising during the sample programmes ranged from 29% to 42% of the total advertising broadcast. The majority of food advertising occurred during cartoons and/or children's programmes and during sitcoms (both 42%). The lowest frequency of food advertising occurred during reality TV programmes (29%). Overall, 37% of all advertisements were for food products.

**Table 2: Summary of New Zealand advertisements analysed**

<b>Programme Type</b>	<b>Total minutes viewed</b>	<b>Total number of advertisement breaks</b>	<b>Total number of advertisements</b>	<b>Food advertisements Frequency/ Percentage</b>	<b>Non-food advertisements Frequency/ Percentage</b>
Reality TV	120	8	65	19 (29%)	46 (71%)
Drama	120	8	64	22 (34%)	42 (66%)
Soap opera	90	6	55	21 (38%)	34 (62%)
Cartoon/ Children's programmes	360	11	71	30 (42%)	41 (58%)
Sitcom	60	4	50	21 (42%)	29 (58%)
News/ Current Events	30	2	18	6 (33%)	12 (67%)
<b>TOTAL</b>	<b>780 minutes</b>	<b>39</b>	<b>323</b>	<b>119 (37%)</b>	<b>204 (63%)</b>

Note: On average most one hour television programmes contain four advertisement breaks and half hour programmes contain two advertisement breaks.

#### **4.1.3 Foods featured in New Zealand advertising and during each New Zealand programme type**

All of the comments in this section relate to Table 3, which follows on page 58.

The greatest number of food advertisements were for bread, cereals and grains (21.2% of all advertised foods), followed by beverages (19.7%). Fast food (18.2%) and snacks, sweets and desserts (16.8%), comprised a relatively large proportion of advertising, whilst all other food groups featured considerably less. All food groups featured in advertising. An example of a food advertisement is shown in Figure 1.



**Figure 1: Breakfast cereal advertisement (New Zealand)**

Aside from advertisement content, there were very few food occurrences during reality TV programmes. This is unsurprising considering the nature of the genre of the occurrences. Seventy five percent were beverages. The remaining 25% of food occurrences were meat, fish and poultry, and fast food (12.5% each). There were no occurrences of fruit and vegetables, bread, cereals and grains, dairy products, other sweets, microwave meals and miscellaneous foods.

During drama programmes three categories comprised 85% of all food occurrences: meat, fish and poultry; beverages; snacks, sweets and desserts (28.6% for each of these food groups). A further 14.2 % of food occurrences in

drama programmes were bread, cereals and grains. There were no occurrences fruit and vegetables, dairy products, microwave meals, fast food or miscellaneous foods portrayed in drama programmes.

During soap opera programmes the majority of foods shown were beverages (51.1%). The second largest group represented was miscellaneous foods (14.2%). Bread, cereals and grains comprised the same proportion of food occurrences as snacks, sweets and desserts (10.6% each). Meat, fish and poultry, and fruit and vegetables also comprised a small proportion of the occurrences. There were no dairy products, microwave meals or fast food. An example of a food occurrence during a soap opera is shown in Figure 2.



**Figure 2: Character consuming wine on Shortland Street (New Zealand)**

All food categories were shown during cartoons and children's programming, with the exception of microwave meals and fast food. The highest scoring categories were beverages (27.7%) followed by bread, cereals and grains (24.1%). Thirteen point nine percent of food occurrences were snacks, sweets and desserts. Meat, fish and poultry, fruit and vegetables and miscellaneous foods each had an equal proportion of food occurrences (10.6% each). There were a small proportion of dairy products (3.2%). An example of a food instance during a cartoon is shown in Figure 3.



**Figure 3: Characters consuming breads and fruit on Digimon (New Zealand)**

Sitcoms featured all food groups except fast food. The most commonly portrayed foods were beverages (25.8%), followed by snacks, sweets and desserts (19.4%). Bread, cereals and grains were shown in the same proportion as fruit and vegetables and miscellaneous foods (12.9% each). Meat, fish and poultry, dairy products, and microwave meals were also present in small numbers.

**Table 3: Frequency of foods featured in New Zealand advertising and during each New Zealand programme type**

Food type	Advertising (during all programmes)	Programme type				
		Reality TV	Drama	Soap opera	Cartoon	Sitcom
Meat, fish and poultry	5.1%	12.5%	28.6%	4.3%	10.3%	9.7%
Beverages	19.7%	75.0%	28.6%	51.1%	27.7%	25.8%
Fruit and vegetables	8.0%	0%	0%	8.5%	10.3%	12.9%
Bread, cereals, and grains	21.2%	0%	14.2%	10.6%	24.1%	12.9%
Dairy products	4.4%	0%	0%	0%	3.4%	3.2%
Snacks, sweets and desserts	16.8%	0%	28.6%	10.6%	13.9%	19.4%
Microwave meals	1.5%	0%	0%	0%	0%	3.2%
Fast food	18.2%	12.5%	0%	0%	0%	0%
Miscellaneous	5.1%	0%	0%	14.9%	10.3%	12.9%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

#### 4.1.4 Food episodes in New Zealand programme content

Table 4 shows the number of food episodes that occurred during the programme content of the sample. Food episodes are direct, visual references to food. A food episode is any situation involving the eating, preparation/handling, or purchasing of food. This also includes food on display (e.g. in a café, or on a table at home), food in art works (e.g. paintings, posters or other imagery involving food) and books (e.g. if a character is using a cookbook or looking at a book with pictures of food in it).

The greatest number of food occurrences was during soap operas or sitcom programmes (41% and 18% respectively). Soap operas had an average of 10 food episodes per half hour of viewing, whilst sitcoms had seven food episodes per half hour of viewing. Dramas and cartoon/children's programmes had the lowest level of food episodes: 1.25 and 1.5 episodes respectively per half hour of viewing.

**Table 4: Summary of food episodes in New Zealand programme content**

<b>Programme type</b>	<b>Total minutes viewed (including advertisements)</b>	<b>Number of food episodes/ percentage</b>	<b>Average number of food episodes per half hour of viewing</b>
Reality TV	120	8 (10%)	2
Drama	120	5 (7%)	1.25
Soap opera	90	31 (41%)	10.0
Cartoons/Children's programmes	360	18 (24%)	1.5
Sitcom	60	14 (18%)	7.0
News/ Current Events	30	0 (0%)	0
<b>TOTAL</b>	<b>780 minutes</b>	<b>76 (100%)</b>	<b>2.92</b>



#### **4.1.5 Foods featured in New Zealand advertising and New Zealand programme content**

Both advertisements and programme content featured a variety of foods, which were categorised into seven food types (meat, fish, and poultry; beverages; fruit and vegetables; bread, cereals and grains; dairy products; snacks, sweets and desserts; microwave meals; fast food; miscellaneous).

Overall, beverages featured the most (29.0%) within the media broadcast (programmes combined with advertisements), followed by bread, cereal and grains (17.8%). Snacks, sweets and desserts comprised 15.4% of the food occurrences and fast food comprised 10% of the occurrences. Both of these categories have more exposure than fruit and vegetables (8.5%), meat (6.9%) and dairy products (3.1%). These are detailed in the table below.

**Table 5: Percentage of occurrences of food types within overall New Zealand media environment (advertising and programmes).**

Bever- ages	Bread, cereal and grains	Dairy products	Fast food	Fruit and vege	Meat fish and poultry	Micro- wave meals	Misc	Sweets, snacks and desserts	Total
29.0	17.8	3.1	10.0	8.5	6.9	1.2	8.1	15.4	100

##### **4.1.5.1 Meat, fish, and poultry**

The programmes viewed never portrayed more than one type of meat in a food episode; although a small number of advertisements for condiments showed several cuts of meat, as did advertisements promoting the consumption of meat.

Overall the greatest number of occurrences of meat was in advertising (26.7%) Cartoons and sitcoms each had 20% of the meat occurrences respectively.

During programme content these occurrences mainly involved meat being eaten as part of a meal; usually an evening meal, served with vegetables, rice or pasta. Reality TV programmes had only a small proportion of meat occurrences.

**Table 6: Percentage of occurrences of meat by New Zealand programme type**

Meat	Advertising (during all programmes)	Programme type					Total
		Reality TV	Drama	Soap opera	Cartoon	Sitcom	
Occurrence of one type of meat	26.7%	6.7%	13.3%	13.3%	20%	20%	100% n=15
Occurrence of each of two types of meat	100%	0%	0%	0%	0%	0%	100% n=2
Occurrence of all three types of meat	100%	0%	0%	0%	0%	0%	100% n=1

The Chi-Square test results in a (significance) p-value of 0.249. This value is greater than 0.05, therefore the null hypothesis ( $H_0$ =No Association) is accepted, concluding there is not a significant relationship between the occurrence of meat and programme types. This suggests that meat is not shown more commonly in some programme types than in others.

Chi-Square Tests associated with Table 6 (Meat)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	18.267(a)	15	.249
<b>Likelihood Ratio</b>	15.116	15	.443
<b>Linear-by-Linear Association</b>	1.052	1	.305
<b>N of Valid Cases</b>	195		
18 cells (75.0%) have expected count less than 5. The minimum expected count is .03.			

#### 4.1.5.2 Beverages

The greatest number of occurrences of one type of beverage occurred during advertisements (39.7%). Beverage advertisements were mostly sweetened instant fruit flavoured drinks, juices, energy drinks, bottled water, milk, tea, coffee or hot chocolate. There was never more than one type of beverage shown per advertisement.

During programme content 27.9% of occurrences of one type of beverage were during soap operas. These occurrences were predominantly alcoholic drinks. Soap operas and sitcoms were the only programmes to have occurrences of each of two and each of three types of beverages. This reflects the situation where different individuals were seen to be drinking different beverages at the same time; a scene may show one character having a cup of coffee, whilst another has a cup of tea and a third character has a glass of water.

**Table 7: Percentage of occurrences of beverages by New Zealand programme type**

Beverages	Advertising (during all programmes)	Programme type					Total
		Reality TV	Drama	Soap opera	Cartoon	Sitcom	
Occurrence of one type of beverage	39.7%	8.8%	2.9%	27.9%	11.8%	8.8%	100 % n=68
Occurrence of each of two types of beverage	0%	0%	0%	100%	0%	0%	100 % n=4
Occurrence of each of three types of beverage	0%	0%	0%	33.3%	0%	66.7%	100 % n=3

The Chi-Square Test results in a (significance) p-value of 0.000. This value is less than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is rejected, concluding that there is a significant relationship between the occurrence of beverages and programme types. This suggests that certain beverages are consistently shown more in some programme types than in others.

Chi-Square tests associated with Table 7 (Beverages)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	69.652(a)	15	.000
<b>Likelihood Ratio</b>	57.227	15	.000
<b>Linear-by-Linear Association</b>	27.778	1	.000
<b>N of Valid Cases</b>	195		
17 cells (70.8%) have expected count less than 5. The minimum expected count is .08.			

The category "beverages" includes any of the following beverage types: alcohol (beer, wine, sake, spirits), soft drinks, juices, sweetened instant fruit flavoured drinks, milk, water (tap or bottled), tea, coffee, drinking chocolate, sports drinks, energy drinks, vitamin drinks). In order to determine which particular beverages have a significant relationship with programme type, further tests were conducted on select groups of items. Only significant results are shown. Significant relationships were found to exist between alcoholic drinks and programme type, and equally between soft drinks and programme type. This suggests that alcoholic drinks and soft drinks are consistently shown in some programme types more than in others.

The largest proportion of alcoholic beverage occurrences was during soap operas (61%). The existence of this link between alcoholic drinks and soap operas indicates that soap opera programmes in the New Zealand viewing environment are likely to have similar imagery. Characters were seen drinking alcoholic drinks at retail establishments (e.g. restaurants and bars) and also when entertaining guests at home. Consumption of alcoholic drinks was also shown when characters were depressed or emotionally stressed. Nineteen point two percent of alcoholic beverage occurrences were during reality TV programmes, 11.5% were during sitcoms and 3.8% were in dramas. Not surprisingly there were considerably few occurrences of alcoholic drinks (3.8%) in advertisements as this is regulated by government legislation. There were no occurrences of alcoholic drinks in cartoons as this is prohibited by the Advertising Standards Authority. There was only one occurrence of soft drinks during a sitcom programme. This sample is therefore too small to be analysed. However, it is important to note that unexpectedly soft drinks were not shown in advertising. This is likely to be due to the nature of the advertising campaigns that were broadcast at the time the sampled programmes were recorded.

**Table 8: Percentage of occurrences of beverages by New Zealand programme type**

Beverages	Advertising (during all programmes)	Programme type					Total
		Reality TV	Drama	Soap operas	Cartoon	Sitcom	
Occurrence of alcoholic drinks	3.8%	19.2%	3.8%	61.5%	0%	11.5%	100% n=26
Occurrence of soft drinks	0%	0%	0%	0%	0%	100%	100% n=1

The Chi-Square test results in a (significance) p-value of 0.000. This value is less than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is rejected, concluding that there is a significant relationship between the occurrence of alcoholic drinks and programme types. This suggests that alcoholic drinks are consistently shown more in soap opera programmes than in other types of programmes.

Chi-Square tests associated with Table 8 (Alcoholic drinks)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	75.874(a)	5	.000
<b>Likelihood Ratio</b>	68.513	5	.000
<b>Linear-by-Linear Association</b>	18.491	1	.000
<b>N of Valid Cases</b>	195		
6 cells (50.0%) have expected count less than 5. The minimum expected count is .67.			

