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Television food advertising towards children: A content analysis of the Singapore advertising landscape and experimental study on the placement of pro-nutritional advertisements

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Table of Contents

Acknowledgments2

Abstract.....5

Introduction.....6

Television and Childhood Obesity 6

Regulating Food Advertising towards Children7

Objectives of Research8

Literature Review8

Linking Media Content to Media Effects8

Food Advertising towards Children – Content and Persuasion Techniques9

Effects of F&B Advertising on Children12

Effects of Pro-nutritional Messages on Children16

Message Order Characteristics19

Conceptual Framework21

Study One21

Study Two.....23

Study One: Content Analysis.....27

Method27

Results28

Study Two: Experimental Study33

Method33

Results37

Discussion.....	42
<i>Study One</i>	<i>42</i>
<i>Study Two.....</i>	<i>45</i>
<i>Academic Contributions.....</i>	<i>47</i>
Implications	48
<i>Advertising Regulations</i>	<i>49</i>
<i>Health and Social Marketing.....</i>	<i>50</i>
Limitations & Future Research.....	51
Conclusion	53
References	54

List of Appendices

Appendix A: Content Analysis Code Book

Appendix B: Intercoder Reliability for Items in Coding Scheme

Appendix C: Presence of Health Claims in the F&B Ads

*Appendix D: Comparative Analysis of F&B Ads during Child-oriented and
General-audience programs*

Appendix E: TV Viewing Habits of Participants

Appendix F: Video Screenshots of Experimental Stimuli

Appendix G: Final Questionnaire

Appendix H: Experimenter Script

Appendix I: Experiment Debrief Form

Television food advertising towards children: A content analysis of the Singapore advertising landscape and experimental study on the placement of pro-nutritional advertisements

Abstract

Food advertising has been recognized as one of the contributing factors to rising childhood obesity. This study aims to examine food and beverage (F&B) advertising as well as persuasion strategies in health communication in the form of pro-nutritional advertisements, in the context of children's television viewing. In Study One, we mapped out the food advertising landscape by content analyzing F&B advertisements (ads) across six television channels over two weeks in Singapore. Results show that there is a disproportionately large quantity of junk F&B ads and no pro-nutritional advertisement (PNA) by health authorities on Singapore television. In Study Two, an experiment was conducted on 364 children aged 10-13 years old to investigate the effects of message order and time delay on a combination of PNA and F&B ads in influencing children's food consumption intention. Two-way ANOVA tests reveal that the optimal placement of PNA is when the PNA is placed after F&B ads in the presence of time delay. Children exposed to this condition chose significantly lower amount of total food items and unhealthy food items as compared to other conditions. Results indicated that message order and time delay are pertinent factors in determining the effectiveness of the PNA in moderating the negative effects of F&B ads. Implications on advertising regulations and health promotion are discussed.

Introduction

A multitude of food advertising studies have been conducted in countries such as Australia, United Kingdom and the United States. However, no studies examining the television food advertising landscape in Singapore has been documented. Neither has there been research on how placement of pro-nutritional messages from health authorities can moderate the effects of pro-junk food messages from commercial F&B ads. The current study aims to address the above concerns, which are particularly pressing given the problems associating food advertising and childhood obesity.

Television and Childhood Obesity

The World Health Organization (WHO) identifies obesity as one of the most pressing health problems facing modern society (WHO, 1997). The WHO projected in 2005 that 1.6 billion adults aged 15 and above were overweight with at least 400 million considered clinically obese (WHO, 2006). In Asia, there has also been an increase in the prevalence of obesity over the past twenty years (Popkin, 1994).

Indeed, obesity is a growing problem in Singapore, with 6.9% of adults here in 2004 considered obese and 25.6% overweight (Health Promotion Board [HPB], 2004). Recent data revealed 12% - 14% of primary school children here to be obese (Channel News Asia, 2008). This is worrying as the HPB has noted that obese children are 30% more likely to become obese adults (HPB, n.d.). The current study is timely as it hopes to provide findings that could assist health-related organizations and social marketers in planning health campaigns.

Food advertising has been named a contributing factor to childhood obesity (Roberts & Pettigrew, 2007). The formation of dietary patterns could be affected by commercial television viewing, as television is recognized as an important educational source for children (American Academy of Pediatrics, 1995; Kunkel, 1994; Lambo, 1981). This is important as eating habits

developed in childhood are likely to persist into adulthood (Dibb & Harris, 1996; Sweeting, Anderson & West, 1994). Advertisers have been increasingly aggressive in the use of multiple media platforms to target children (Roberts, Foehr, Rideout & Brodie, 1999). However, core advertising expenditures have still been geared towards television (Ippolito & Pappalardo, 2002) because the medium is viewed as being most influential among the young (Roberts, Foehr & Rideout, 2005).

Regulating Food Advertising towards Children

TV advertising regulations have been used as a tool by various countries to restrict advertisers from marketing certain food products (Ofcom, 2007) or using particularly problematic techniques in their advertisements towards children (AANA, 2010; ACMA, 2010). The forms of regulation have ranged from outright bans or defined restrictions using legislation to non-binding frameworks developed for industry self-regulation. While most other developed countries have adopted well defined sets of regulations governing TV advertising towards children, Singapore has yet to do so to similar degrees.

While the wholesale banning of TV F&B ads targeting children seems to be the most direct way to prevent children from being exposed to unhealthy food advertising, its effectiveness as a solution to childhood obesity has met with contentions. Such a move has been labeled as radical (Ofcom, 2009), criticized for inadequate evidence of benefits (National Preventative Health Taskforce, 2009), and for having negative financial consequences (Christenson, 1982). The current study thus seeks to explore an alternative method of reducing the negative impact of F&B advertising on children – through the placement of pro-nutritional advertisements (PNA).

Objectives of Research

In view of the link between TV food advertising and the prevalence of childhood obesity, the dearth of research in Singapore on TV F&B advertising landscape as well as the paucity of child-oriented TV F&B regulations, this study aims to systematically examine the executional characteristics and content of F&B ads shown on Singapore TV.

In addition, studies have yielded inconsistent findings on the effects of PNA when placed alongside junk food ads. In order to better enhance the effectiveness of PNA in countering junk food ads, the present study also aims to investigate the placement effects of exposing children to a combination of F&B ads and PNA.

This research consists of two studies. Study One is a content analysis of F&B ads in six different channels in Singapore over two weeks. Study Two is an experiment to investigate how the placement of a PNA relative to F&B ads affect children's food consumption intention. Implications of findings on regulations for F&B TV advertising towards children, as well as on health and social marketing will be discussed.

Literature Review

Linking Media Content to Media Effects

The primary assumption of most content analysis studies is that media content has an effect on audiences (Manganello & Fishbein, 2008). Specifically, media exposure has the potential to influence any combination of audience beliefs, perceptions, attitudes and behavior. Two major theories informing the effects of television on audiences are social cognitive theory (SCT) and cultivation theory.

SCT is an extension of Bandura's original social learning theory. The essential core of the whole social learning paradigm states that people can learn behaviors vicariously through observation and adopt the behavior by modeling it (Bandura, 1969, 1967, 1977, 2002). Applying SCT to the television context suggests that viewers can learn behaviors by watching characters on screen perform them.

Cultivation theorists see television as a strong socializing force in molding viewer perceptions of reality (Gerbner & Gross, 1976; Gerbner et al., 1994). Heavy television viewers are more likely than light viewers to view the world as it is depicted on television and overestimate crime rates (Gerbner, 1996a). This is despite low correspondence between the prevalence of violence in media and actual crime statistics (Gerbner, 1996b). Although initial studies using the cultivation approach looked at violence in the media, a meta-analysis by Morgan and Shanahan (1997) identified the possibility that television may affect views on other perceptions on such matters pertaining to education, gender roles and politics.

These two theories complement each other in linking media content to audience behaviors. Combined, the theories postulate that behavioral scripts may be learned through long term exposure to certain media content. Using this framework, food advertising may be viewed as a problem if the majority of F&B ads portray the consumption of unhealthy food products.

Food Advertising Towards Children – Content and Persuasion Techniques

Prevalence of food and food types in children's advertising. Past research has indicated that food ads form a considerably large proportion of all ads broadcast during children's programming (National Food Alliance, 1995; Roberts & Pettigrew, 2007). Specific types of food products advertised have been identified. Fast foods, breakfast cereals, snacks and

candy were found to be the most commonly advertised food items to children (Kotz & Story, 1994; Lewis & Hill, 1998).

Other researchers have used nutritional classification as a means to ascertain the value of the food products advertised. Findings from these types of studies show that food products advertised were usually high in fat, sugar and salt content (Gamble & Cotugna, 1999; National food alliance, 1995; Radimer & Hill, 1997).

Scholars who investigated the quality of the food products advertised against health policy recommendations for children's diets have also painted a picture of contrast. In their 2008 study, Stitt and Kunkel found 84% of food ads were for products that should not be included in a regular diet, compared to only 3% of food products which are considered healthy. In a separate study, researchers in Australia found 79% of food ads to be for non-core foods as listed in the Australian Guide to Healthy Eating (Zuppa, Morton & Mehta, 2003), where non-core food is defined as foods not found in the five core food groups: dairy products, fruits, vegetables, meat and alternatives, and rice and alternatives (Kellett, Smith & Schmerlaib, 1998). The recommendations outlined in the AGHE are similar to those in the healthy diet pyramid devised by the HPB (HPB, 2009). Both guides recommend increased selection of rice and alternatives, meat and alternatives, fruits and vegetables, and lower consumption of food high in sugar, fats, oil and salt.

The prevalence of ads alone is insufficient in explaining media effects on audiences. A critical part of how audiences perceive and receive these messages lies in the manner in which the food product is presented. Certain portrayals are more prominent than others in their use by advertisers to promote food products. Hence, in the next section, common executional styles & several key thematic devices employed by advertisers will be reviewed.

Thematic content of food ads. In food advertising targeting children, fun, happiness and taste were found to be the most prevalent types of appeals (Folta, Goldberg, Economos, Bell, & Meltzer, 2006; Page & Brewster, 2007). A tendency to market personal enhancement, linking concepts health and well-being to products, has also been documented (Barcus, 1980; Rossiter, 1980). Some of the themes found in F&B ads have shown to present problems. For example, an emphasis on exaggerated health claims is a prominent theme in the Australian's children television commercials (Radimer & Hill, 1997; Roberts & Pettigrew, 2007).

Studies in this area have also analyzed ads from a gratification perspective. A large content analysis study conducted by Keller and Schulz (2008) analyzed 11, 613 ads from European broadcast stations. Product appeals were found to be categorized mainly into two types of gratification appeals. Primary gratifications are defined as more sensory based, relating to taste and associating a pleasant experience while consuming the product. Secondary gratifications were described as more intrinsic, such as maintaining harmony with friends.

Executorial characteristics of TV F&B ads. Research has found that advertisers use specific formats, themes and methods designed to appeal to children. Some of these include: the use of animation, story formats, humour and the implied ability of certain foods to enhance popularity, performance and mood (Lewis & Hill, 1998; Robert & Pettigrew, 2007). In addition, an Australian study (Robert & Pettigrew, 2007) also revealed that celebrity appeals, animated product endorsers and premiums to be widely used strategies by advertisers to sell food products.

A major aim of the current research study is to, using previous literature as a guide, map out the Singapore food advertising landscape. This will be done via a content analysis of television programming available for viewing in Singapore. Sections that will be examined include basic placement information, presentation formats, health claims and thematic portrayals.

Effects of F&B Advertising on Children

With a specific focus on obesity, TV viewing has been implicated as an important contributing factor. A cross-sectional survey showed children who watch more television tend to be heavier (Anderson, Crespo, Bartlett, Cheskin & Pratt, 1998). Time spent watching TV during childhood was shown to be positively associated with weight increase over time (Coon & Tucker, 2002; Proctor et al., 2003). A relationship between childhood TV viewing patterns and one's body mass index in adulthood has been established (Viner & Cole, 2005).

An explanation offered by Dietz & Gortmaker (2001) argues that TV viewing affects one's energy intake and energy expenditure. Support for this view has been found. Other scholars found the frequency of TV viewing to be associated with more positive attitudes toward junk food and higher consumption of energy-dense foods and drinks (Dixon et al., 2007; Mulvihill, & Maes, 2006; Vereecken, Todd, Roberts). Other scholars liken time spent watching TV to physical inactivity (Hu, Li, Colditz, Willett & Manson, 2003). However, similar to previous research, Hu et al. (2003) suggest the main problem lies in the prevalence of F&B ads on TV promoting high-energy density foods which may affect food choice or induce overconsumption of food.

Experimental studies have offered evidence to establish causal relationships between TV ad exposure and children's food-related attitudes and behavior. Specifically, exposure was significantly related to food choice and preference, (Borzekowski & Robinson, 2001; Halford et al., 2008), actual food intake (Halford, Boyland, Hughes, Oliveira & Dovey, 2007) and purchase requests (Brody, Stoneman, Lane & Sanders, 1981). Concerns regarding the compromise of external validity in well-controlled laboratory studies may not be warranted given Gorn & Goldberg's (1982) experimental study which was conducted in a realistic setting – a summer

camp for children. Children were exposed to either candy commercials, commercials for fruits, or nutritional public service announcements (PSAs). It was found that children who were exposed to candy commercials were more likely to choose candies over fruit during snack time.

Effects of F&B ads on brand awareness and recognition. Some researchers have posited that F&B ads exert their influence on children through increasing brand awareness and recognition. Since most F&B ads are of unhealthy food products, children who develop brand awareness through F&B ads will more likely develop a liking for unhealthy food products (Harrison & Marske, 2005).

Researchers have pointed to brand awareness as a means by which F&B ads can induce liking for products advertised (Harrison & Marske, 2005). An experimental trial by Borzekowski and Robinson (2001) supports this: children who viewed a video with TV food commercials embedded were more likely to choose the advertised brand when given a choice of two similar food products, compared to children who viewed the video without commercials.

Beyond-brand effects of F&B ads. However, seemingly conflicting evidence has been documented. Kopelman, Roberts and Adab (2007) found brand recognition not significantly related to food knowledge, food choice and poor eating behaviors. One solution to resolve such a discrepancy is to view ads as generating a desire to consume, in general, rather than always causing brand-specific preferences (Halford et al., 2004; Halford et al., 2007).

When viewed in light of the obesity epidemic (WHO, 2006), the notion of F&B ads stimulating desire for food consumption becomes even more acutely problematic. Such direct exposure-to-behavior effects have been well documented. When presented with food, children consumed significantly more after exposure to F&B ads compared to non-F&B ads (Halford et al., 2004; Halford et al., 2007). Another experimental study found that TV commercials

increased the amount of non-advertised food selected, but not for those that were advertised (Goldberg, Gorn, & Gibson, 1978).

The concept of external eating can be used to explain the beyond-brand effects of F&B ads on children's food consumption behaviours. External eating is defined as eating in response to external food-related stimuli such as sight and smell of food, rather than internal physiological cues such as hunger, to engage in eating behavior (Wardle, 1987). With particular reference to obesity, Schachter's Externality Theory of Obesity (Milich, 1975; Costanzo & Woody, 1979) posits that individuals more sensitive to the sight or smell of food are more likely to react to these stimuli by eating, which increases their chance of becoming obese.

Positive relationships between recall of ads and the amount of food children consumed (Halford et al., 2004) or intend to consume (Halford et al., 2008) were found in recent experimental studies. The more F&B ads children recalled, the higher their total caloric intake after exposure to food ads. The authors suggest this indicates that children's responsiveness to F&B ads may predict over-eating, and thus weight gain.

This poses a problem in the modern environment, where F&B ads are a major source of external food cues for people. In light of the externality theory and content analyses reviewed above indicating high prevalence of F&B ads on TV, the constant bombardment of food images through TV ads is a major cause for concern.

Existing regulations on food advertising targeted towards children. TV advertising targeting children has been banned in Sweden, Norway and Quebec (National Preventative Health Taskforce, 2009). In the UK, an independent regulatory body named Office of Communications (Ofcom) released a set of mandatory guidelines regulating food advertising targeting children. Products classified as being high in fat, salt or sugar (HFSS) are not allowed

to be advertised during children's programs and programs with a high proportion of children as its audience (Ofcom, 2007). Also, HFSS product advertisements targeting children are not allowed to use techniques appealing to children nor can they include false health claims.