#### **4.1.5.3 Fruit and vegetables**

Forty seven point six percent of all occurrences of fruit and vegetable were in advertising. In the total sample multiple occurrences were rare; only one advertisement featured fruit and vegetables and was advertising the consumption of these product categories (i.e. the "5+ a day" promotion, illustrating the value of eating fruit and vegetables). Other types of advertisements promoted individual products such as preserved fruit products for children.

Soap operas and sitcoms both had 19.0% of occurrences of one type of fruit and vegetable. Cartoons had 14.3% of occurrences of one type of fruit and vegetable. During soap operas and sitcoms there were common occurrences of fruit displayed in a fruit bowl (usually in the home) and vegetables usually occurred as part of a meal with meat, pasta or rice. In cartoons, characters often ate fresh fruit as part of a meal such as breakfast or lunch or as a between meal snack. There were no occurrences of fruit and vegetables during reality TV programmes or dramas.

**Table 9: Percentage of occurrences of fruit and vegetables by New Zealand programme type**

Fruit and Vegetables	Advertising (during all programmes)	Programme type					Total
		Reality TV	Drama	Soap opera	Cartoon	Sitcom	
Occurrence of one type of fruit or vegetable	47.6%	0%	0%	19.0%	14.3%	19.0%	100% n=21
Occurrence of each of two types of fruit or vegetable	100%	0%	0%	0%	0%	0%	100% n=1

The Chi-Square test results in a (significance) p-value of 0.602. This value is greater than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is accepted, concluding there is not a significant relationship between the occurrence of fruit and vegetables and programme types. This suggests that fruit and vegetables are not shown more commonly in some programme types than in others.

Chi-Square tests associated with Table 9 (Fruit and vegetables)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	8.271(a)	10	.602
<b>Likelihood Ratio</b>	8.708	10	.560
<b>Linear-by-Linear Association</b>	2.538	1	.111
<b>N of Valid Cases</b>	195		
12 cells (66.7%) have expected count less than 5. The minimum expected count is .03.			



#### 4.1.5.4 Bread, cereals and grains

Sixty four point four percent of occurrences of one type of bread, cereal or grain were in advertising. Generally these were advertisements for individual products: different varieties of bread, cereal, muesli bar, cracker, pasta and rice products.

Cartoons contained 15.6% of occurrences, whilst soap operas had 11.1% of occurrences of one type of bread, cereals and grains. Other programme types had considerably fewer occurrences. There was only one occurrence of one of each of two types of bread, cereals and grains, which was during a cartoon. In programmes, occurrences of bread included fresh bread and bagels or filled rolls and sandwiches. Pasta and rice usually occurred as part of a meal, although sushi was also grouped in this category.

**Table 10: Percentage of occurrences of bread, cereals and grains by New Zealand programme type**

Bread, cereals and grains	Advertising (during all programmes)	Programme type					Total
		Reality TV	Drama	Soap operas	Cartoon	Sitcom	
Occurrence of one type of bread, cereals and grain.	64.4%	0%	2.2%	11.1%	15.6%	6.7%	100 % n=45
Occurrence of each of two types of bread, cereals and grain	0%	0%	0%	0%	0%	100%	100 % n=1

The Chi-Square test results in a (significance) p-value of 0.041. This value is less than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is rejected, concluding there is a significant relationship between the occurrence of bread, cereals and grains and programme types. This suggests that certain bread, cereals and grains are consistently shown in some programme types more than in others.

<b>Chi-Square tests associated with Table 10 (Bread, cereals and grains)</b>			
	<b>Value</b>	<b>df</b>	<b>Asymp. Sig. (2-sided)</b>
<b>Pearson Chi-Square</b>	18.920(a)	10	.041
<b>Likelihood Ratio</b>	12.829	10	.233
<b>Linear-by-Linear Association</b>	.638	1	.425
<b>N of Valid Cases</b>	195		
11 cells (61.1%) have expected count less than five. The minimum expected count is .03.			

The category "bread, cereals and grains" includes any of the following food types: bagels, sandwiches, filled rolls, breakfast cereals, muesli bars, crackers, pasta, rice and sushi. In order to determine which particular breads, cereals and grains have a significant relationship with programme type, further tests were conducted on select groups of items. Only significant results are shown. A relationship was found to exist between bread (i.e. bagels, sandwiches, filled rolls) and programme type.

Forty percent of occurrences of bread were during cartoons. The existence of this pattern between bread and cartoons indicates that most cartoons and children's programmes in the New Zealand viewing environment are likely to have similar imagery. Sitcoms had 26.7% of occurrences, whilst soap operas had 20% of occurrences. Only 6.7% of occurrences of bread were during advertisements and a further 6.7% were during dramas. There were no occurrences of bread during reality TV programmes.

**Table 11: Percentage of occurrences of bread by New Zealand programme type**

Bread	Advertising (during all programmes)	Programme type					Total
		Reality TV	Drama	Soap opera	Cartoon	Sitcom	
Occurrence of bread	6.7%	0%	6.7%	20.0%	40.0%	26.7%	100 % n=15

The Chi-Square Test results in a (significance) p-value of 0.000. This value is less than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is rejected, concluding there is a significant relationship between the occurrence of bread and programme types. This suggests that bread is more commonly shown in cartoons than in any other type of programme.

Chi-Square tests associated with Table 11 (Bread)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	35.036(a)	5	.000
<b>Likelihood Ratio</b>	29.832	5	.000
<b>Linear-by-Linear Association</b>	29.305	1	.000
<b>N of Valid Cases</b>	195		
6 cells (50.0%) have expected count less than 5. The minimum expected count is .38.			

#### **4.1.5.5 Dairy products**

The majority of occurrences of dairy products were contained in advertisements (75%). There were only two other occurrences of dairy products in programmes, one each during a cartoon and during a sitcom.

**Table 12: Percentage of occurrences of dairy products by New Zealand programme type**

Dairy products	Advertising (during all programmes)	Programme type					Total
		Reality TV	Drama	Soap opera	Cartoon	Sitcom	
Occurrence of one type of dairy product	75.0%	0%	0%	0%	12.5%	12.5%	100% n=8

The Chi-Square test results in a (significance) p-value of 0.249. This value is greater than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is accepted, concluding there is not a significant relationship between the occurrence of dairy products and programme types. This suggests that dairy products are not shown more commonly in some programme types than in others.

Chi-Square tests associated with Table 12 (Dairy products)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	2.575(a)	5	.765
<b>Likelihood Ratio</b>	4.294	5	.508
<b>Linear-by-Linear Association</b>	.099	1	.753
<b>N of Valid Cases</b>	195		
7 cells (58.3%) have expected count less than 5. The minimum expected count is .21.			

#### 4.1.5.6 Snacks, sweets and desserts

As Table 13 illustrates, the majority of occurrences of one type of snacks, sweets and dessert items were during advertisements; such items in advertising included ice creams, snack (corn/potato) chips, chocolate and other confectionery. In programmes, characters were seen eating other snack items including meat pies, doughnuts, muffins or biscuits. Thirteen point two percent of occurrences of one type of snacks, sweets and dessert items were during soap operas. Cartoons and sitcoms both had 10.5% of occurrences. The only occurrence of one of each of two types of snacks, sweets and dessert items was during a sitcom.

**Table 13: Percentage of occurrences of snacks, sweets and desserts by New Zealand programme type**

Snacks, sweets and desserts	Advertising (during all programmes)	Programme type					Total
		Reality TV	Drama	Soap opera	Cartoon	Sitcom	
Occurrence of one type of snacks, sweets or desserts	60.5%	0%	5.3%	13.2%	10.5%	10.5%	100% n=38
Occurrence of each of two types of snacks, sweets or desserts	0%	0%	0%	0%	0%	100%	100% n=2

The Chi-Square test results in a (significance) p-value of 0.001. This value is less than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is rejected, concluding there is a significant relationship between the occurrence of snacks, sweets and desserts and programme types. This suggests that certain snacks, sweets and desserts are consistently shown in some programme types more than in others.

Chi-Square tests associated with Table 13 (Snacks, sweets and desserts)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	30.983(a)	10	.001
<b>Likelihood Ratio</b>	16.984	10	.075
<b>Linear-by-Linear Association</b>	3.241	1	.072
<b>N of Valid Cases</b>	195		
11 cells (61.1%) have expected count less than 5. The minimum expected count is .05.			

The category "snacks, sweets and desserts" includes any of the following food types: cakes, meat and fruit pies, cookies, snack chips, chewing gum, mints, sweets, ice cream, ice blocks. In order to determine which particular snacks, sweets and desserts have a significant relationship with programme type, further tests were conducted on select groups of items. Only significant results are shown. A relationship was found to exist between cakes, pies and cookies and programme type.

The majority of occurrences of cakes, pies and cookies were during sitcoms (40%) and soap operas (33.3%). The existence of this pattern between cakes, pies and cookies and sitcoms and soap operas indicates that most sitcoms and soap opera programmes in the New Zealand viewing environment are likely to have similar imagery. Thirteen point three percent of occurrences of cakes, pies and cookies were during both dramas and cartoons (13.9% each). There were no occurrences of cakes, pies and cookies during reality TV programmes or in advertisements.

**Table 14: Percentage of occurrences of cakes, pies and cookies by New Zealand programme type**

Cakes, pies and cookies	Advertising (during all programmes)	Programme type					Total
		Reality TV	Drama	Soap opera	Cartoon	Sitcom	
Occurrence of cakes, pies and cookies	0%	0%	13.3%	33.3%	13.3%	40.0%	100 % n=15

The Chi-Square test results in a (significance) p-value of 0.000. This value is less than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is rejected, concluding there is a significant relationship between the occurrence of cakes, pies and cookies and programme types. This suggests that cakes, pies and cookies are more commonly shown in sitcoms and soap operas than in any other type of programme.

Chi-Square tests associated with Table 14 (Cakes, pies and cookies)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	45.718(a)	5	.000
<b>Likelihood Ratio</b>	39.963	5	.000
<b>Linear-by-Linear Association</b>	31.291	1	.000
<b>N of Valid Cases</b>	195		
6 cells (50.0%) have expected count less than 5. The minimum expected count is .38.			

#### 4.1.5.7 Microwave meals and snacks

There were only three occurrences of microwave meals and snacks. Two of these (66.7%) were during advertisements, while the other occurrence was during a sitcom.

**Table 15: Percentage of occurrences of microwave meals and snacks by New Zealand programme type**

Microwave meals and snacks	Advertising (during all programmes)	Programme type					Total
		Reality TV	Drama	Soap opera	Cartoon	Sitcom	
Occurrence of one type of microwave meals and snacks	66.7%	0%	0%	0%	0%	33.3%	100% n=3

The Chi-Square test results in a (significance) p-value of 0.566. This value is greater than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is accepted, concluding there is not a significant relationship between the occurrence of microwave meals and snacks, and programme types. This suggests that microwave meals and snacks are not more commonly shown in any one particular type of programme.



Chi-Square tests associated with Table 15 (Microwave meals and snacks)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	3.888(a)	5	.566
<b>Likelihood Ratio</b>	3.485	5	.626
<b>Linear-by-Linear Association</b>	.075	1	.784
<b>N of Valid Cases</b>	195		
7 cells (58.3%) have expected count less than 5. The minimum expected count is .08.			

#### 4.1.5.8 Fast food

All except one occurrence of fast food were during advertising. The majority of these occurrences were advertisements for traditional (burger, fries and a drink) fast food meal deals (“combos”), or traditional items coupled with promotional items (toys or other giveaways). Breakfast and dessert menu items also featured. The single occurrence of fast food in a programme featured during a reality TV programme.

**Table 16: Percentage of occurrences of fast food by New Zealand programme type**

Fast food	Advertising (during all programmes)	Programme type					Total
		Reality TV	Drama	Soap opera	Cartoon	Sitcom	
Traditional	90.9%	9.1%	0%	0%	0%	0%	100% n=11
Promotional	100%	0%	0%	0%	0%	0%	100% n=8
Desserts	100%	0%	0%	0%	0%	0%	100% n=5
Breakfasts	100%	0%	0%	0%	0%	0%	100% n=1

The Chi-Square test results in a (significance) p-value of 0.847. This value is greater than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is accepted, concluding there is not a significant relationship between the occurrence of fast food and programme types. This suggests that fast food is not more commonly shown in any one particular type of programme.

<b>Chi-Square tests associated with Table 16 (Fast food)</b>			
	<b>Value</b>	<b>df</b>	<b>Asymp. Sig. (2-sided)</b>
Pearson Chi-Square	17.897(a)	25	.847
Likelihood Ratio	26.542	25	.379
Linear-by-Linear Association	10.457	1	.001
N of Valid Cases	195		
30 cells (83.3%) have expected count less than 5. The minimum expected count is .03.			

#### **4.1.5.9 Miscellaneous**

Miscellaneous items included eggs, soup, and condiments such as sauces, spices, salt and pepper. The majority of occurrences of one type of miscellaneous foods were during advertisements (36.8%). Twenty six point three percent of occurrences of one type of miscellaneous foods were during soap operas. Sitcoms had 21.1% of occurrences, and cartoons had 15.6% of occurrences. The only occurrence of one of each of two types of miscellaneous foods was during a soap opera.

**Table 17: Percentage of occurrences of miscellaneous foods by New Zealand programme type**

Miscellaneous foods	Advertising (during all programmes)	Programme type					Total
		Reality TV	Drama	Soap opera	Cartoon	Sitcom	
Occurrence of one type of miscellaneous foods	36.8%	0%	0%	26.3%	15.8%	21.1%	100% n=19
Occurrence of each of two types of miscellaneous foods.	0%	0%	0%	100%	0%	0%	100% n=2

The Chi-Square test results in a (significance) p-value of 0.013. This value is less than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is rejected, concluding there is a significant relationship between the occurrence of miscellaneous foods and programme types. This suggests that miscellaneous foods are shown more commonly in some programme types than in others.