The United States (US) adopts a stance of industry self regulation. The Federal Communications Commission and Federal Trade Commission regulate advertising in general. Broad guidelines drawn up by the Children's Advertising Review Unit (CARU) exist specifically covering advertising towards children, such as discouraging the use of stereotypes and advising against unreasonable performance portrayal in advertisements. However, these guidelines are voluntary and not law binding (Story & French, 2004).

Australia employs both self-regulation and legislation for television advertising. Enforceable by law, the *Code of Practice* indicates F&B advertisements targeting children should not promote an inactive lifestyle, encourage unhealthy consumption habits nor contain misleading information on the nutritional content of the product (ACMA, 2010). The *Food & Beverages Advertising & Marketing Communications Code* (AANA, 2010) governs self-regulation in the Australian food advertising industry. Its provisions for child-targeted advertisements are very similar to the *Code of Practice*, with additional clauses such as prohibiting deception and portrayals of excessive consumption, to name a few.

The case in Singapore is one of self-regulation (CASE, 2008). The main guidelines stipulated under the *Singapore Code of Advertising Practice* mainly pertain to issues of safety, and aim to prevent the exploitations of children's credulity. An especially relevant recommendation to the present study is that "advertisements should not actively encourage children to eat excessively throughout the day or to replace main meals with confectionery or snack foods" (ASAS, 2008, p. 24).

While the wholesale banning of TV advertisements targeting children seems to be the most direct way to prevent children from being exposed to unhealthy food advertising, its effectiveness as a solution to childhood obesity has met with contentions. Such a move has been labeled as radical (Ofcom, 2009), criticized for inadequate evidence of benefits (National Preventative Health Taskforce, 2009), and having negative financial consequences (Christenson, 1982). The current study thus seeks to explore an alternative method of reducing the negative impact of F&B advertising on children – through the placement of pro-nutritional advertisements.

The regulations employed by various countries have focused on banning and limiting F&B ads. However, there is a lack of emphasis on using pro-nutritional messages to counter the negative impact of F&B ads that are allowed to air.

Effects of Pro-Nutritional Messages on Children

Studies have investigated the effects of healthy F&B ads and pro-nutritional messages in promoting the consumption of healthier foods. There are mixed findings in this field of study. A typological variety of pro-nutritional messages employed is also evident.

An experiment conducted by Peterson, Jeffrey, Bridgwater & Dawson (1984) found that children paid high levels of attention to pro-nutrition TV programmes and PSAs. They were readily able to recall the content and nutritional concepts presented. However, no differences in food preference and consumption behavior were recorded between children who were exposed to the stimuli and the control group. These findings (Peterson et al., 1984) indicate that the hierarchy of effects model can be applied to the promotion of pro-nutritional messages to children – it is easier to gain attention and transmit information, but more difficult to modify attitudes and behaviour.

Nevertheless, studies by Galst (1980) and Gorn & Goldberg (1982) found differences in food preference and actual food intake between children exposed to pro-nutritional PSAs and children exposed to junk food ads. These two studies utilized behavioral measures – children were allowed to choose from several healthy and unhealthy food items daily for snacks over a few weeks. Exposure to advertisements of foods with no sugar content and pro-nutrition PSAs, along with approving comments from an adult, showed the most reduction in the selection of sugared snacks (Galst, 1980).

Goldberg et al. (1978) investigated how exposure to a neutral cartoon TV program, a 24-minute pro-nutrition TV cartoon program, pro-nutrition public service announcements (PSAs) and junk food ads can affect children's food consumption intention. Analogous to the findings of Galst (1980) and Gorn & Goldberg (1982), a main effect for the type of advertisements was found. Among children who watched a neutral cartoon program, those who were exposed to junk food ads expressed intention to consume more sugared snacks and less fruit when presented with picture boards of food items, as compared to children exposed to nutritional PSAs. However, Goldberg et al. (1978) pointed out that in real-life, the PSAs will likely be shown alongside junk food ads. Thus, they argued that it is worthy to study the effects of being exposed to this combination of two opposing nutritional messages.

Although Goldberg et al. (1978) did not investigate the effects of exposure to a combination of both PSAs and junk food ads, findings regarding the pro-nutrition cartoon may shed some light on the possible effects of such “mixed” messages. It was found that the pro-nutrition cartoon was very effective in reducing the number of sugared foods selected, even when shown alongside junk food ads. Specifically, children who were exposed to the neutral cartoon and junk food ads chose more sugared snacks than those exposed to the pro-nutrition

program and junk food ads. This shows that pro-nutrition TV content is able to moderate and reduce the effects of junk food ads in influencing consumption of unhealthy food in children. However, there are vast differences in the executional characteristics of cartoon programmes and PSAs. Thus, the extrapolation of the above results to PSAs remains uncertain.

Instead of pro-nutrition TV cartoon programmes, a more recent study by Dixon et al. (2007) investigated the effects of healthy food ads on children's food attitudes and preferences in the presence of junk food ads. Healthy food ads are more similar in content and executional characteristics to PSAs, as compared to cartoon programmes. Results of this study indicated increased liking and positive beliefs towards healthy foods, but no reduction in preference for unhealthy food, when healthy food ads was shown alongside junk food ads. The authors attributed this result to the fact that the healthy food ads used in the experiment did not provide direct counter-arguments to challenge the pro-junk food messages. The healthy food ads merely promoted alternative food choices.

To sum up, pro-nutrition messages, pro-nutrition cartoons and healthy food ads, when shown alone, seem to be effective in shaping positive attitudes towards healthy food and influencing the intention to consume healthy foods. However, in the presence of opposing messages from junk food ads, the effects of pro-nutrition messages in promoting healthy dietary habits and in countering persuasive effects of junk food ads are still unclear. There are several possible explanations for these mixed effects. Firstly, the content and presentation styles of PSAs used in some studies may be less appealing (Goldberg et al., 1978) and less familiar (Gorn & Goldberg, 1982) to children than the junk food ads. Another factor which may affect the effectiveness of healthy food ads or PSAs is the viewing context and environment. Galst (1980) found that pro-nutrition PSAs had the greatest impact when it was accompanied by approving

comments from an adult. Lastly, the researchers may have neglected the possibility that message order and placement of counter-messages relative to each other may play a part in determining the persuasive effects of each message (Gass & Seiter, 2002).

Message Order Characteristics

Some persuasion scholars have argued that attention to, and retention of the content of a persuasive message is required before acceptance of the message, and thus attitudinal effects can occur (Miller & Campbell, 1959; Watts & McGuire, 1964). When one is exposed to two counter messages, the presentation order was found to be a crucial factor in determining which message is attended to or more likely retained in one's memory (Miller & Campbell, 1959; Insko, 1964). The message which prevails will then more likely influence opinions, attitudes (Watts & McGuire, 1964; Wilson & Miller, 1968) and thus behaviour.

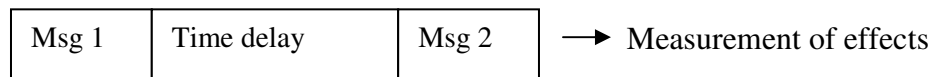
The outcome in which the message presented first has a greater impact than the second message has been termed the primacy effect, whereas the outcome in which the message presented last has an advantage over the first is termed the recency effect (Gass & Seiter, 2007). Communication research on the primacy and recency principles have yielded mixed findings – the primacy effect was found under certain conditions, whereas the recency effect under others (Belkaoui, 1977). Researchers have since studied the factors which affect primacy and recency effects in the communication and persuasion context, such as ego involvement (Belkaoui, 1977), personal relevance with the topic (Haugtvedt & Wegener, 1994), how salient and interesting the material is perceived (Furnham, 1986), and the manner in which the messages were presented (Petty, Tormala, Hawkins & Wegener, 2001).