Despite the significance of this relationship further cross tabulations have not been conducted as the miscellaneous category does not include significant occurrences of any one particular food item or food group. For instance, there were only a few references to several different types of spices.

Chi-Square tests associated with Table 17 (Miscellaneous foods)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	22.484(a)	10	.013
<b>Likelihood Ratio</b>	18.747	10	.044
<b>Linear-by-Linear Association</b>	10.427	1	.001
<b>N of Valid Cases</b>	195		
12 cells (66.7%) have expected count less than 5. The minimum expected count is .05.			

#### **4.1.5.10 Summary of significant food relationships featured in advertising and programme content**

The food categories were cross tabulated with the programme types in order to establish significant relationships. A significant relationship was found between:

- Occurrences of beverages and programme type,
- Occurrences of bread, cereals and grains and programme type, and
- Occurrences of snacks, sweets and desserts and programme type.

This indicates that these food groups are consistently shown in some programme types more than in others.

Further tests conducted on these categories found relationships between:

- Alcoholic drinks and soap operas,
- Bread and cartoons,
- Cakes, pies and cookies and sitcoms and soap operas.

The existence of these links in the sampled programmes implies that:

- Soap operas on New Zealand television have frequent occurrences of cakes, pies and cookies and alcoholic drinks
- Sitcoms on New Zealand television have frequent occurrences of cakes, pies and cookies, and
- Cartoons on New Zealand television have frequent occurrences of bread

#### **4.1.6 Eating episodes, settings, locations and situations by programme type**

Occurrences of food and food references were classified into the type of episode, as well as the setting, location and situation.

The tables on the following pages show the incidence of each type of occurrence, setting, location and situation within each type of programme. Cross tabulation tests were performed in order to determine the significance of any association (relationship) between these variables. Note: All rows in all tables sum to 100%.

The null ( $H_0$ ) and alternative ( $H_1$ ) hypothesis for this test is as follows:

$H_0$ = No association between episode, setting, location and situation type X and programme type

$H_1$ = Not  $H_0$

The Chi-Square test produces a (significance) p-value. If this value is less than 0.05, the null hypothesis will be rejected, thus concluding that there is a significant relationship between the occurrence of episode, setting, location and situation type X and programme type.

##### **4.1.6.1 Eating episodes by programme type**

Of all the occurrences of food and beverage simultaneously, 47.4% were during advertisements. Twenty one point one percent were during sitcoms and 15.8% were during soap operas. Considerably fewer occurrences were during cartoons, dramas and reality TV programmes. This shows that characters were more inclined to be eating or drinking rather than doing both simultaneously.

Of the occurrences that food and beverages occurred solely, the majority involved food, occurring mainly during advertisements (71.4%). Cartoons had the next largest number of food only occurrences (12.2%). Beverage only episodes occurred mostly in advertisements (52.5%), then in soap operas (28.8%).

**Table 18: Eating episodes by New Zealand programme type**

Episode	Advertising (during all programmes)	Programme type					Total
		Reality TV	Drama	Soap operas	Cartoon	Sitcom	
Food and beverage	47.4%	2.6%	2.6%	15.8%	10.5%	21.1%	100 % n=38
Food only	71.4%	1.0%	3.1%	8.2%	12.2%	4.1%	100 % n=98
Beverage only	52.5%	10.2%	1.7%	28.8%	3.4%	3.4%	100 % n=59

The Chi-Square test results in a (significance) p-value of 0.000. This value is less than 0.05; therefore the null hypothesis (H0=No Association) is rejected, concluding there is a significant relationship between the type of food episode and the programme type. This suggests that certain types of food episodes are consistently shown in some programme types more than in others.

Chi-Square tests associated with Table 18 (Eating episodes)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	37.398(a)	10	.000
<b>Likelihood Ratio</b>	34.138	10	.000
<b>Linear-by-Linear Association</b>	2.220	1	.136
<b>N of Valid Cases</b>	195		

9 cells (50.0%) have expected count less than 5. The minimum expected count is .97.
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#### **4.1.6.2 Setting by New Zealand programme type**

Most episodes involving a person eating and/or drinking alone occurred during advertisements (81.1%); that is, most products advertised were of one individual consuming the product. During programme content the greatest number of characters eating and/or drinking alone was during soap operas (8.1%).

Similarly, the highest percentage of episodes involving eating and/or drinking with one other person (34.4% and 25% respectively), eating and/or drinking in a group (50.9%, and 22.6% respectively) and handling/preparing/purchasing food/drink (50%, 20.6%) occurred during advertisements and soap operas respectively. Episodes involving eating as a family occurred once each during a sitcom and cartoon. All other occurrences were during advertisements. “Other” types of episodes, such as food visibly displayed (e.g. fruit in a fruit bowl) but not consumed, occurred mainly during advertisements (91.9%). There was one “other” type occurrence each during a sitcom, cartoon and soap opera. Some advertising was animated/computer generated so the food/drink product was not shown in any particular setting, such as a Poppa Jacks corn chip advertisement.

**Table 19: Setting by New Zealand programme type**

Setting	Advertising (during all programmes)	Programme type					Total
		Reality TV	Dram a	Soap opera	Cartoo n	Sitco m	
Eating/drinking alone	81.1%	5.4%	0%	8.1%	2.7%	2.7%	100 % n=37
Eating/drinking with one other	34.4%	6.3%	9.4%	25.0%	9.4%	15.6%	100 % n=32
Eating/drinking in a group	50.9%	3.8%	3.8%	22.6%	13.2%	5.7%	100 % n=53
Eating/drinking as a family	0%	0%	0%	0%	50.0%	50.0%	100 % n=2
Food/drink handling, Preparation, purchase	50.0%	5.9%	0%	20.6%	14.7%	8.8%	100 % n=34
Other	91.9%		0%	2.7%	2.7%	2.7%	100 % n=37

The Chi-Square test results in a (significance) p-value of 0.000. This value is less than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is rejected, concluding there is a significant relationship between the type of setting in which a food episode occurs and the programme type. This suggests that certain settings are consistently shown in some programme types more than in others.

Chi-Square tests associated with Table 19 (Setting)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	55.140(a)	25	.000



<b>Likelihood Ratio</b>	56.507	25	.000
<b>Linear-by-Linear Association</b>	1.131	1	.288
<b>N of Valid Cases</b>	195		
26 cells (72.2%) have expected count less than 5. The minimum expected count is .05.			

#### 4.1.6.3 Location by New Zealand programme type

Most of the episodes featuring home as the location occurred in advertising (50.5%), followed by soap operas (20.9%), cartoons (13.2%) and sitcoms (11.0%). Forty seven point one percent of occurrences involving the workplace were during advertising, followed by soap operas (29.4%) and dramas (11.8%). Retail establishments, such as restaurants and bars, featured most during soap operas (41.2%), advertising (29.4%) and sitcoms (17.6%). Public facilities, such as schools, gymnasiums and parks, occurred mostly in advertisements (61.5%), followed by reality TV programmes and cartoons (each 19.2%). Situations involving eating and/or drinking “on the run” occurred only in advertising.

**Table 20: Location by New Zealand programme type**

Location	Advertising (during all programmes)	Programme type					Total
		Reality TV	Dram a	Soap operas	Cartoo n	Sitco m	
Home	50.5%	1.1%	3.3%	20.9%	13.2%	11.0%	100% n=91
Workplace	47.1%	5.9%	11.8%	29.4%	0%	5.9%	100% n=17
Retail establishment	29.4%	5.9%	0%	41.2%	5.9%	17.6%	100% n=17
Public facility	61.5%	19.2%	0%	0%	19.2%	61.5%	100% n=26
“on the run”	100%	0%	0%	0%	0%	0%	100% n=16

Other	100%	0%	0%	0%	0%	0%	100% n=28
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The Chi-Square test results in a (significance) p-value of 0.000. This value is less than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is rejected, concluding there is a significant relationship between the type of location in which a food episode occurs and the programme type. This suggests that certain locations are consistently shown in some programme types more than in others.

Chi-Square tests associated with Table 20 (Location)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	83.555(a)	25	.000
<b>Likelihood Ratio</b>	95.146	25	.000
<b>Linear-by-Linear Association</b>	27.961	1	.000
<b>N of Valid Cases</b>	195		
27 cells (75.0%) have expected count less than 5. The minimum expected count is .41.			

#### 4.1.6.4 Situation by New Zealand programme type

Regular meals, such as breakfast, lunch, or dinner occurred mostly in advertisements (56.6%) and soap operas (18.4%). Between meal eating or snacking occurred mostly in advertisements (65.1%), followed by cartoons (14.3%). Situations that did not involve a meal or snack, such as a character consuming only a beverage or eating sweets or gum occurred mainly in advertisements (62.5%) and soap operas (19.6%).

**Table 21: Situation by New Zealand programme type**

Situation	Advertising (during all programmes)	Programme type					Total
		Reality TV	Drama	Soap opera	Cartoon	Sitcom	
Regular meal (breakfast, lunch, dinner, celebratory)	56.6%	1.3%	2.6%	18.4%	11.8%	9.2%	100 % n=76
Between meal eating or snack	65.1%	0%	4.8%	9.5%	14.3%	6.3%	100 % n=63
Not a meal or snack	62.5%	12.5%	0%	19.6%	0%	5.4%	100 % n=56

The Chi-Square test results in a (significance) p-value of 0.002. This value is less than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is rejected, concluding there is a significant relationship between the type of situation in which a food episode occurs and the programme type. This suggests that certain situations are consistently shown in some programme types more than in others.

Chi-Square tests associated with Table 21 (Situation)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	27.348(a)	10	.002
<b>Likelihood Ratio</b>	33.304	10	.000
<b>Linear-by-Linear Association</b>	3.334	1	.068
<b>N of Valid Cases</b>	195		
8 cells (44.4%) have expected count less than 5. The minimum expected count is 1.44.			



## **4.2 Japanese television**

### **4.2.1 Summary of Japanese programmes analysed**

The total sample of Japanese material viewed consisted of 22 programmes, with 119 food advertisements, 261 non-food advertisements and 380 advertisements total, excluding programme previews. The programmes were classified by Video Research as being cartoon, variety, music or educational. The following table lists the programmes viewed, by programme type and broadcast time.

**Table 22: Summary of Japanese programmes analysed**

Programme Type	Time slot	Number of Programmes	Programmes (Japanese)	Programmes (Translated into English)
Variety	Some evenings (between 7pm to 10pm)	8	Sekai Marumie!, TV Champion, Warau Inu no Jyonetsu,  Gakkoo he iko!, Ito-ke no shokutaku, USO!? Japan, Mecha x2 iketeru The! Sekai gyoten news	World exposure, Television champion, Gonna go crazy funky dogs,  Let's go to school!, Itoke's dinner table, Is this for real?! Japan Really really cool The surprising world news
Cartoon	Some evenings (between 6pm to 9pm)	11	Atashinchi, Doraemon, Sazae-san (2), Meitantei Konan Kochira Katsushika-ku Kamearikoen-mae hashutsusho, Crayon Shin-chan, Inuyasha, Chibimaruko-chan (2), One Piece	My house, (Character's name), Sazae's family, Detective Conan, The police station in front of the park,  (Character's name), Dog demon, Little Maruko, One Piece
Music	Some weekday evenings (8pm to 9pm)	2	Music Station Sokuho! Uta no Daijiten!	Music Station Dictionary of songs
Educational	Thursday evening (6:30pm to 7pm)	1	Tensai Terebi-kun	Genius' television
<b>TOTAL</b>		<b>22</b>		

### 4.2.2 Frequency of Japanese food advertisements

For the purpose of this study advertisements were categorised as either advertising a food product or advertising some other product. The majority of advertisements were 15 seconds in length. Table 23 shows the distribution of food advertisements to non-food advertisements by programme type.

The proportion of food advertising during the sample programmes ranged from 29% to 35% of the total advertising broadcast. The majority of food advertising occurred during cartoons (35%) and variety shows (29%), with the lowest frequency of food advertising occurring during music programmes (26%). There was no advertising during the one educational programme in the sample. Overall, 31% of all advertisements were for food products.

**Table 23: Summary of Japanese advertisements analysed**

<b>Programme Type</b>	<b>Total minutes viewed</b>	<b>Total no. of ad. Breaks</b>	<b>Total number of ads</b>	<b>Food ads. frequency/ percentage</b>	<b>Non-food ads. frequency/ percentage</b>
Variety	411	33	170	49 (29%)	121 (71%)
Cartoon	353	36	175	61 (35%)	114 (65%)
Music	110	8	35	9 (26%)	26 (74%)
Educational	35	0	0	0 (0%)	0 (0%)
<b>TOTAL</b>	<b>899 minutes</b>	<b>77 breaks</b>	<b>380</b>	<b>119</b>	<b>261</b>



### **4.2.3 Foods featured in Japanese advertising and within each Japanese programme type**

All of the comments in this section relate to Table 24, which follows on page 94.

The most common food advertisements were for beverages (21.9% of all advertised foods), followed by fruit and vegetables (16.6%). Bread, cereals and grains (14.4%) and fast food (12.2%), comprised the next largest proportions of advertising, whilst meat and miscellaneous foods each comprised 10.8% of food advertising. Dairy foods featured considerably less (2.1%). All food groups featured in advertising except microwave meals. These did not appear in either advertising or in programme content. An example of a food advertisement is shown in Figure 4.