Time intermission between exposure to the two counter messages and the time gap between the messages and recall are important factors determining whether primacy or recency

will be the predominant effect (Miller & Campbell, 1959, Insko, 1964). Based on the concept of the Ebbinghaus forgetting curve, which postulates that memory for information decays over time (Krugman, 1965), it is reasonable to predict that information people receive more recently will more likely be retained, as compared to messages received some time ago. Thus, a recency effect occurs in favour of the second message, when two counter messages are separated by a time gap (Miller & Campbell, 1959). The message closer to the time of measurement is likely to be still fresh in the mind in comparison to the first message, hence exerting greater attitudinal and behavioral influence.

However, when the two counter messages are presented back to back, followed by a time delay before effects are measured, the recency effect tends to be diminished in comparison to the primacy effect (Miller & Campbell, 1959). This can be explained by factors such as level of attention to and acceptance of the communication. In the case of back to back messages, the first is more likely to receive greater audience attention (Yates & Curley, 1986) and be more easily accepted as it is presented before any opposing arguments are aired (Miller & Campbell, 1959). A summary of how time delay affects the occurrence of primacy or recency effects in persuasive communication is shown in figure 1.

Scenario 1: Recency effect is more likely



Scenario 2: Primacy effect is more likely



Figure 1. Effects of Message Order and Time Delay on Two Opposing Messages

Having outlined the links between the effects of televised food advertising on childhood obesity, the current study will map out the current state of the Singapore television food

advertising. It is hoped findings from the content analysis portion of the study will assist in assessing if the television food advertising scene in the country is problematic in encouraging unhealthy dietary consumption habits. Whilst pro-nutritional messages have been studied in some variety, a research gap exists in terms of examining its effectiveness with time-delay and message order characteristics in mind. Thus, the experimental section of the current study seeks to bridge this gap, providing scholars with a richer base of information from which to draw meaningful conclusions and point the way forward for future health communication research in this area.

Conceptual Framework

Study One: Content Analysis

Literature review has revealed that televised content has an effect in influencing audiences. This is fundamentally guided by two major theories – SCT (Bandura, 1967, 1969, 1977, 2002) and Cultivation Theory (Gerbner & Gross, 1976; Gerbner et. al, 1994). For TV F&B ads, the prevalence of certain problematic food types, executional styles and thematic content have been associated with effects on children’s beliefs, perceptions, attitudes and behaviors. Specifically, these include attitudes towards food, intention of consumption and consumption behavior. Guided by this understanding, a conceptual framework to guide the systematic examination of TV F&B advertising was developed as summarized in figure 2.

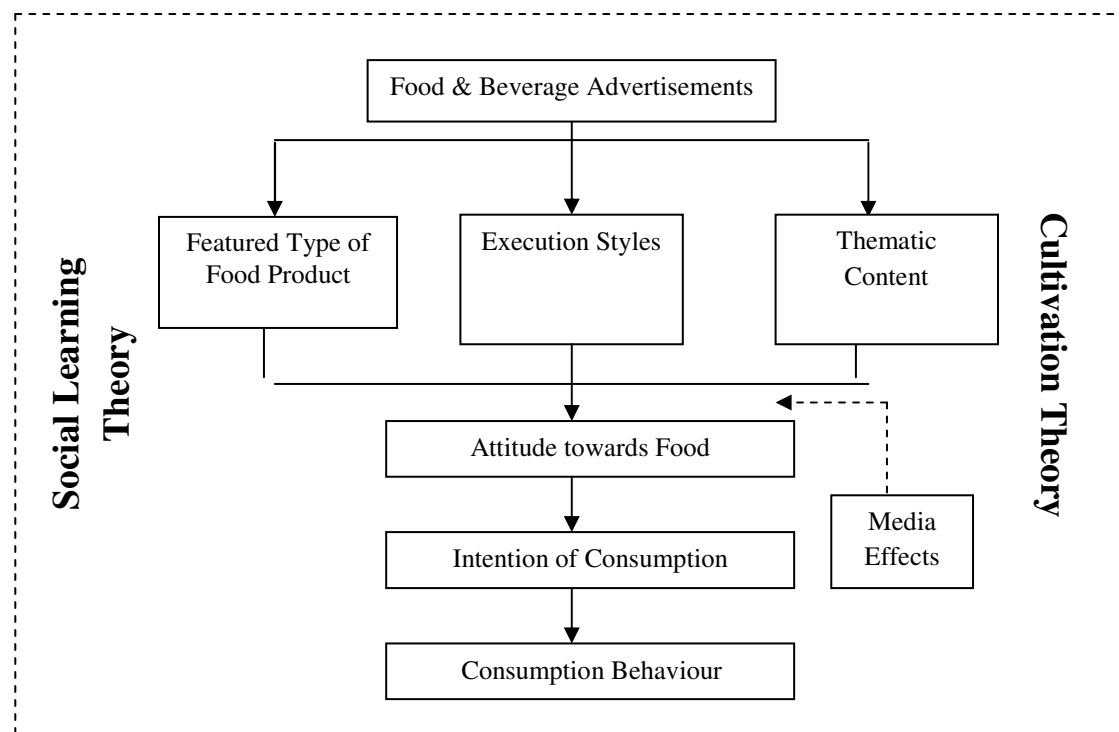


Figure 2: Conceptual Framework of Content Analysis Study

Past research on F&B ads have mapped a media landscape that is poorly balanced and problematic particularly towards children. Frequencies of F&B ads exposure are high in the UK (Lewis & Hill, 1998) and Australia (Hill & Radimer, 1997). A study from the UK (National Food Alliance, 1995) revealed that food ads occupy 56%-63% of all commercials screened during peak children's viewing time, with 80%-100% of them featuring food high in fat, sugar or salt. Scholars also found that low-nutritional food such as fast foods, breakfast cereals and candy to be the most commonly advertised food products to children (Kotz & Story, 1994).

Due to a dearth of research documenting clearly the product and placement characteristics of TV F&B ads in the local context, the current content analysis study establishes the following research questions:

RQ1: How often are F&B ads and PSAs shown in channels that children in Singapore are most likely to watch?

RQ2: When are the F&B ads most frequently shown in channels that children in Singapore are most likely to watch?

RQ3: What types of food products are most frequently advertised in channels that children in Singapore are most likely to watch?

Children's ads use formats, themes and strategies designed to appeal to children. Studies have found that F&B ads use emotional appeals, linking products with concepts such as fun, happiness, health and well being, so as to market personal enhancement (Barcus, 1980; Rossiter, 1980). Problematic content themes, such as the exaggeration of health claims in F&B ads (Roberts & Pettigrew, 2007; Hill & Radimer, 1997) were also prevalent. In terms of executional characteristics, the use of celebrity appeals, animated product endorsers and premiums were widely used (Roberts & Pettigrew, 2007). With reference to these findings, the following research questions were formulated to examine advertising techniques shown on Singapore TV:

RQ4: What are the most prevalent content themes (common and problematic) portrayed in F&B ads shown in channels that children in Singapore are most likely to watch?

RQ5: What are the executional characteristics of F&B ads in channels that children in Singapore are most likely to watch?

Study Two: Experimental Study

The literature on primacy and recency effects highlights the importance of the two factors, order of message presentation and time delay, in determining the relative influence of two opposing messages. As shown in the literature review, pro-nutritional messages from public service ads and pro-junk food messages from F&B ads can be seen as two opposing messages that affect children's food consumption behaviour (Galst, 1980; Gorn & Goldberg, 1982). When these two opposing messages occur together, research has yielded inconsistent findings regarding

their relative effects. Thus, it is worthwhile to study how order of message presentation and time delay can affect the relative effectiveness of each message.

Research (Miller & Campbell, 1959; Insko, 1964) has shown that when there is a time delay between the presentation of two opposing messages, a recency effect is more likely to occur, thus the second message has an advantage in exerting its influence to modify attitudes and behaviour. However, when there is no time delay between the presentation of two opposing messages, a primacy effect is more likely to occur, thus the audience is more likely to be influenced by the first message.

Based on these findings, a conceptual framework was developed as summarized in figure 3. This framework takes into account the order of placement of PNAs relative to F&B ads, as well as the presence or absence of time delay between the two types of ads. Literature reviewed also shows that F&B ads and nutrition-related PSAs are able to modify food consumption intention and behaviour (Galst, 1980; Gorn & Goldberg, 1982). Thus, we hypothesize that message order and time delay will influence the effectiveness of PNAs in reducing the negative effects of F&B ads on food consumption intention.