**Figure 4: Bottled tea advertisement (Japan)**

Aside from advertisement content, there were no food occurrences during music programmes, which is unsurprising considering the nature of the genre, and few food occurrences during educational programmes. During educational programmes there was an equal proportion of meat, fish and poultry; fruit and vegetables; bread, cereals and grains; and miscellaneous foods (25% of each of the four food categories).

Food occurrences during variety programmes were largely miscellaneous foods (27.3%) and bread, cereals and grains (21.3%). Seventeen point one percent of foods were meat, fish and poultry, 15.7% were beverages and 14.8% were fruit and vegetables. Two point eight percent of food occurrences during variety programmes were snacks, sweets and desserts and there were no occurrences of dairy products, microwave meals, or fast food. An example of a food occurrence during a variety programme is shown in Figure 5.



**Figure 5: Segment on Taiwanese food on Sekai Marumie! (Japan).**

During cartoons the majority of food occurrences were beverages (25.3%). The second largest group represented was miscellaneous foods (19.6%). Fruit and vegetables comprised 17.7% of the food occurrences during cartoons. Meat, fish and poultry comprised 16.3% and 13.9% were bread, cereals and grains. Seven point two percent of food occurrences were snacks, sweets and desserts and there were no occurrences of dairy products, microwave meals or fast food. An example of a food occurrence during a cartoon is shown in Figure 6.



Figure 6: Characters preparing corncobs on Chibimaruko-chan (Japan).

Table 24: Frequency of foods featured in Japanese advertising and during each Japanese programme type

Food Type	Advertising (during all programmes)	Programme type		
		Variety	Cartoon	Educational
Meat, fish and poultry	10.8%	17.1%	16.3%	25%
Beverages	21.9%	15.7%	25.3%	0%
Fruit and vegetables	16.6%	14.8%	17.7%	25%
Bread, cereals, and grains	14.4%	21.3%	13.9%	25%
Dairy products	2.1%	1%	0%	0%
Snacks, sweets and desserts	11.2%	2.8%	7.2%	0%
Microwave meals	0%	0%	0%	0%
Fast food	12.2%	0%	0%	0%
Miscellaneous	10.8%	27.3%	19.6%	25%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

#### 4.2.4 Food episodes in Japanese programme content

The following table shows the number of food episodes that occurred during the programme content of the sample. Food episodes are direct, visual references to food. A food episode is any situation involving the eating, preparation/handling, or purchasing of food. This also includes food on display (e.g. in a café, or on a table at home), food in art works (e.g. paintings, posters or other imagery involving food) and books (e.g. if a character is using a cookbook or looking at a book with pictures of food in it).

The majority of food occurrences occurred during cartoons and variety programmes (55% and 44% respectively). Cartoons have an average of nine food episodes per half an hour of viewing, whilst variety programmes have seven food episodes per half hour of viewing. Educational programmes have the lowest level of food episodes – two per half hour of viewing. There were no food occurrences during music programmes.

**Table 25: Summary of food episodes in Japanese programme content**

<b>Programme type</b>	<b>Total minutes viewed (including advertisements)</b>	<b>Number of food episodes/ percentage</b>	<b>Average number of food episodes per half hour of viewing</b>
Variety	411	89 (44%)	7
Cartoon	353	111 (55%)	9
Music	110	0 (0%)	0
Educational	35	2 (1%)	2
<b>TOTAL</b>	<b>899 minutes</b>	<b>202</b>	<b>7</b>

#### **4.2.5 Foods featured in Japanese advertising and Japanese programme content**

Both advertisements and programme content featured a variety of foods, which were categorised into seven food types (meat, fish, and poultry; beverages; fruit and vegetables; bread, cereals and grains; dairy products; snacks, sweets and desserts; microwave meals and snacks; fast food; miscellaneous). It is important to note here that many foods categorised as miscellaneous foods were presented on Japanese television. These foods were such things as *miso* soup (traditional Japanese soup), *nori* (seaweed strips) and *nato* (fermented beans). Other food in this category were items that were clearly presented as food, but where the specific food type was difficult to discern (e.g. cartoons often showed a meal on a plate, however the particular food groups were merely represented by different coloured “mounds”).

Overall, beverages featured the most within the media broadcast (20.5%), followed by miscellaneous foods (19.7%). Bread, cereal and grains comprised 16.8% of the food occurrences and fruit and vegetables comprised 16.5% of the occurrences. Fifteen percent of the food occurrences were meat, fish and poultry. Sweets, snacks and desserts comprised only a small portion of the sample (6.8%) and fast food featured even less (3.7%). Dairy products comprised only 1% of all food occurrences in the media environment and microwave meals did not feature at all. This is not surprising considering that the Japanese consume fewer dairy products than New Zealanders and have a different approach to food and meal preparation that limits the use of a microwave oven.

**Table 26: Percentage of occurrences of food types within overall Japanese media environment (advertising and programmes).**

Bever- ages	Bread, cereal and grains	Dairy products	Fast food	Fruit and vege	Meat fish and poultry	Micro- wave meals	Misc	Sweets, snacks and desserts	Total
20.5	16.8	1.0	3.7	16.5	15.0	0.0	19.7	6.8	100%

The tables on the following pages show the occurrence of each type of food within each type of programme. Cross tabulation tests were performed in order to determine the significance of any association (relationship) between these variables. The null ( $H_0$ ) and alternative ( $H_1$ ) hypotheses for this test are as follows:

$H_0$ = No association between food type X and programme type

$H_1$ = Not  $H_0$  (i.e. there is an association between food type X and programme type)

The Chi-Square test produces a (significance) p-value. If this value is less than 0.05, the null hypothesis will be rejected, thus concluding that there is a significant relationship between the occurrence of food type X and programme type.

#### 4.2.5.1 Meat, fish, and poultry

Advertisements for meat were generally promoting a particular recipe using the meat, fish or poultry, or a condiment to accompany the meat, such as sauces and spices. Meat also featured in advertisements for restaurants, where various meal options were depicted. In some occurrences meat was also shown in beverage advertisements where it was suggested that the beverage could accompany the meal (e.g. a ham sandwich and a bottle of tea). Of all the occurrences of one type of meat 16% were during advertisements. The majority of occurrences of each of two types of meat were during advertisements (58.3%).

During programme content 42% of one type of meat (e.g. meat, fish or poultry) occurrences was during cartoons and 39.5% were during variety programmes. Two point five percent were during educational programmes. These occurrences mostly involved meat being eaten as part of a meal; usually a lunch or dinner, served with vegetables, rice or noodles. In many cases the meat was either beef or pork. Fish and seafood were also common. Chicken featured very rarely. Occurrences of more than one type of meat occurred only in advertisements (58.3%) and variety programmes (41.7%).

**Table 27: Percentage of occurrences of meat by Japanese programme type**

Meat	Advertising (during all programmes)	Programme type			Total
		Variety	Cartoon	Educational	
Occurrence of one type of meat	16.0%	39.5%	42.0%	2.5%	100% n=81
Occurrence of each of two types of	58.3%	41.7%	0%	0%	100% n=12

meat					
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The Chi-Square test results in a (significance) p-value of 0.000. This value is less than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is rejected, concluding there is a significant relationship between the occurrence of meat and programme types. This suggests that certain meats are consistently shown in some programme types more than in others.

Chi-Square tests associated with Table 27 (Meat)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	31.910	6	.000
<b>Likelihood Ratio</b>	37.405	6	.000
<b>Linear-by-Linear Association</b>	1.268	1	.260
<b>N of Valid Cases</b>	320		
6 cells (50.0%) have expected count less than 5. The minimum expected count is .08.			

The category “meat” includes any of the following meat types: meat (beef and pork), fish (including all types of seafood), and poultry (chicken). In order to determine which particular meats have a significant relationship with programme type, further tests were conducted on select groups of items. Only significant results are shown. Significant relationships were found to exist between meat and programme type, and equally between poultry and programme type. This suggests that meat (e.g. beef and pork) and chicken are consistently shown in some programme types more than in others.

Meat featured mostly in variety programmes (43.8%) which is not surprising considering that many of the variety programmes included segments on how to cook particular foods or on ethnic foods of other cultures. In this particular sample one variety show ran a segment on traditional Taiwanese cuisine whilst another showed children preparing traditional Japanese food. The existence of



this pattern between meat and variety programmes indicates that variety programmes in the Japanese viewing environment are likely to have similar imagery. Cartoons also featured meat often (29.7%), which is consistent with the fact that the cartoons often depicted characters having lunch and dinner meals.

There were only five occurrences of poultry, all of which occurred during advertisements. Of those five advertisements, only one was specifically selling a chicken product. The other four showed chicken as a secondary food item (e.g. an advertisement for salad dressing may show a salad with chicken accompanying it, but the chicken is not the feature of the advertisement).

**Table 28: Percentage of occurrences of meat by Japanese programme type**

Meat	Advertising (during all programmes)	Programme type			Total
		Variety	Cartoon	Educational	
Occurrence of meat	23.4%	43.8%	29.7%	3.1%	100% n=64
Occurrence of poultry	100%	0%	0%	0%	100% n=5

The Chi-Square test results in a (significance) p-value of 0.000. This value is less than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is rejected, concluding there is a significant relationship between the occurrence of meat and programme types. This suggests that meat is consistently shown in variety programmes more than in others.

Chi-Square tests associated with Table 28 (Meat)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	19.885	3	.000
<b>Likelihood Ratio</b>	18.013	3	.000

<b>Linear-by-Linear Association</b>	0.680	1	.410
<b>N of Valid Cases</b>	320		
5 cells (62.5%) have expected count less than 5. The minimum expected count is .03.			

The Chi-Square test results in a (significance) p-value of 0.035. This value is less than 0.05, therefore the null hypothesis ( $H_0$ =No Association) is rejected, concluding there is a significant relationship between the occurrence of poultry and programme types. This suggests that poultry is consistently shown in advertising more than in programmes.

<b>Chi-Square tests associated with Table 28 (Poultry)</b>			
	<b>Value</b>	<b>df</b>	<b>Asymp. Sig. (2-sided)</b>
<b>Pearson Chi-Square</b>	8.579	3	.035
<b>Likelihood Ratio</b>	10.027	3	.018
<b>Linear-by-Linear Association</b>	6.635	1	.010
<b>N of Valid Cases</b>	320		
5 cells (62.5%) have expected count less than 5. The minimum expected count is .03.			

#### **4.2.5.2 Beverages**

Thirty five percent of advertisements featured one type of beverage and 29.4% of advertisements featured two types of beverages. Beverage advertisements were mostly bottled tea and coffee, soft drinks, sports drinks, bottled water, milk, vitamin drinks and alcoholic drinks (sake and beer).

During programme content, 41.7% of occurrences of one type of beverage were during cartoons and 23.3% were during variety programmes. These occurrences were predominantly Japanese (green) tea, tea, coffee, juice and alcoholic drinks. Advertising, cartoons and variety shows had occurrences of each of two types of beverages and cartoons and variety shows had each of three types of beverages. This indicates that different individuals were seen to be drinking different beverages than the others at the same time; a scene may show one character having a cup of coffee, whilst another has a cup of tea and a third character has a glass of beer.

**Table 29: Percentage of occurrences of beverages by Japanese programme type**

Beverages	Advertising (during all programmes)	Programme type			Total
		Variety	Cartoon	Educational	
Occurrence of one type of beverage	35.0%	23.3%	41.7%	0%	100% n=103
Occurrence of each of two types of beverage	29.4%	23.5%	47.1%	0%	100% n=17
Occurrence of each of three types of beverage	0%	83.3%	16.7%	0%	100% n=6
Occurrence of each of four types of beverage	0%	100%	0%	0%	100% n=1

The Chi-Square Test results in a (significance) p-value of 0.097. This value is greater than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is accepted, concluding that there is not a significant relationship between the occurrence of beverages and programme types. This suggests that certain beverages are not shown more commonly in some programme types than in others.

Chi-Square tests associated with Table 29 (Beverages)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	18.661(a)	12	.097
<b>Likelihood Ratio</b>	19.266	12	.082
<b>Linear-by-Linear Association</b>	3.778	1	.052
<b>N of Valid Cases</b>	320		
12 cells (60.0%) have expected count less than 5. The minimum expected count is .01.			

#### 4.2.5.3 Fruit and vegetables

There were occurrences of each of one, two and three types of fruit or vegetable in advertising. Of all the occurrences of one type of fruit or vegetable, 27.4% were in advertising. A similar proportion of all the occurrences of each of two types of fruit or vegetable were also in advertising (29.2%). The majority of occurrences of each of three types of fruit or vegetable were in advertising. Whilst fruit and vegetables were prominent in advertising, they were never the product being advertised; rather they were foods that could accompany those products being advertised.

Variety programmes had occurrences of each of one, two and three types of fruit or vegetable whilst cartoons had occurrences of one and two types of fruit or vegetable. During both variety programmes and cartoons, fruit and vegetables usually occurred as part of a meal with meat, pasta or rice. Characters often ate fresh fruit as part of a meal such as breakfast or lunch or as a between meal snack. Cartoons often contained images of fruit and vegetables during the opening and closing credits of the programme.

**Table 30: Percentage of occurrences of fruit and vegetables by Japanese programme type**

Fruit and Vegetables	Advertising (during all programmes)	Programme type			Total
		Variety	Cartoon	Educational	
Occurrence of one type of fruit or vegetable	27.4%	32.9%	37.0%	2.7%	100% n=73
Occurrence of each of two types of fruit or vegetable	29.2%	29.2%	41.7%	0%	100% n=24
Occurrence of each of three types of fruit or vegetable	80.0%	20.0%	0%	0%	100% n=5

The Chi-Square test results in a (significance) p-value of 0.080. This value is greater than 0.05, therefore the null hypothesis ( $H_0$ =No Association) is accepted, concluding there is not a significant relationship between the occurrence of fruit and vegetables and programme types. This suggests that fruit and vegetables are not shown more commonly in some programme types than in others.