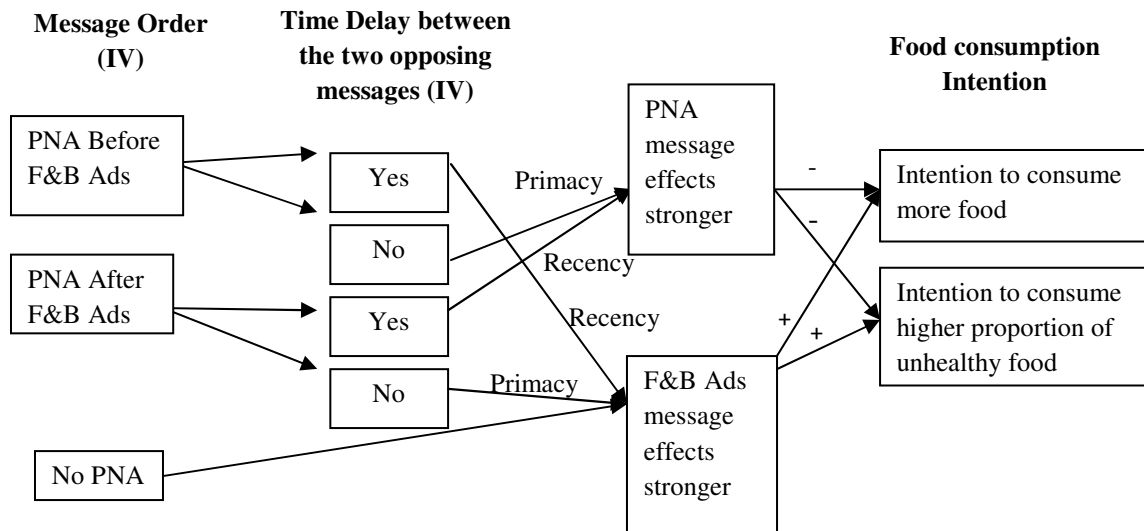


Figure 3: Conceptual Framework of Experimental Study

Experiment Hypotheses (Study Two)

H1) There will be an interaction effect between message order and time delay on children’s food choice, specifically:

- A) Number of food items chosen,
- B) Proportion of unhealthy food items chosen

Specifically,

H2) When there is a time delay between the two opposing messages, children who watch the PNA after the F&B ads will choose:

- A) Less food items;
- B) A lower proportion of unhealthy food items.

H3) When there is no time delay between the two opposing messages, children who watch the PNA right after the F&B ads will choose:

- A) More food items;
- b) A higher proportion of unhealthy food items.

H4) When the PNA is shown before the F&B ads, children who were exposed to a time delay between the two opposing messages will choose:

- A) More food items
- B) A higher proportion of unhealthy food items.

H5) When the PNA is shown after the F&B ads, children who were exposed to a time delay between the two opposing messages will choose:

- A) Less food items;
- B) A lower proportion of unhealthy food items.

Extrapolating the results from research on the effects of message order and time delay on the occurrence of primacy or recency effects, a PNA can only exert greater effect than F&B ads when it is placed after the F&B ads, in the presence of time delay; and when it is placed before F&B ads, in the absence of time delay. Thus, it is hypothesized that these two specific placements of the PNA will have an impact on the food consumption intention of children, as compared to children not exposed to the PNA.

H6) As compared to children in the control condition who were not exposed to the PNAs, children in treatment conditions 1 (PNA After X Time Delay) and 3 (PNA Before X No Time Delay) will choose

- A) Less food items;
- B) A lower proportion of unhealthy food items.

Study One: Content Analysis

Method

Defining Sample

TV F&B ads were sourced from both terrestrial and cable television channels available for viewing in Singapore. For terrestrial channels, Channel 5, Channel 8 and OKTO were used. For cable channels, Nickelodeon, Disney Channel and The Cartoon Network were used. The above channels were chosen as they either enjoy high viewership in Singapore, or that they primarily televise programmes targeted towards children. Hence, there is a greater likelihood that children would be exposed to F&B ads broadcast over these channels.

One aim of the study was to investigate what constituted a typical week of television programming that children would be able to watch. Thus, a composite day sampling design was devised to generate our sample. Recording was done between 8 December 2009 and 21 December 2009, using the timeslot of 9a.m. to 10p.m., for all channels except OKTO. This timeslot was chosen to reflect the probable timings primary school children would be able to watch television. As for OKTO, recording was done between 9am to 9pm on weekdays and 9am to 7pm for weekends. These timeslots for OKTO were chosen so as to only include timings for “oktoday” programmes tailored towards children, and to exclude timings for “oktonite” programmes which are tailored towards adults. For each channel, each day of the week was recorded in alternating halves. For example, 9a.m. to 3p.m. was recorded on the Monday of the first week whilst 3p.m. to 10p.m. was recorded on the Monday of the second week.

The unit of analysis was any F&B ad shown during these 2 weeks across all the channels. A total of 91 hours of programming across 6 channels was recorded. The final sample consists of 1453 F&B ads, 73 of which are unique.

Coding Scheme

The coding scheme was divided into two broad sections when coding for F&B ads shown. In the first section, basic ad information such as the date, day, timing, channel, length, type of food product featured in the ad and the program in which the ad appears in was coded for.

In the second section, more specific advertising features and elements such as health claims and thematic content were analyzed. The coding categories and operationalizations of thematic content categories are explicitly stated in the codebook attached in Appendix A.

Coding Procedure

The ads were recorded using the Starhub High Definition Digital Video Recorder. This allowed for convenient multiple viewing when analysis was being done. Three coders were trained in the use of the coding scheme using commercials not found in the final sample. The coders discussed and refined the coding sheet when disagreement occurred.

Using the final coding scheme, a pre-test was conducted with 15 F&B TV ads not found in the final sample. Intercoder reliability was established using Perreault & Leigh (1989)'s index of reliability, as shown in Appendix B. The indices of reliability for categories in Section One of the coding scheme range from 0.839 to 1.000. The reliability scores for content-related items in Section Two range from 0.775 to 1.000.

For the final study sample, all three coders coded all the ads for Section One. The two coders with the highest inter-coder reliability then independently content analyzed each unique F&B ad for Section Two.

Results

Of the 1453 F&B ads that were recorded: 1023 (70.4%) are from terrestrial channels and 430 (29.6%) from satellite channels. There are a total of 73 unique F&B ads in the sample coded.

Among the unique ads, 54 are for food (74%) and 19 for beverage (26%). Most of the coded ads are 15 seconds (38.4%) and 30 seconds (28.8%) long.

RQ1 examined the frequency of F&B ads and PSAs shown on channels that children in Singapore are most likely to watch. Frequency analysis reveals that a child would have been exposed to as high as an average of 7.31 F&B ads in an hour of television viewing as shown in the case of Channel 8. Table 1 summarizes the number of F&B ads shown in the channels and the frequency of F&B ads that children are exposed to in an hour of channel viewing. Most (45.8%) of the F&B ads are shown in Channel 8, followed by Channel 5 (18.7%) and Nickelodeon (17.8%).

Table 1

Number and Frequency of F&B ads Exposure in Programme Channels

Channel	Number of F&B Ads (N=1453)	Frequency
Channel 5	271 (18.7%)	2.98 Ads/hr
Channel 8	665 (45.8%)	7.31 Ads/hr
Okto	87 (6%)	0.96 Ads/hr
Nickelodeon	258 (17.8%)	2.83 Ads/hr
Disney Channel	42 (2.9%)	0.46 Ads/hr
Cartoon Network	130 (8.9%)	1.43 Ads/hr

In RQ2, the timing when F&B ads are most frequently shown is examined. An analysis was conducted to find out in which timeslots were food items advertised the most. The timeslots were categorized into segments of weekday morning (12.00am – 12.00pm), afternoon (12.00pm – 6.00pm) and evening (6.00pm-12.00am) as well as weekend morning, afternoon and evening. Results show that most F&B ads are shown in weekday afternoons, n = 568 (39.1%), followed by weekday evenings and n = 316 (27.1%), weekend afternoons, n = 267 (18.4%). Over the recorded period, F&B ads are shown most frequently on Thursdays, n = 429 (29.5%) and Saturdays, n = 208 (14.3%). Programme types were coded for and results show that F&B ads

appear most in the advertising slots during drama serials $n = 499$ (34.4%) and animation/cartoons $n = 374$ (25.7%).