Chi-Square tests associated with Table 30 (Fruit and vegetables)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	15.422(a)	9	.080
<b>Likelihood Ratio</b>	15.828	9	.071
<b>Linear-by-Linear Association</b>	.161	1	.688
<b>N of Valid Cases</b>	320		
7 cells (43.8%) have expected count less than 5. The minimum expected count is .03.			

#### 4.2.5.4 Bread, cereals and grains

There were occurrences of one type of bread, cereal or grain in advertising, and in all programme types. The majority of occurrences of one type of bread, cereal and grains were during variety programmes (38.7%) and during cartoons (31.2%). Variety programmes and advertisements had occurrences of each of two types of bread, cereals and grains and there was one occurrence of each of three types of bread, cereals and grains during a variety programme.

Advertisements featuring bread, cereals and grains were usually for individual products: mostly noodles, rice or pasta. Often the item was not the main focus of the advertisement but was shown because the advertised item could accompany it. For instance, the Japanese have a product called *dashi*, which are flavourings (e.g. seaweed, fish flakes) and the advertisement showed this being sprinkled on to rice. Bread was advertised only once and cereals featured only twice (in advertisements). Muesli bars and crackers did not feature at all.

Similarly, the occurrences of bread, cereals and grains in cartoons and variety programmes were mainly noodles, rice or pasta. These items usually occurred as part of a meal, with meat and vegetables. Sushi was also included in this category.

**Table 31: Percentage of occurrences of bread, cereals and grains by Japanese programme type**

Bread, cereals and grains	Advertising (during all programmes)	Programme type			Total
		Variety	Cartoon	Educational	
Occurrence of one type of bread, cereal or grain.	28.0%	38.7%	31.2%	2.2%	100% n=93
Occurrence of each of two types of bread, cereal or grain	10%	90.0%	0%	0%	100% n=10
Occurrence of each of three types of bread, cereal or grain	0%	100%	0%	0%	100% n=1

The Chi-Square test results in a (significance) p-value of 0.000. This value is less than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is rejected, concluding there is a significant relationship between the occurrence of bread, cereals and grains and programme types. This suggests that certain bread, cereals and grains are consistently shown in some programme types more than in others.



<b>Chi-Square tests associated with Table 31 (Bread, cereals and grains)</b>			
	<b>Value</b>	<b>df</b>	<b>Asymp. Sig. (2-sided)</b>
<b>Pearson Chi-Square</b>	40.342(a)	9	.000
<b>Likelihood Ratio</b>	39.636	9	.000
<b>Linear-by-Linear Association</b>	.183	1	.669
<b>N of Valid Cases</b>	320		
10 cells (62.5%) have expected count less than 5. The minimum expected count is .01.			

The category “bread, cereals and grains” includes any of the following food types: bagels, sandwiches, filled rolls, breakfast cereals, muesli bars, crackers, pasta, rice and sushi. In order to determine which particular bread, cereals and grains have a significant relationship with programme type, further tests were conducted on select groups of items. Only significant results are shown. A relationship was found to exist between noodles and programme type, pasta and programme type and rice and programme type.

As can be seen in Table 32 pasta and noodles occurred mainly during variety programmes. Rice occurred mostly in cartoons and variety programmes. The existence of this pattern between rice and cartoons, and rice, pasta, and noodles and variety programmes indicates that most cartoons and variety programmes in the Japanese viewing environment are likely to have similar imagery. Advertisements had some occurrences of noodles, pasta or rice. As was previously mentioned, in this particular sample one variety show ran a segment on traditional Taiwanese cuisine whilst another showed children preparing traditional Japanese foods. In both cases the dishes that were shown featured noodles, pasta or rice, hence the strong relationship between these programmes and these types of foods. The strong relationship between rice and cartoons is evident in that the sampled cartoons often depicted characters eating meals, most of which included rice.

**Table 32: Percentage of occurrences of bread, cereals and grains by Japanese programme type**

Bread, cereals and grains	Advertising (during all programmes)	Programme type			Total
		Variety	Cartoon	Educational	
Occurrence of noodles	31.3%	62.5%	0%	6.3%	100% n=32
Occurrence of pasta	22.2%	77.8%	0%	0%	100% n=9
Occurrence of rice	11.8%	45.1%	43.1%	0%	100% n=51

The Chi-Square Test results in a (significance) p-value of 0.000. This value is less than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is rejected, concluding there is a significant relationship between the occurrence of noodles and programme types. This suggests that noodles are consistently shown in variety programmes more than in others.

Chi-Square tests associated with Table 32 (Noodles)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	45.941(a)	3	.000
<b>Likelihood Ratio</b>	44.546	3	.000
<b>Linear-by-Linear Association</b>	4.833	1	.028
<b>N of Valid Cases</b>	320		
2 cells (25.0%) have expected count less than 5. The minimum expected count is .20.			

The Chi-Square Test results in a (significance) p-value of 0.007. This value is less than 0.05, therefore the null hypothesis ( $H_0$ =No Association) is rejected, concluding there is a significant relationship between the occurrence of pasta and programme types. This suggests that pasta is consistently shown in variety programmes more than in others.

Chi-Square tests associated with Table 32 (Pasta)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	12.111(a)	3	.007
<b>Likelihood Ratio</b>	12.682	3	.005
<b>Linear-by-Linear Association</b>	.470	1	.493
<b>N of Valid Cases</b>	320		
5 cells (62.5%) have expected count less than 5. The minimum expected count is .06.			

The Chi-Square Test results in a (significance) p-value of 0.000. This value is less than 0.05, therefore the null hypothesis ( $H_0$ =No Association) is rejected, concluding there is a significant relationship between the occurrence of rice and programme types. This suggests that rice is consistently shown in variety programmes and cartoons more than in other programmes.

Chi-Square tests associated with Table 32 (Rice)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	18.796(a)	3	.000
<b>Likelihood Ratio</b>	21.385	3	.000
<b>Linear-by-Linear Association</b>	10.049	1	.002
<b>N of Valid Cases</b>	320		
2 cells (25.0%) have expected count less than 5. The minimum expected count is .32.			

#### 4.2.5.5 Dairy products

Of the few occurrences of dairy products, the majority were contained in advertisements (66.7%). There were only two other occurrences of dairy products, and these were during variety programmes. The dairy product shown in all cases was cheese.

**Table 33: Percentage of occurrences of dairy products by Japanese programme type**

Dairy products	Advertising (during all programmes)	Programme type			Total
		Variety	Cartoon	Educational	
Occurrence of one type of dairy product	66.7%	33.3%	0%	0%	100% n=6

The Chi-Square test results in a (significance) p-value of 0.304. This value is greater than 0.05, therefore the null hypothesis ( $H_0$ =No Association) is accepted, concluding there is not a significant relationship between the occurrence of dairy products and programme types. This suggests that dairy products are not shown more commonly in some programme types than in others.

Chi-Square tests associated with Table 33 (Dairy products)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	3.636(a)	3	.304
<b>Likelihood Ratio</b>	5.462	3	.141
<b>Linear-by-Linear Association</b>	3.436	1	.064
<b>N of Valid Cases</b>	320		
5 cells (62.5%) have expected count less than 5. The minimum expected count is .04.			

#### 4.2.5.6 Snacks, sweets and desserts

As illustrated in Table 34, half of the occurrences of one type of snacks, sweets and dessert item were during advertisements. Sweet items in advertising included ice creams, cookies and confectionery. In variety programmes and cartoons characters were seen eating desserts, cake and other similar items. It is important to note here, that whilst the Japanese do have ‘sweets’ (*okashi*) they are generally rice or bean based foods rather than western style highly sugary sweets.

**Table 34: Percentage of occurrences of snacks, sweets and desserts by Japanese programme type**

Snacks, sweets and desserts	Advertising (during all programmes)	Programme type			Total
		Variety	Cartoon	Educational	
Occurrence of one type of snacks, sweets, and dessert	50.0%	12.5%	37.5%	0%	100% n=40
Occurrence of each of two types of snacks, sweets, and dessert	50.0%	50.0%	0%	0%	100% n=2

The Chi-Square test results in a (significance) p-value of 0.287. This value is greater than 0.05, therefore the null hypothesis ( $H_0$ =No Association) is accepted, concluding there is not a significant relationship between the occurrence of sweets, snacks and desserts and programme types. This suggests that sweets, snacks and desserts are not shown more commonly in some programme types than in others.

Chi-Square tests associated with Table 34 (Snacks, sweets and desserts)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	7.384(a)	6	.287
<b>Likelihood Ratio</b>	8.954	6	.176
<b>Linear-by-Linear Association</b>	1.050	1	.306
<b>N of Valid Cases</b>	320		
6 cells (50.0%) have expected count less than 5. The minimum expected count is .01.			

#### 4.2.5.7 Microwave meals and snacks

Microwave meals and snacks did not occur in either advertising or in programme content. This indicates that the Japanese do not use microwave ovens for meal cooking or preparation in the same way that New Zealanders do and suggests that their use of microwave ovens is minimal.

#### 4.2.5.8 Fast food

Fast food occurred only during advertising. The majority of these occurrences were advertisements for traditional fast food meal deals (“combos”), or breakfasts. Traditional items coupled with promotional items (toys or other giveaways) and pizza menu items also featured. The two advertisers of these products were McDonald’s and Pizza Hut.

**Table 35: Percentage of occurrences of fast food by Japanese programme type**

Fast Food	Advertising (during all programmes)	Programme type			Total
		Variety	Cartoon	Educational	
Traditional	100%	0%	0%	0%	100% n=13
Promotional	100%	0%	0%	0%	100% n=2
Breakfasts	100%	0%	0%	0%	100% n=5
Pizza	100%	0%	0%	0%	100% n=3

The Chi-Square test results in a (significance) p-value of 0.000. This value is less than 0.05; therefore the null hypothesis (H0=No Association) is rejected, concluding there is a significant relationship between the occurrence of fast food and programme types. This relationship is clearly between fast food and advertising, that is, there is no fast food shown within any programmes and only in advertising.

Chi-Square tests associated with Table 35 (Fast food)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	41.857(a)	12	.000
<b>Likelihood Ratio</b>	48.572	12	.000
<b>Linear-by-Linear Association</b>	17.933	1	.000
<b>N of Valid Cases</b>	320		
17 cells (85.0%) have expected count less than 5. The minimum expected count is .01.			

#### 4.2.5.9 Miscellaneous foods

Miscellaneous foods included soups (such as traditional Japanese *miso* soup), sauces and condiments, salt and pepper. Other foods in this category were items that were clearly presented as food, but where the specific food type was difficult to discern (e.g. cartoons often showed a meal on a plate; however the particular food groups were merely represented by different coloured “mounds”). The majority of occurrences of miscellaneous foods were during variety programmes and cartoons.

**Table 36: Percentage of occurrences of miscellaneous foods by Japanese programme type**

Miscellaneous	Advertising (during all programmes)	Programme type			Total
		Variety	Cartoon	Educational	
Occurrence of one type of miscellaneous food	18.9%	43.4%	37.7%	0%	100% n=106
Occurrence of each of two types of miscellaneous food.	0%	81.3%	6.3%	12.5%	100% n=16

The Chi-Square test results in a (significance) p-value of 0.000. This value is less than 0.05; therefore the null hypothesis ( $H_0$ =No Association) is rejected, concluding there is a significant relationship between the occurrence of miscellaneous foods and programme types. This suggests that certain miscellaneous foods are consistently shown in some programme types more than in others.



Despite the significance of this relationship further cross tabulations have not been conducted as the miscellaneous foods category does not count significant occurrences of any one particular food item or food group (e.g. there were only a few references to several different types of spices).

<b>Chi-Square tests associated with Table 36 (Miscellaneous foods)</b>			
	<b>Value</b>	<b>df</b>	<b>Asymp. Sig. (2-sided)</b>
<b>Pearson Chi-Square</b>	103.395(a)	6	.000
<b>Likelihood Ratio</b>	81.761	6	.000
<b>Linear-by-Linear Association</b>	7.446	1	.006
<b>N of Valid Cases</b>	320		
4 cells (33.3%) have expected count less than 5. The minimum expected count is .10.			

#### **4.2.5.10 Summary of significant food relationships featured in advertising and programme content**

The food categories were cross tabulated with the programme types in order to establish significant relationships. A significant relationship was found between:

- Occurrences of meat, fish and poultry and programme type, and
- Occurrences of bread, cereals and grains and programme type.

This indicates that these food groups are consistently shown in some programme types more than in others.

Further tests were conducted on these categories and relationships were found to exist between:

- Meat and variety programmes,
- Noodles and variety programmes,
- Pasta and variety programmes and
- Rice and cartoons and variety programmes.

The existence of these patterns in the sampled programmes implies that:

- Variety programmes on Japanese television have frequent occurrences of meat, noodles, pasta and rice,
- Cartoons on Japanese television have frequent occurrences of rice.

#### **4.2.6 Eating episodes, settings, locations and situations by Japanese programme type**

Occurrences of food and food references were classified into the type of episode, as well as the setting, location and situation.

The tables on the following pages show the occurrence of each type of episode, setting, location and situation within each type of programme. Cross tabulation tests were performed in order to determine the significance of any association (relationship) between these variables. Note: All rows in all tables sum to 100%.

The null ( $H_0$ ) and alternative ( $H_1$ ) hypothesis for this test is as follows:

$H_0$ = No association between episode, setting, location and situation type X and programme type

$H_1$ = Not  $H_0$

The Chi-Square test produces a (significance) p-value. If this value is less than 0.05, the null hypothesis will be rejected, thus concluding that there is a significant relationship between the occurrence of episode, setting, location and situation type X and programme type.