With reference to RQ3, the types of food products advertised were coded for. Food types were grouped into core or non-core food group based on the AGHE. As shown in Table 2, 71.9% of the food products shown in ads are non-core in nature. Sweet snacks/dessert (29%), bread spreads (15%) and fast food (11.3%) are the most heavily advertised types of food. In particular, sweet snacks/desserts ($n = 129$) and spreads ($n = 126$) are frequently shown in animations/cartoons programme advertising slots, causing a potential problem as children are more likely to be exposed to ads of these unhealthy food products. Specifically, top advertised food brands (with the highest frequencies) in the recorded timeframe are Skippy Peanut Butter (8.2%), Nutella (6.8%), MacDonalds (5.9%), Cornetto ice-cream (4.9%), Kinder Bueno (4.9%), Kinder Joy (4.8%), KFC (4.7%), Coca Cola (4.7%), Oreos (3.7%) and Crispy Chocolate Rice (2.9%), which are sweet/savory food or beverage high in sugar, salt or fat content.

Table 2

Frequency and Percentage of Food Type Exposure (N=1453)

Type of Food Product	Frequency	Percentage
Core Food	114	14.1%
Dairy	37	2.5%
Meat Products	10	0.7%
Cereal	92	6.3%
Rice	51	3.5%
Fruits	-	-
Vegetable	-	-
Bread	-	-
Noodles	16	1.1%
Non-Core Food	1045	71.9%
Sweet snacks/desserts	421	29.0%
Savory Snacks	128	8.8%
Carbonated drinks	67	4.6%
Juice drinks	9	0.6%
Fast food	164	11.3%
Spreads	218	15%
Powdered Drinks	38	2.6%
Arbitrary Food	202	14.4%
Restaurant	44	3.0%
Health Supplements	157	10.8%
Others	1	0.6%

In RQ4, content themes portrayed in F&B ads were studied. Presence of these content claims was coded using three options: definitely no, implied and definitely yes. Recoding was done during data analysis to re-compute implied responses to a “yes” which signifies a presence of content themes. Unlike the previous research questions, the test was conducted on both the total sample of F&B ads collected (N=1453) to study the general landscape of thematic exposure, and the unique sample of F&B ads (N=73) to understand the prevalence of thematic executions.

With reference to Table 3, results show that in terms of common content themes, many F&B ads emphasize taste/flavor/smell (71.9%) and portray the food products as being healthy or nutritious (41.1%) despite the sample containing a large number of less nutritious food products. The most prevalent problematic content themes are mood alteration (41.6%) and excessive

consumption of food (26.8%). These two themes portray an immediate change in mood due to product consumption and the consumption of excessive quantities of food respectively. These themes are also highly prevalent when we examine the unique ads. An additional theme that stands out is the problematic theme of social enhancement (32.9%). This suggests that even though there is not much repetition of ads with the theme of social enhancement over the recorded period, many food marketers adopt this problematic strategy in their content portrayal.

Table 3

Frequency and Percentage of Common and Problematic Content Themes [N = 1453 (Total), N=73 (Unique)]

Content Themes	Frequency		Percentage	
	Total Ads (N=1453)	Unique Ads (N=73)	Total Ads (N=1453)	Unique Ads (N=73)
Common Content Themes				
Taste/flavor/smell	1045	43	71.9%	58.9%
Premiums	387	11	26.6%	15.1%
Healthy/nutritious product	597	29	41.1%	39.7%
Others	72	4	5%	5.5%
Problematic Content Themes				
Damage to good dietary habits	26	2	1.8%	2.7%
Excessive consumption of food	390	13	26.8%	17.8%
Superiority of consumer	221	13	15.2%	17.8%
Social Enhancement	207	24	14.2%	32.9%
Social Degradation	229	2	15.8%	2.7%
Mood alteration	605	30	41.6%	41.1%
Premiums with problems	284	6	19.5%	8.2%
Minimizing Pricing	134	2	9.2%	2.7%
Sales pressure	119	6	8.2%	8.2%
Begging / Pestering	34	1	2.3%	1.4%
Unrealistic Expectations	155	4	10.7%	5.5%
None	78	13	5.4%	17.8%

To answer RQ5, the various contextual cues and technical aspects of the F&B ads was studied. Among the unique F&B ads (n = 73), 35.6% depict friends in its situational content, followed by solitary (26%) and family portrayals (20.5%). No specific activity (32.9%) is shown in most of the F&B ads and when some form of activity is shown, it is mostly about work (8.2%), school (6.8%) and sports (6.8%).

The main presenting character(s) most frequently shown in the F&B ads are ordinary adults/group of adults (52.1%) and ordinary child/group of children (13.7%), with male characters (34.2%) being more commonly employed. Results show that most of the F&B ads do not have an emphasis on a single secondary presenting character as they mostly portray solitary situations or a crowd of people. Interestingly, only 23.3% of the F&B ads display some form of third party approval symbols (i.e. healthier choice symbol, halal symbol).

In terms of presentation styles, most of the F&B ads use live action or settings (82.2%) in its presentation instead of animation (20.5%), which is unique in comparison to F&B ads shown in other countries (Horgen, Choate & Brownell, 2002; Lewis & Hill, 1998). Almost all the F&B ads (97.3%) in the sample use jingles, background music or songs in their execution to capture children's attention. 83.6% of the ads also use some form of voiceover in its commentary.

Apart from the results reported thus far, additional interesting features of TV F&B ads were analyzed. This includes health claims made in the ads. Notably, more than half of the ads contain at least one form of product health claim (see Appendix C). A comparative analysis between child-oriented programmes and general audience programmes in terms of food types advertised was also conducted. Results show that there are significantly more dairy, meat products, juice drinks and spreads advertised in children's programmes (see Appendix D).

Study Two: Experimental Study

Method

Participants

A total of 364 children aged 10-13 years old participated in this experiment. All of them are Primary 5 students from Greenridge Primary School in Singapore. The sample included 207

boys and 155 girls. The racial mix comprises of 65.5% Chinese, 26.3% Malay, 3.8% Indians and 4.6% Others (e.g. Javanese, Burmese). Amongst the children, 37.5% are Buddhists, 29% are Muslims, 11% are Christians, 4.9% are Taoists, 2.7% are Hindus, 1.9% of the children have other religions (e.g. Catholic) and 10.4% have no religion.

Experimental Design

A two (PNA before F&B ads versus PNA after F&B ads) by two (presence of time delay versus absence of time delay between PNA and F&B ads) between-subjects factorial design was employed. Message order was manipulated by placing the PNA before or after the F&B ads. Time delay was manipulated by inserting a seven-minute cartoon between the PNA and the F&B ads. The four treatment conditions are illustrated in Figure 4. Additionally, Condition 5 is a control condition whereby there is no PNA with the cartoon sandwiched between F&B ads.

	PNA Before	PNA After						
Time Delay	<p>Condition 2</p> <table border="1"> <tr> <td>PNA</td> <td>Cartoon</td> <td>F&B</td> </tr> </table>	PNA	Cartoon	F&B	<p>Condition 1</p> <table border="1"> <tr> <td>F&B</td> <td>Cartoon</td> <td>PNA</td> </tr> </table>	F&B	Cartoon	PNA
PNA	Cartoon	F&B						
F&B	Cartoon	PNA						
No Time Delay	<p>Condition 3</p> <table border="1"> <tr> <td>PNA</td> <td>F&B</td> <td>Cartoon</td> </tr> </table>	PNA	F&B	Cartoon	<p>Condition 4</p> <table border="1"> <tr> <td>F&B</td> <td>PNA</td> <td>Cartoon</td> </tr> </table>	F&B	PNA	Cartoon
PNA	F&B	Cartoon						
F&B	PNA	Cartoon						

Figure 4. Experimental Conditions and the Independent Variables Involved.

Materials

An original PNA (see Appendix F) using Microsoft Powerpoint was created. The PNA consists of one single frame showing five health tips, which are narrated by a female voiceover. There is a fictitious health authority title (Health Association of Singapore) and corresponding

logo at the bottom right hand corner to simulate PSAs in real life. The PNA was approximately 30 seconds long.

Six F&B ads targeted towards children were selected from the sample in Study One (see Appendix F). The advertised foods and drinks are Koko Krunch, Oreo's, Skippy, Kinder Joy, Juicy Jelly and Milo. Each ad was approximately 15 to 30 seconds long.

A seven-minute children's cartoon titled "Shaun the Sheep" (see Appendix F) was used to operationalize time delay by providing a time gap between the F&B ads and PNA. The cartoon was selected as it is not gender specific and has a highly engaging plot.

Procedure

Each class of the Primary five cohort of Greenridge Primary School was randomly assigned to one of the five experimental conditions. All of the classes were similar in terms of size, age, gender and racial mix. All experimenters read from a standard experimenter script (see Appendix H). In their own classrooms, the children watched a video clip depending on the condition they were assigned. The placement of the PNA varied depending on their treatment condition. For the control group, the video clip contained only F&B ads and the short cartoon.

Subsequently, the children were told to imagine it is recess time and they could tick the food they would like to eat for one recess, given that the foods are free of charge. This is to control for differences in family income and pocket money allowances that might affect their purchasing power of food items. The coloured version of the 30 food items was projected onto the screen for the children's reference when doing this questionnaire. They filled out the food consumption intention questionnaire by ticking the food items they want to eat. After that, they answered the questionnaire on TV viewing habits followed by the demographics questions.

Finally, after collecting the questionnaires back from the participants, a debrief was conducted to explain the rationale of the study as well as provide the children with more health tips so that they could be educated in the ways to lead a healthy lifestyle. We gave them a handout with the debrief information, the researchers' contact details and the additional health tips for their reference (see Appendix I).

Measures

After watching the video, participants were told to complete a survey which consists of an attitude questionnaire, a food consumption intention questionnaire, a TV viewing habits questionnaire and a demographics questionnaire (see Appendix G).

Six statements containing attitudinal expressions towards content from the PNA were provided. Each statement had five Likert scale options. All options were accompanied by illustrations of facial expressions to aid children's understanding of the different options varying from "Strongly Agree" to "Strongly Disagree". This was to measure respondents' attitude towards the health behavior recommended. The Cronbach alpha reliability score of this attitude scale was low, at 0.54. Thus, this scale was disregarded in the final analysis.

The food consumption intention questionnaire consisted of a total of 30 food items, each represented by a black and white photograph with clear labels of the name and proportion of each food. Photographs were used instead of clip art images so as to enhance realism and increase the external validity of the study. To allow better visualization of the food options, the colour version of the 30 food items was projected on the classroom screen. Children could refer to the coloured food images when making their choices. 15 of the food items are healthy foods such as apple, wholemeal bread and corn, whereas the remaining 15 are unhealthy food items such as roti prata, doughnut and bubble milk tea. The healthy food items are low energy density

foods and the unhealthy food items are high energy density foods that are usually high in sugar, fat and salt. The order of the unhealthy and unhealthy food options was jumbled up.

Total number of food items chosen was determined by counting the number of food items each participant checked in the food consumption intention scale. For proportion of unhealthy food items chosen, an index was created by computing the ratio of number of unhealthy food items chosen over the total number of food items chosen. Specifically, the bigger the ratio, the higher the proportion of unhealthy food items chosen; the smaller the ratio, the higher the proportion of healthy food items chosen.

The TV viewing habits and parental mediation questionnaire sought information on the children's TV consumption habits as well as the nature of parental mediation, if any (see Appendix G). The demographics questionnaire contained multiple-choice questions on their gender, age, race, religion and their daily average pocket money.

Results

Interaction Effects of Message Order and Time Delay on Food Consumption Intention

To test H1, two 2 x 2 full factorial ANOVA tests were conducted to evaluate the effects of message order and time delay on the two dependent variables (DV): total number of food items chosen and proportion of unhealthy food items chosen.

Results of the ANOVA tests reveal a highly significant interaction effect between message order and time delay on the total number of food items chosen, $F(1, 288) = 46.03$, $p < .01$, partial $\eta^2 = .14$. The interaction of message order and time delay is marginally significant for the proportion of unhealthy food items chosen, $F(1, 288) = 3.62$, $p = 0.06$, partial $\eta^2 = .10$.

Table 4 and Figure 5 depict the interaction effects of message order and time delay on the two dependent variables.

Table 4

Effects of Placement of PNA and Time Delay on Food Choice

Dependent Variables	Means and standard deviations				F values and effect sizes
	PNA Before		PNA After		
	Time Delay	No Time Delay	Time Delay	No Time Delay	Interaction Message Order X Time Delay
Total Food Items	10.56 (5.86)	8.17 (4.82)	7.07 (4.67)	13.22 (6.03)	46.03** $\eta^2 = .14$
Proportion of Unhealthy Food Items	0.45 (0.27)	0.39 (0.29)	0.36 (0.30)	0.42 (0.24)	3.62 ^a $\eta^2 = .10$

Note. ^ap = 0.06, two-tailed. *p < .05, two-tailed. **p < .01, two-tailed.

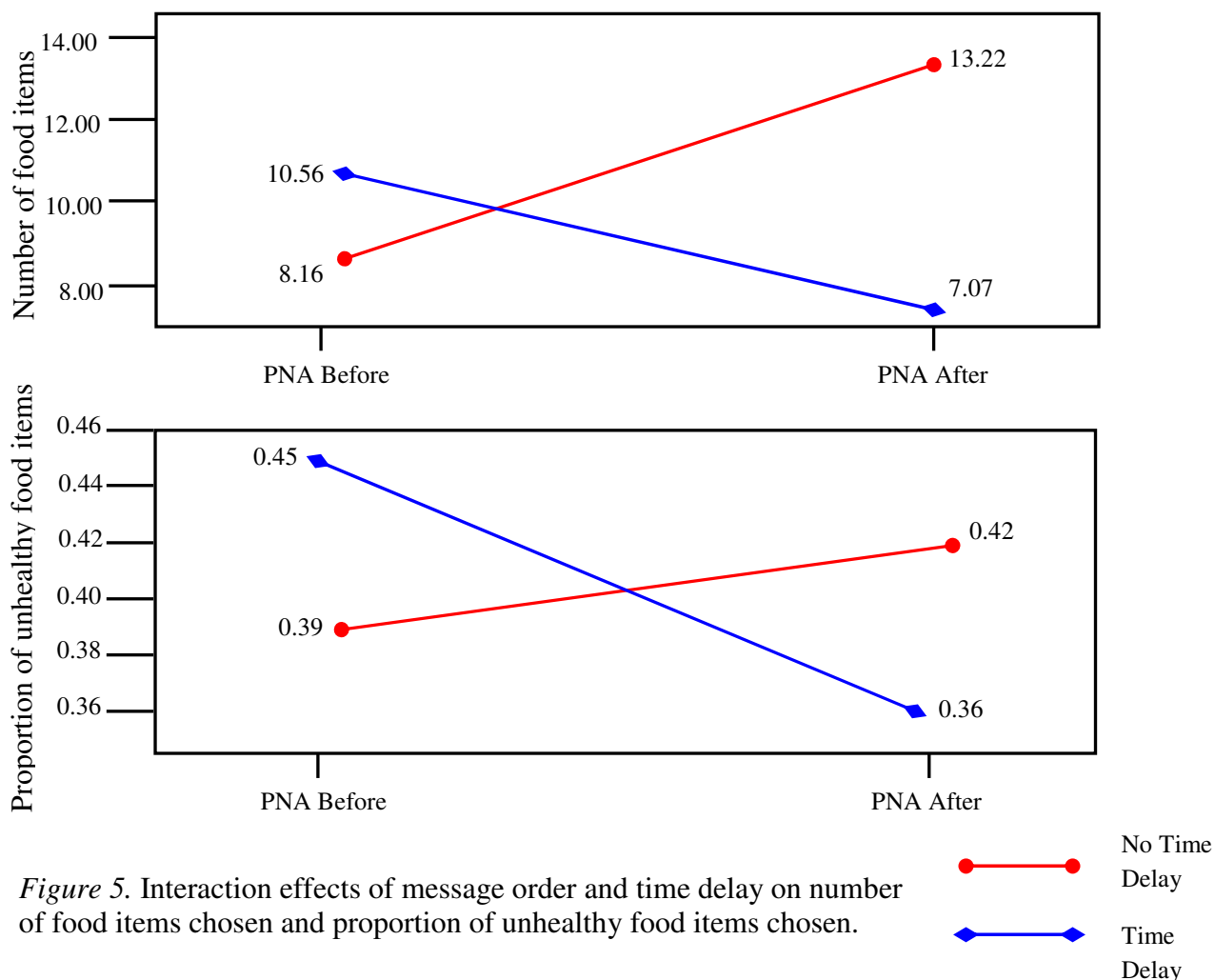


Figure 5. Interaction effects of message order and time delay on number of food items chosen and proportion of unhealthy food items chosen.