##### **4.2.6.1 Eating episodes by Japanese programme type**

Of all the occurrences of food and beverage simultaneously, 42.5% were during cartoons. Thirty percent were during variety programmes and 27.5% were during advertisements. This shows that characters in cartoons were more likely to be eating and drinking simultaneously (e.g. in a meal situation accompanied with a beverage) whilst advertisements tended to depict either eating or drinking rather than both.

Beverages were mostly shown without food during advertisements (54.4%) followed by cartoons (35.1%). Advertisements, variety programmes and cartoons each comprised approximately one third each of all food only occurrences. During the educational programme food only occurred; beverages did not occur, either with or without food present.

**Table 37: Eating episodes by Japanese programme type**

Episode	Advertising (during all programmes)	Programme type			Total
		Variety	Cartoon	Educational	
Food and beverage	27.5%	30.0%	42.5%	0%	100% n=80
Food only	36.1%	32.2%	30.6%	1.1%	100% n=183
Beverage only	54.4%	10.5%	35.1%	0%	100% n=57

The Chi-Square test results in a (significance) p-value of 0.006. This value is less than 0.05; therefore the null hypothesis (H0=No Association) is rejected, concluding there is a significant relationship between the type of food episode and the programme type. This suggests that certain types of food episodes are consistently shown in some programme types more than in others.

Chi-Square tests associated with Table 37 (Eating episodes)			
	Value	df	Asymp. Sig. (2-sided)

<b>Pearson Chi-Square</b>	17.967(a)	6	.006
<b>Likelihood Ratio</b>	20.113	6	.003
<b>Linear-by-Linear Association</b>	5.785	1	.016
<b>N of Valid Cases</b>	320		
3 cells (25.0%) have expected count less than 5. The minimum expected count is .36.			

#### 4.2.6.2 Setting by Japanese programme type

Most episodes involving a person eating and/or drinking alone occurred during advertisements (81.1%); that is, most products were advertised depicting one individual consuming the product. During programme content the greatest occurrences of characters eating and/or drinking alone were during cartoons (15.1%).

Similarly, the highest percentage of occurrences involving eating and/or drinking with one other person were during advertisements and cartoons (45.1% and 37.3% respectively). Eating and/or drinking in a group occurred mostly in variety programmes (57.6%) and advertisements (22.7%). There is a strong relationship between eating and/or drinking as a family and cartoons; 82.5% of all eating and/or drinking as a family occurrences occurred during cartoons (85.2%) Handling/preparing/purchasing of food/drink occurred during advertisements (14.5%) cartoons (40.3%), variety programmes (19.7%) and educational programmes (1.6%).

Other types of settings, such as food visibly displayed but not consumed (e.g. fruit in a fruit bowl), occurred mostly during advertisements (42.6%). Some advertising was also animated/computer generated so the food/drink product was not shown in any particular setting. This also occurred in cartoons (37.7%) and variety programmes (19.7%) where food was included but did not fit in with the aforementioned settings. These were situations including characters thinking about food (e.g. the food item appears in a “thought bubble”),

characters looking at pictures of food in cookbooks, artworks involving food (e.g. paintings) and images of food with no background setting (e.g. the image is shown with a plain one colour background screen).

**Table 38: Setting by Japanese programme type**

Setting	Advertising (during all programmes)	Programme type			Total
		Variety	Cartoon	Educational	
Eating/drinking alone	81.1%	3.8%	15.1%	0%	100% n=53
Eating/drinking with one other	45.1%	17.6%	37.3%	0%	100% n=51
Eating/drinking in a group	22.7%	57.6%	18.2%	1.5%	100% n=66
Eating/drinking as a family	11.1%	3.7%	85.2%	0%	100% n=27
Food/drink handling, preparation, purchase	14.5%	43.5%	40.3%	1.6%	100% n=62
Other	42.6%	19.7%	37.7%	0%	100% n=61

The Chi-Square test results in a (significance) p-value of 0.000. This value is less than 0.05, therefore the null hypothesis (H0=No Association) is rejected, concluding there is a significant relationship between the type of setting in which a food episode occurs and the programme type. This suggests that certain settings are consistently shown in some programme types more than in others.

Chi-Square tests associated with Table 38 (Setting)			
	Value	df	Asymp. Sig. (2-sided)

<b>Pearson Chi-Square</b>	127.634(a)	15	.000
<b>Likelihood Ratio</b>	127.340	15	.000
<b>Linear-by-Linear Association</b>	20.784	1	.000
<b>N of Valid Cases</b>	320		
6 cells (25.0%) have expected count less than 5. The minimum expected count is .17.			

#### 4.2.6.3 Location by Japanese programme type

Most of the episodes involving home as the location occurred in cartoons (59.3%) followed by advertising (30.1%). This is unsurprising, as cartoons often depicted characters having meals at home as a family and advertisements often showed people either preparing or eating/drinking the given food/drink at home.

Food in the workplace occurred only three times; once during a variety show and twice in two different advertisements. Retail establishments, such as restaurants, bars, and hotel facilities featured most during variety programmes (56.4%) and advertising (29.5%). Public facilities, such as schools, gymnasiums and parks, occurred mainly in advertisements (48.1%), followed by cartoons (32.7%). Situations involving eating and/or drinking “on the run” occurred rarely; only three times in advertising and once during a cartoon. Situations that were categorised as “other” were those where no location was shown. This includes animated/computer generated advertising and imagery that does not show the food/drink product in any particular environment. This also occurred in cartoons (37.7%) and variety programmes (19.7%) where food was included but did not fit in with the aforementioned locations (e.g. the image is shown with a plain one colour background screen).

**Table 39: Location by Japanese programme type**

Location	Advertising (during all programmes)	Programme type			Total
		Variety	Cartoon	Educational	
Home	30.1%	10.6%	59.3%	0%	100% n=113
Workplace	66.7%	33.3%	0%	0%	100% n=3
Retail establishment	29.5%	56.4%	14.1%	0%	100% n=78
Public facility	48.1%	19.2%	32.7%	0%	100% n=52
“on the run”	75.0%	0%	25.0%	0%	100% n=4
Other	45.7%	31.4%	20%	2.9%	100% n=70

The Chi-Square test results in a (significance) p-value of 0.000. This value is less than 0.05, therefore the null hypothesis ( $H_0$ =No Association) is rejected, concluding there is a significant relationship between the type of location in which a food episode occurs and the programme type. This suggests that certain locations are consistently shown in some programme types more than in others.

Chi-Square tests associated with Table 39 (Location)			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	888.100(a)	15	.000
<b>Likelihood Ratio</b>	87.024	15	.000
<b>Linear-by-Linear Association</b>	21.040	1	.000
<b>N of Valid Cases</b>	320		
12 cells (50.0%) have expected count less than 5. The minimum expected count is .02.			

#### 4.2.6.4 Situation by Japanese programme type

Regular meals, such as breakfast, lunch, or dinner occurred mostly in advertisements (40.3%) and cartoons (31.1%). Between eating meals or snacking also occurred mainly in advertisements and cartoons (37.7% each). Situations that were not a meal or snack occurred in advertising (34.3%), cartoons (35.7%) and variety programmes (30.0%). These included characters consuming only a beverage or eating sweets or gum, as well as characters thinking about food (e.g. the food item appears in a “thought bubble”), characters looking at pictures of food in cookbooks, artworks involving food (e.g. paintings) and images of food with no background setting (e.g. the image is shown with a plain one colour background screen).

**Table 40: Situation by Japanese programme type**

Situation	Advertising (during all programmes)	Programme type			Total
		Variety	Cartoon	Educational	
Regular meal (breakfast, lunch, dinner, celebratory)	40.3%	26.9%	31.1%	1.7%	100% n=119
Between meal eating or snack	37.7%	24.6%	37.7%	0%	100% n=61
Not a meal or snack	34.3%	30%	35.7%	0%	100% n=140



The Chi-Square test results in a (significance) p-value of 0.523. This value is greater than 0.05, therefore the null hypothesis ( $H_0$ =No Association) is accepted, concluding there is not a significant relationship between the type of situation in which a food episode occurs and the programme type. This suggests that certain situations are not shown more commonly in some programme types than in others.

<b>Chi-Square tests associated with Table 40 (Situation)</b>			
	<b>Value</b>	<b>df</b>	<b>Asymp. Sig. (2-sided)</b>
<b>Pearson Chi-Square</b>	5.165(a)	6	.523
<b>Likelihood Ratio</b>	5.752	6	.451
<b>Linear-by-Linear Association</b>	1.161	1	.281
<b>N of Valid Cases</b>	320		
3 cells (25.0%) have expected count less than 5. The minimum expected count is .38.			

### **4.3 Alcohol and cigarettes**

Alcohol and cigarettes were prevalent in the Japanese sample, both in advertising and during programme content. Whilst it is beyond the scope of this study to conduct statistical analysis on the occurrence of these items it is interesting to note their presence, particularly when such imagery is prohibited in New Zealand during children's programming. Examples of cigarette and alcohol imagery are shown in Figures 7, 8 & 9.



Figure 7: Beer advertisement (Japan).

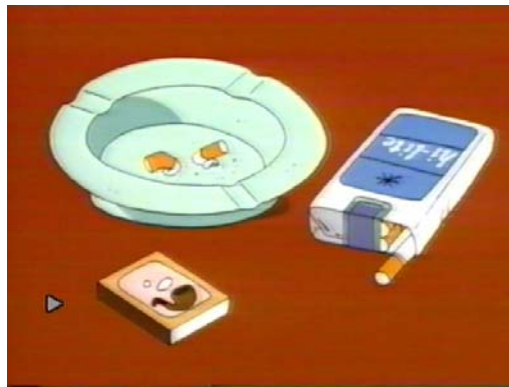


Figure 8: Cigarettes shown during the cartoon Chibimaruko-chan (Japan).



Figure 9: Characters drinking beer during the cartoon Sazae-san (Japan).

## **5 Discussion**

### **5.1 Comparison of New Zealand and Japanese media environments**

Based on the children's viewership ratings that were used to select the New Zealand and Japanese television samples for this study, it is evident that the two viewing environments are very different. Firstly, the New Zealand sample contained many programmes that were not targeted to children, but based on the viewership ratings these are among the programmes that children are watching. The Japanese viewership ratings (and consequently the Japanese sample) contained many cartoons and variety programmes designed specifically for children.

Another key difference between the two viewing environments is the time at which children's programmes are broadcast. In New Zealand, children's programmes generally screen on weekdays from 3pm to 6pm and on weekend mornings. This is not the case in Japan. The cartoons recorded in the Japanese sample screened on weekday evenings from 6pm to 9pm. This suggests that during the time periods when Japanese children are watching cartoons (i.e. 6pm to 9pm), New Zealand children are watching other programmes for which they are not the intended audience.

A further difference between the New Zealand and Japanese television viewing environments is the nature of advertising. In the New Zealand sample advertisements were on average 30 seconds in length, whereas in the Japanese sample they were generally 15 seconds in length. The New Zealand advertisement breaks followed a pattern of approximately two breaks in half hour programmes with four breaks in hour-long programmes. Each advertisement break contained between six and twelve advertisements. It was difficult to find any such pattern in the Japanese sample. Simply, some programmes contained many breaks whilst others contained very few. There

were half hour programmes with as few as one advertisement break and as many as four advertisement breaks. Furthermore, the number of advertisements per breaks varied greatly. In some occurrences single advertisements would screen sporadically during a programme. Other advertisement breaks could contain up to thirteen advertisements.

The content of the advertisements in the New Zealand and Japanese samples was also different. In particular much of what is prohibited in New Zealand was broadcast in Japan. For example, repetition of advertisements is strictly controlled in New Zealand: no advertisement may be played more than twice within an hour (ASA, 2001). However in the Japanese sample, advertisements for the same product were often played in succession and repeated several times within a single programme. Also, in New Zealand advertising must be clearly recognisable. Licensed products, which are a direct spin-off from a television programme or its characters, cannot be advertised within that programme (ASA, 2001). This occurred frequently during the Japanese sample. Collectors' cards, toys and other merchandise relating to television programmes and characters were advertised during those programmes. Furthermore cigarette and alcohol advertising featured during children's programmes in the Japanese sample. Whilst this is not restricted by an advertising authority in Japan, it does not adhere to the restrictions imposed upon New Zealand advertisers.

## **5.2 Food related advertising**

On New Zealand television, food related advertisements ranged from 29% to 42% of all advertising broadcast during the sampled programmes. Similarly, food advertising on Japanese television ranged from 29% to 35% of all advertising broadcast during the sampled programmes. This indicates that on average, in both countries food features in up to one third of total advertising.

The majority of food and beverage product advertising in the New Zealand sample occurred during cartoons and children's programming, and sitcoms.

Advertising during cartoons featured mainly breakfast cereals, snack chips, muesli bars, ice blocks, and fast food. However, it is logical that items of this nature are advertised during children's programming time slots. "Treat" foods are generally within an affordable price range for most children. Additionally, it is unlikely that any advertiser would seek to promote other products such as cars, electronic goods, or household products during programmes targeted to children, as children are unlikely to have the means or the desire to purchase such items.

The majority of food and beverage products advertising in the Japanese sample also occurred during cartoons and variety programmes. Advertising during these programmes featured a wide variety of beverages (soft drinks, sports drinks, vitamin drinks, and bottled tea, coffee and water), as well as biscuits, ice cream, and fast food. Whilst the New Zealand sample had frequent occurrences of breakfast cereals and snack chips, the Japanese sample had far fewer occurrences of these types of foods. Similarly, muesli bars and crackers did not feature at all in the Japanese sample. Instead, the types of snacks included items such as unshelled peas (sold in packets like potato chips).

Interestingly, whilst the New Zealand sample mainly showed food and toy products during cartoons and children's programmes, the Japanese sample showed many other products also. There were advertisements for products such as cars, electronic goods (such as computers and cell phones), and household products (such as cleaning products and toiletries). This is likely to be due to the time at which the programmes screened (ranging from 6pm to 9pm), rather than the audience to which they are targeted (children). That is, it is expected that during these periods of time other members of the household, who would be more interested in these non-food products, may also be viewing television. This could be because some of the variety programmes children are viewing are targeted at an older audience, just as the New Zealand sample indicated was

occurring in New Zealand, with soap operas and sitcoms having high viewership amongst children.

Of all food advertisements in the New Zealand sample, the highest proportion was for bread, cereals and grains (21%), followed by beverages (20%). Fast food (18%) and snacks, sweets and desserts (17%), both comprised the next largest proportion of advertising, whilst all other food groups featured considerably less (8% or less). In the Japanese sample, the majority of food advertisements (21.9%) featured beverages, followed by fruit and vegetables (16.6%). Bread, cereals and grains (14.4%), fast food (12.2%) and snacks, sweets and desserts (11.2%) comprised the next largest proportions of advertising. There were equal proportions of meat, fish and poultry and miscellaneous foods (10.8% each). Dairy products featured considerably less (only 1.2%) and microwave meals did not feature at all.

This suggests that foods advertised in New Zealand during cartoons and children's programming - "the advertised diet", are not consistent with recommended dietary guidelines for New Zealanders (see Appendix 5 for details of these guidelines). Based on the Japanese dietary guidelines (see Appendix 11 for details), the Japanese "advertised diet" is closer to what is recommended; there are frequent occurrences of fruit and vegetables, and a lower proportion of fast food and snacks, sweets and desserts than contained in advertisements broadcast in New Zealand. Whilst New Zealand and Japanese dietary guidelines are not synonymous, key points such as eating a variety of foods and partaking in physical activity are consistent.

Interpretive, qualitative analysis of the advertisements suggests that irrespective of the nature of the foods advertised, in both samples there is no evidence of irresponsible promotion. Food is shown in a context that is appropriate to its nature. This is particularly relevant in respect to children's rôle modelling and vicarious learning from television. That is, it is expected that children would

learn unhealthy eating behaviours from advertisements if the advertisements encouraged, for example, consuming excessive portions of food, or recommended eating treat foods everyday. However, this is not the case. For example, most New Zealand breakfast cereal advertisements portray the eating of a bowl of cereal at the dining table in the morning. Furthermore, “treat” foods are presented as such – foods to be consumed occasionally only and in moderation.

### **5.3 Frequency of food related imagery in programme content**

Most food related imagery on New Zealand television occurred during soap operas and sitcoms - on average ten and seven occurrences per half an hour of viewing respectively. There were very few occurrences of food episodes in all other types of programmes.

This indicates that children are exposed to few food related images during cartoons and children’s programmes in the designated children’s viewing time. Most exposures occur during programmes that many children watch but are not the targeted audience.

Food related images on Japanese television were seen to occur most during cartoons and variety programmes - on average nine and seven occurrences per half an hour of viewing respectively. There were very few occurrences of food images in all other programmes.

This indicates that children are exposed to many food related images during cartoons and children’s programmes in the designated children’s viewing time. Most exposures occur during programmes that many children watch and are the targeted audience.

Clearly, the New Zealand and Japanese television viewing environments are very different. New Zealand children are exposed to more food imagery in programmes other than cartoons and children's programmes. That is, the New Zealand children's programming environment is not presenting much food imagery. For Japanese children the opposite is occurring – most food related imagery is during cartoons and variety programmes aimed at children.

#### **5.4 Foods featured in programme content**

Nine types of foods were analysed by the programme types in which they featured on New Zealand television:

1. Meat, fish, and poultry occurred mainly during cartoons and sitcoms.
2. Beverages occurred mainly during soap operas and sitcoms.
3. Fruit and vegetables occurred mainly during soap operas, sitcoms and cartoons.
4. Bread, cereals and grains occurred mainly during cartoons.
5. Dairy products occurred vary rarely in any programme type.
6. Snacks, sweets and desserts occurred mainly during soap operas.
7. Microwave meals occurred only once, during a sitcom.
8. Fast food occurred only once, during a reality TV programmes.
9. Miscellaneous foods occurred mainly during soap operas and sitcoms.

This indicates that the general programme content of cartoons and children's programmes does not portray an unhealthy range of foods. There was a high instance of meat, fruit and vegetables and bread. However, the programme content of soap operas and sitcoms features a variety of foods, some of which are considered to be "eat less" types, such as desserts and sweets and some beverages, such as those high in sugar.



There were significant relationships between alcoholic drinks and programme type, and snacks, sweets and desserts and programme type. In both cases most of the occurrences of both alcoholic drinks and of snacks, sweets and desserts were during soap operas. This indicates that the food content of soap opera type programmes is inconsistent with a healthy diet of a variety of foods and contains mainly high fat and sugar foods.

On Japanese television:

1. Meat, fish, and poultry occurred mainly during variety programmes and cartoons.
2. Beverages occurred mainly during cartoons and variety programmes.
3. Fruit and vegetables occurred mainly during variety programmes and cartoons.
4. Bread, cereals and grains occurred mainly during variety programmes and cartoons.
5. Dairy products occurred vary rarely in any programme types.
6. Snacks, sweets and desserts occurred mainly during cartoons and variety programmes.
7. Microwave meals did not occur at all.
8. Fast food did not occur at all during programme content (but did feature in advertising).
9. Miscellaneous foods occurred mainly during variety programmes and cartoons.

This indicates that the general programme content of cartoons and children's programmes does not portray an unhealthy range of foods. There was a high incidence of meat, fruit and vegetables and noodles and rice. Accordingly, the content of some variety programmes and cartoons features foods that are considered to be "eat less" types, such as sweets and desserts. Therefore, whilst Japanese children may be exposed to much food imagery, the imagery differs in

that there are more traditional healthy snacks such as unsplit peas instead of potato chips and *okashi* (rice/bean based Japanese sweets) instead of sweets. This suggests that Japanese children have more exposure to a variety of “healthy” food imagery.

There were significant relationships between meat, fish and poultry and programme type, and bread, cereals and grains and programme type. In both cases most of the occurrences of meat and of bread, cereals and grains were during variety programmes. This indicates that the food content of variety type programmes is consistent with a balanced diet of a variety of foods.

## **5.5 Food and eating behaviours**

Food episodes on New Zealand television often involved both food and drink, which occurred mainly during sitcoms and soap operas. Cartoons and children’s programmes featured episodes mostly involving food alone. Beverages were consumed most frequently without food during soap operas, the majority of which were alcoholic drinks.

Food episodes on Japanese television also often involved both food and drink, which occurred mostly during cartoons. Variety programmes and cartoons collectively comprised approximately two thirds of all episodes where food was consumed without beverages. Beverages were consumed most frequently without food in cartoons.

This indicates that cartoons on Japanese television are more likely to depict characters eating and drinking simultaneously, or only drinking, whereas if New Zealand television characters consume anything it is more likely to be food not beverages.

Eating situations involved regular meals and between meal eating or snacking. On New Zealand television, most situations in soap operas involved eating

meals, whilst most dramas involved snacking. Cartoons and children's programmes had an equal presentation of both meals and snacks. Similarly, on Japanese television, cartoons had an equal representation of meals, snacks and consumption that was neither a meal nor a snack (one third each).

The eating behaviours and situations in cartoons and children's programmes on New Zealand television were presented in a healthy context; eating behaviours reflected dietary guidelines such as those recommended by the NZMH (1997). Despite the occurrence of between meal eating and snacking, the types of foods consumed during these situations were not necessarily unhealthy, often involving fruit or bread. However, situations in other programmes, particularly in soap operas featuring meals, did not always present these meals in way that reflects recommended dietary guidelines. For example, alcoholic drinks and desserts or sweets, which are recommended to be of the "eat less type", accompanied many meals.

The eating behaviours and situations in cartoons and children's programmes on Japanese television were also presented in a healthy context, based on recommended Japanese dietary guidelines. Despite the occurrence of between meal eating and snacking, the types of foods consumed during these situations were not necessarily unhealthy, often involving vegetable snacks or rice balls. However, unlike cartoons broadcast in New Zealand, there were occurrences of alcoholic drinks and cigarette smoking during Japanese cartoons. Whilst this is seemingly not restricted by a broadcasting authority in Japan, it does not fit with the restrictions imposed upon New Zealand broadcasters. This suggests that issues surrounding children viewing such images are regarded differently by the Japanese. This is particularly interesting as although this study focuses on the eating behaviours of television characters and the impact this has on children. The possibility that children might try to emulate viewed behaviours relating to cigarette smoking and alcohol can not be ruled out.

## **5.6 Eating environments and scene locations**

Food episodes on New Zealand television took place in a variety of locations and settings. The cartoon and children's programming environment often featured eating as a group at home, and was one of only two programme types to feature eating as a family. The other was a sitcom. This suggests that children are being presented with positive food and eating imagery during children's programmes. That is, where characters are seen eating as a family at home it is likely that a parent or adult is involved in meal preparation. This is significant as this type of imagery could suggest to children that it is important to eat with family, and that family members can help children choose which foods to eat. This supports literature that suggests children alone are ill prepared to make appropriate food choices (see, for example, Kotz & Story, 1994).

Soap operas and dramas had the highest number of occurrences of eating in a workplace. Soap operas and sitcoms had the most occurrences of eating in a retail establishment. In cartoons, dramas and soap operas, the majority of occurrences were in the home. As these programmes depicted undesirable eating behaviour, such as excessive consumption of alcohol and foods high in fat and sugar, raised concerns that children could adopt unhealthy eating practices at home.

Food episodes on Japanese television also took place in a variety of locations and settings. The cartoon and children's programming environment most often featured eating as a family at home, and handling/preparing/purchasing of food/drink. Images often showed female family members (usually the mother) preparing meals for the family. This type of imagery is synonymous with what is recommended by Japanese dietary guidelines: meal times are an occasion for family communication, and home cooking is appreciated. This suggests that

children are being presented with positive food and eating imagery during these types of programmes.

In cartoons and variety programmes the majority of food occurrences were in the home, followed by retail establishments (restaurants, bars and hotel facilities) and public facilities (schools, gymnasiums and parks). Consumption of food occurred very rarely in the workplace or “on the run” (only three times each). These programmes were seen to depict behaviour that fits with recommended dietary guidelines, such as eating together as a family and not eating “on the run”. Exposure to these images suggests that children could adopt healthy eating practices at home.

Kaufman’s (1980) study of American television advertisements and programming content revealed that its television “diet” was at the time weighted heavily toward the consumption of perceived low nutrition foods. This study has found that this is true of the current media environment in New Zealand, but is less so of the current media environment in Japan. The television “diet”- in New Zealand especially, also featured behaviour which is inconsistent with the generally agreed upon principles of sound nutrition.

## **5.7 Limitations**

This study is limited by the brief two week sampling period of television programmes broadcast in both New Zealand and Japan, and the use of a limited number of TV channels. In both countries the programmes selected were based on children’s viewership ratings (AC Nielsen, New Zealand; Video Research,

Japan). The majority of highly rated programmes were broadcast on one of two channels in New Zealand and six channels in Japan. Furthermore, the sampling periods, although relatively short, were selected in such a manner to avoid any bias from seasonal or festive programming.

Also, advertising campaigns usually occur over two to three week periods, during which time the same advertisements are frequently repeated. Although the sampling time frame included a variety of programmes and brand advertising campaigns, it is acknowledged that the advertising campaigns may vary from time to time. In New Zealand, recent “5+ a day” fruit and vegetable and an “*Eat more red meat*” advertising schedule have had considerable exposure during children’s shows. It is assumed, however, that unlike the advertising diet, the programme diet is more consistent throughout the year. Furthermore, some different advertising campaigns may have been recorded on alternative channels if other highly rated programmes had been sampled.

A weakness of the ACNielsen and Video Research ratings data is the use of the audience sample, 10 year age category in New Zealand and a 9 year age category in Japan. The programmes selected in the New Zealand sample were those rated by children aged 5-14 years. In the Japanese sample the programmes selected were those rated by children aged 4-12 years. In both cases these are extremely broad age ranges and it could be reasonably expected that viewing tastes vary within these age groups. This is reflected in the variety of programmes that rated highly. Furthermore, it is difficult to determine the different influences that advertising and programme content could have on children of varying ages. It would be useful to consider programmes and media environments as viewed by a variety of demographic segments such as gender and narrower age bands that reflect the enormous differences in cognitive maturity between children aged 5-14. This would require a separate study of its own.

As mentioned previously, the samples contained a variety of programmes. In the New Zealand sample this included soap operas, dramas, sitcoms, reality TV programmes, cartoons and children's programmes broadcast at different times during the week, including some after 8:30pm. The Japanese sample included music, educational and variety programmes, and cartoons. These also screened at different times during the week. It is therefore likely that not all children in each age bracket (New Zealand sample, 5-14; Japanese sample, 4-12) view all of these programmes. Younger children are more likely to be in bed by mid-evening (e.g. 8:30pm onwards). Furthermore, some parents may prohibit their younger children from watching certain programmes.

A further issue is whether children choose to watch particular programmes, or whether they are merely exposed to them as a result of their parents' and siblings' viewing preferences. This suggests that children could be exposed to advertising and programme material that is not intended for them as an audience. Forthcoming research by Bulmer and Eagle provides anecdotal evidence supporting the notion that children may often perform other functions such as taking a shower in preparation for bed, during advertising breaks.

Whether advertisements are viewed, or indeed observed and concentrated on or not is also a consideration. The presence of several viewers in the room may limit the level of involvement a viewer has with a programme or advertisement. It is also often reported that advertisement breaks can serve as an interlude to interact with others in the viewing environment, allowing some viewers' time to prepare a meal or snack, or to use the toilet. Esslemont & McLeay, (1993), along with their own research, reviewed literature on this aspect and found multiple studies which support this notion. Therefore, the effects on children of exposure to advertisements are to date unsubstantiated.

## **6 Conclusions and implications**

The purpose of this study has been to compare and analyse the portrayal of food and nutrition in both television advertising and programmes in New Zealand and Japan. These two countries were selected as they are culturally diverse in respect to lifestyles, food and eating habits, media environments and advertising regulations. In particular this study has a focus on the issues surrounding the increasing emergence of obesity in children, which despite the aforementioned cultural differences is affecting both New Zealand and Japanese children. The study was conducted in a similar manner to that used by Kaufman in 1980. Kaufman's (1980) study of American television advertisements and programming content revealed that its television "diet" was at the time weighted heavily toward the promotion of perceived low nutrition foods. The television "diet" also featured behaviour which is inconsistent with the generally agreed upon principles of sound nutrition.

This study has found that now, more than 20 years later, the New Zealand television "diet" is very similar to Kaufman's reported "television diet" as reported on from American television. Notably, desserts, sweets, and high sugar content beverages still comprise a large proportion of the television advertising diet. Television characters are currently frequently seen eating between meal snacks, eating to satisfy social and psychological needs, eating "on the go", eating to reward or punish themselves and frequently consuming alcoholic drinks. However, the Japanese television "diet" depicts considerably "healthier" eating behaviours and foods. Whilst Japanese advertising still comprises a large proportion of desserts, beverages and biscuits, these items do not have the same "western" connotations as their New Zealand counterparts. For example many of the advertised beverages on Japanese television are not high sugar content drinks, but more frequently bottled teas. Desserts and biscuits are usually packaged in very small serving sizes. There are also more fruit and vegetables in the Japanese television diet, and the majority of meals



were eaten as a family in the home. This suggests that Japanese children are being exposed to healthier foods and eating behaviours than New Zealand children.

Both the New Zealand and Japanese advertising environments during children's programmes contain food advertising. Approximately one third of all advertising in both New Zealand and Japan features food or beverage products. On New Zealand television there is more food advertising during cartoons and children's programmes than during other programmes, with a prevalence of products that are deemed unhealthy. This includes high sugar content breakfast cereals, snack chips, muesli bars, ice blocks, and fast food, along with other products high in fats and sugars. On Japanese television, high sugar content breakfast cereals, snack chips and muesli bars were almost non-existent. Instead, advertised snacks included items such as unsplit peas and rice snacks. However fast food and biscuits were advertised.

Whilst this suggests that marketers and advertisers should be addressing advertising issues with caution, there is little evidence that products are being presented in an unhealthy context. The majority of advertisements depict appropriate eating behaviours in appropriate eating environments. For instance, frequently advertised products such as McDonald's foods (Japan and New Zealand), and Kellogg's breakfast cereals (New Zealand only) illustrate the consumption of a recommended serving size, i.e. one McDonald's meal, or one bowl of cereal. However, there are occasions where the "recommended" serving size is questionable; particularly "meal deal" offerings such as the McDonald's "Hunger Buster". This particular meal includes two burgers which could be seen as excessive for one person. Settings either feature consumption of the meal or an activity relating to the meal, such as picking up McDonald's from a drive-through, or eating cereal at the home breakfast table. Alternatively, animation was often used and the product was not necessarily shown in a consumption situation. For example, advertising is often abstract,

such as the animated Poppa Jacks advertisement (New Zealand) in which the product is not shown. This may not provide guidance in regard to serving suggestions, but equally it does not present unhealthy food behaviours.

A key finding of this study is that the sample programme environments revealed that children aged 4-12 years in Japan and 5-14 years in New Zealand are exposed to an array of food related imagery. In New Zealand in particular many of these food images illustrate behaviours that are inconsistent with healthy nutrition practices. However, this was seen to occur most during soap operas, and sitcom type programmes, for which children are not the target audience. Cartoon and children's programming environments show minimal food related imagery. Most of these involve occurrences of sensible eating of bread, fruit and vegetables and meat. This has major implications in light of vicarious learning and rôle modelling theories as this suggests that the cartoon and children's programming environment can provide children with positive food and eating behaviour imagery.

Conversely, it is during programmes for which children are the targeted audience in Japan that most food related imagery occurs. However, similarly to the New Zealand cartoon and children's programming environments, Japanese cartoons show occurrences of sensible eating of rice and noodles, fruit and vegetables and meat. Again, with respect to rôle modelling and vicarious learning, the Japanese cartoon and children's programming environment can provide positive food imagery for children. However, it is interesting to note that whilst Japanese television may be presenting children with positive food images, children are also viewing tobacco and alcohol imagery. This kind of imagery is prohibited in New Zealand but is acceptable in Japan. This indicates that there are strong cultural and legislative differences in the nature of material that is deemed acceptable within children's viewing times in New Zealand and Japan.

However, this study is primarily concerned with the food messages and imagery presented on television. It does not focus on whether these advertisements or programmes can in fact lead to the modelling or modification of children's behaviour, or whether or not this can lead to purchase or consumption of foods viewed. Further research to investigate this aspect is required. Furthermore, the fact that many Japanese children's programmes are animated also provides possible research considerations into the effect that "real" people versus "cartoon" characters may have on children's rôle modelling and learning behaviours.

In New Zealand a major weakness in the argument of those seeking to restrict or eliminate advertising during children's programmes, is that children are watching a variety of programmes. Many of those screening outside the cartoon and children's programmes' schedule illustrate food and eating behaviour in a potentially unhealthy way. Soap operas and sitcoms can present particularly poor rôle models based on the behaviours shown (e.g. excessive consumption of foods high in fat and sugar). However it is not necessarily marketers and advertisers of food and beverage products who are responsible for the exposure children have to food imagery within programme content. Whilst it is beyond the scope of this study to determine whether advertisements are more persuasive than programmes in shaping children's eating behaviours, it is clear that the media environment has a multi-faceted impact on viewers. An important concern of this study is that programme content is a factor that has apparently been ignored in the current television-nutrition-obesity debate. This suggests that some responsibility for what is presented during programmes should be placed upon those who classify the nature of programme content, for instance by way of ratings such as PGR – "parental guidance recommended". Moreover the onus of monitoring children's television viewing lies in parental control. Parents and caregivers should take heed of the classifications of the programmes that their children are watching and be cognisant of the subtle but influential impact of the wider media environment on their children.

This has major implications for the New Zealand television production industry, particularly when New Zealand made soap operas such as “Shortland Street”, which have high viewership among children, are presenting unhealthy foods, behaviours and environments during the programme. The occurrences of alcoholic drinks, snacks, sweets and desserts, were predominant during this programme. However, context is critical. For example, if a particular television character has a rôle as an alcoholic it is expected that excessive alcohol consumption would be shown. Similarly, a character with an eating disorder would be likely to portray unhealthy eating patterns. The argument is that despite the fact that the programme is fictitious, these behaviours reflect reality, whereas a “so-called” politically correct diet could be considered censorship (restricting “offensive” content).

In Japan, calls to restrict advertising during children's programmes are seemingly few; in the course of this study no literature was found in English language databases pertaining to such proposed action. However, this may be because compared to New Zealand children, Japanese children are watching cartoons and variety programmes and not programmes that are outside the children's programmes environment. Furthermore, these programmes are not necessarily illustrating food and eating behaviour in a potentially unhealthy way. Whilst New Zealand children are watching a variety of programmes such as soap operas, dramas and sitcoms, Japanese children are predominately watching cartoons and children's programmes. This is likely to be due to the fact that in Japan cartoons are included during evening times slots (6-9pm), whereas in New Zealand, programmes such as soap operas, dramas and sitcoms screen at these times. These programmes are clearly not targeted to children.

This study has showed that the children's programming environments in both New Zealand and Japan portray healthy food and eating behaviours. Proponents of advertising restrictions and bans in New Zealand are focusing on advertising

during the cartoons and children's programming environment. However, the findings of this study suggest that the advertising and food content shown during other programmes children are watching may be a greater issue. If New Zealand children were presented with dedicated children's programmes in the prime time, 6-9pm peak viewing periods, (i.e. following a similar screening schedule to Japan), it is more likely that children's viewing of adult programmes (i.e. for which they are not the target audience) could be reduced. However, it is acknowledged that on Japanese television a greater number of channels are available to viewers, and corporate sponsors fund much programming.

In respect of the Television New Zealand [TVNZ] charter, the results of this study create a scenario for improvement in the broadcast content. The Charter seeks to improve the television viewing environment in terms of programme variety and quality. It also seeks to maintain and observe a code of ethics that addresses the level and nature of advertising to which children are exposed (TVNZ, 2003). This was clearly stated by New Zealand's Minister of Broadcasting in his address to advertisers at the Annual General Meeting of the Association of New Zealand Advertisers (Maharey, 2003). The minister cautioned advertisers on how they present advertising messages, commenting that it would be foolish to disregard their rôle in negatively influencing the behaviour of some viewers. However, this study has identified a further need: to address the programme content containing similar messages, to which children are exposed. Whilst programmes such as "Shortland Street" are classified as PGR: "parental guidance recommended", it is difficult to determine whether children receive such guidance from parents, guardians, peers and family, and if so, to what extent. This suggests that parents and caregivers should take a stronger rôle in informing children of the potential consequences of various possibly detrimental eating or drinking behaviours (such as over-consumption, eating disorders and alcoholism).

The summary of the findings of this study is that in both New Zealand and Japan television exposes viewers to a range of foods and eating behaviours - not only in television advertising but equally importantly in programmes. This study concludes that the “television diet” in New Zealand contains many foods considered to be of the “eat less” type. However, in regard to advertising bans such as those proposed by Fight the Obesity Epidemic, cited in NZPA (New Zealand Herald), 2002, it is recognised that although an advertising ban during cartoons and children’s programming could possibly decrease the exposure children have to food advertising, it is not just the children’s programming environment that is presenting unhealthy food related messages and imagery. This suggests that the existing advertising codes enforced by the New Zealand Advertising Standards Authority regarding advertising to children, are sufficient.

Furthermore, calls for a complete advertising ban, such as those proposed by Fight the Obesity Epidemic, cited in NZPA (New Zealand Herald), 2002, of all advertisements during all time slots featuring programmes that children could watch would not eliminate the exposure children have to the food related programme content.

Moreover, such action would penalise advertisers of other non-food products. Efforts to reduce exposure to poor eating habits and to ‘eat less food’ would benefit from more consideration than the overly simplistic notion of an advertising ban. Accordingly an advertising ban in New Zealand would probably be ineffective, and accordingly, unjustifiable. Whilst there are fewer calls for advertising bans and restrictions in Japan, it is probable that an advertising ban in Japan would also be ineffective in eliminating food imagery due to the prevalence of such imagery in programme content.

In order to address the childhood obesity issue, this researcher recommends that alternatives other than restricting or banning advertising are considered, such as

health and nutrition education. Furthermore, due to the urgency of the childhood obesity situation action must be taken immediately.

As current obesity related literature suggests, many New Zealanders are currently confused about how to make wise food choices. With the onset of new and changing food evaluation methods, such as the Food Guide Pyramid, calculating grams of fat, comparing fats to carbohydrates, or utilising the Glycemic Index, and conflicting information about each, it is understandable that people are finding it difficult to create a profile of what constitutes a “healthy” diet.

Television advertising is currently being used to promote healthy nutrition practices, such as the “5+ a day” fruit and vegetable campaign and the “*Eat more red meat*” advertisements. Initiatives such as the “Push Play” programme and the “walking school bus” are intended to encourage children to participate in physical activity. Educational initiatives must also address monitoring children’s television viewing in order to encourage parents and caregivers take heed of the classifications of the programmes that their children are watching. Evidently, a holistic approach is required in order to address the degree and extent of childhood obesity. Obesity is a multifaceted issue encompassing nutrition, exercise and lifestyle among other factors. This means that authorities such as the NZMH must become more proactive in addressing this serious issue now. Whether it is by way of introducing nutrition education into the school curriculum, creating community programmes involving families, or by launching a nationwide obesity awareness campaign, it is imperative that consistent information regarding the issues reaches all New Zealanders. Furthermore, it is clear that due to the multifaceted nature of the obesity problem, multiple solutions will be required both in New Zealand and worldwide.

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## **8 Appendices**

## **Appendix 1: NZ physical activity information**

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## **Appendix 2: USA dietary guidelines**

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### **Appendix 3: NZ advertising codes of practice**

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#### **Appendix 4: The food guide pyramid**

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## **Appendix 5: NZ dietary guidelines for children**

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## **Appendix 6: Kaufman, 1980**

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## **Appendix 7: Avery et al., 1997**

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## **Appendix 8: New Zealand television sample**

Summary of New Zealand television sample and preliminary content analysis

16/11/02 - 24/11/02

## **Appendix 9: ACNielsen**

ACNielsen company information from <http://www.acnielsen.co.nz>

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## **Appendix 10: Video Research Ltd.**

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## **Appendix 11: Japanese dietary guidelines**

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