To test hypotheses 2, 3, 4 and 5, one-way ANOVA tests were conducted to investigate the four possible simple main effects for each dependent variable.

Results of the ANOVA tests show that when there was a time delay between the two counter messages, children who watched the PNA after the F&B ads ($M = 7.07, SD = 4.67$) chose significantly less food items than children who watched the PNA before the F&B ads ($M = 10.56, SD = 5.86$), $F(1, 145) = 15.72, p < .01$, partial $\eta^2 = .10$. Thus, H2a is supported. When there was a time delay between the two counter messages, children who watched the PNA after the F&B ads ($M = 0.36, SD = 0.30$) chose a marginally significant lower proportion of unhealthy food items than children who watched the PNA before the food advertisements ($M = 0.45, SD = 0.27$), $F(1, 145) = 3.52, p = 0.06$, partial $\eta^2 = .02$. Thus, H2b is supported.

When there was no time delay, children who watched the PNA after the F&B ads ($M = 13.22, SD = 6.03$) chose significantly more food items than children who watched the PNA before the F&B ads ($M = 8.17, SD = 4.82$), $F(1, 143) = 31.46, p < .01$, partial $\eta^2 = .18$. Thus, H3a is supported. As for the proportion of unhealthy food items chosen, children who watched the PNA before the F&B ads ($M = 0.39, SD = 0.29$) was not significantly different from children who watched the PNA after the F&B ads ($M = 0.42, SD = 0.24$) when there is no time delay, $F(1, 143) = 0.64, n.s.$ Thus, H3b is not supported.

When the PNA was shown before the F&B ads, children who watched the F&B ads right after the PNA ($M = 8.17, SD = 4.82$) with no time delay chose significantly less food items than children who were in the time delay condition ($M = 10.56, SD = 5.86$), $F(1, 153) = 7.71, p < .01$, partial $\eta^2 = .05$. Thus, H4a is supported. When the PNA was shown before the F&B ads, children exposed to time delay between the two messages ($M = 0.45, SD = 0.27$) was not significantly different from those who watched the F&B ads right after the PNA ($M = 0.39, SD =$

0.29) in the proportion of unhealthy food they chose, $F(1, 153) = 1.78$, *n.s.* Thus, H4b is not supported.

When the PNA was shown after the F&B ads, children exposed to a time delay between the two messages ($M = 7.07$, $SD = 4.67$) chose significantly less number of food items than children not exposed to a time delay between the two messages ($M = 13.22$, $SD = 6.03$), $F(1, 135) = 44.80$, $p < .01$, partial $\eta^2 = .25$. Thus, H5a is supported. When the PNA was shown after the F&B ads, children exposed to a time delay between the two messages ($M = 0.36$, $SD = 0.30$) did not choose a significantly lower number of unhealthy food items than children not exposed to a time delay between the two messages ($M = 0.42$, $SD = 0.24$), $F(1, 135) = 1.86$, *n.s.* H5b is not supported.

Differences Between the Control Condition and the Treatment Conditions

To test H6, one-way ANOVA tests were conducted with the 5 conditions as independent variables. The number of food items chosen and the proportion of unhealthy food items chosen were the dependent variables. The means and standard deviations for the number of food items chosen and the proportion of unhealthy food items are shown in Table 5.

Table 5

Differences Among Groups on the Two Dependent Variables (N = 365)

Condition	Dependent Variables			
	No. of Food Items		Proportion of Unhealthy Food Items	
	Mean	SD	Mean	SD
(1) PNA After X Time Delay	7.07	4.67	0.36	0.30
(2) PNA Before X Time Delay	10.56	5.86	0.45	0.27
(3) PNA Before X No Time Delay	8.17	4.82	0.39	0.29
(4) PNA After X No Time Delay	13.22	6.03	0.42	0.24
(5) No PNA	12.38	5.49	0.49	0.25

Results of the one-way ANOVA tests show that at least one experimental condition had an effect on the number of food items chosen, $F(4, 360) = 17.00$, $p < .01$, $\eta^2 = .16$, and the

proportion of number of unhealthy food items chosen, $F(4, 360) = 2.58, p < .05, \eta^2 = .03$. Bonferroni post-hoc analyses were conducted on each dependent variable to evaluate pair-wise differences among the means. The results for the post-hoc analyses are presented in Table 6.

In accordance to H6a, children who were exposed to condition 1 ($M = 7.07, SD = 4.67$) and condition 3 ($M = 8.17, SD = 4.82$) chose significantly less food items than the control condition ($M = 12.38, SD = 5.49$). Thus, H6a is supported. Conditions 2 and 4 are not significantly different from the control conditions in terms of number of food items chosen.

Supporting H6b, children who were exposed to condition 1 ($M = 0.36, SD = 0.30$) chose a significantly lower proportion of unhealthy food items than those in the control condition ($M = 0.49, SD = 0.25$). Conditions 2, 3 and 4 are not significantly different from the control conditions. Thus, H6b is only partially supported.

Table 6

Bonferroni Comparison for Food Choice

Dependent Variables	(I) Condition	(J) Condition	Mean Difference (I-J)	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
Total Food Items	(5) No PNA	(1) PNA After X Time Delay	5.31**	0.90	2.76	7.86
		(2) PNA Before X Time Delay	1.83	0.88	-0.66	4.31
		(3) PNA Before X No Time Delay	4.22**	0.88	1.74	6.70
		(4) PNA After X No Time Delay	-0.84	0.91	-3.42	1.74
Proportion of Unhealthy Food Items	(5) No PNA	(1) PNA After X Time Delay	0.13*	0.05	0.00	0.26
		(2) PNA Before X Time Delay	0.04	0.04	-0.08	0.17
		(3) PNA Before X No Time Delay	0.10	0.04	-0.02	0.23
		(4) PNA After X No Time Delay	0.07	0.05	-0.06	0.20

Note. * $p < .05$, two-tailed. ** $p < .01$, two-tailed.

Discussion

Study One of this paper aims to systematically examine the executional characteristics and content of F&B ads shown on Singapore TV. Results of the content analysis reveal that F&B ads featuring high-energy density food products are highly prevalent on Singapore TV. Many of these ads are broadcast during child-friendly timeslots and programmes, and utilize content themes and executional characteristics that are appealing to children.

Armed with the objective of investigating placement effects of F&B ads and PNAs on children, results from Study Two confirmed that there is indeed an interaction between message order and time delay on the persuasive effects of two opposing messages. An elaboration of the key findings from both studies in greater detail follows. Thereafter, academic contributions of the findings towards F&B advertising and health communication research will be discussed.

Study One

Study One found that, on average, children are being exposed to as high as 7.21 F&B ads in an hour of television viewing. Most of the F&B ads are shown on Channel 8 and Channel 5. This is noteworthy as these terrestrial channels enjoy high market share and viewership, enabling a wider reach to children. According to the Nielsen Media Index 2009 survey, Channel 8, 5 and U were the top two most watched channels, garnering more than 1.2 million viewers daily (Channel NewsAsia, 2010). When cross-referring to the responses collated from the media consumption survey conducted in Study Two (see Appendix E), high viewership for these channels was found as well. 79.2% of the sampled children indicate they watch TV, out of which 53.8% of the respondents watch Channel 8 while 54.8% watch Channel 5. In addition, there is a correlation between the most frequently watched timeslot among the sample and the most advertised timeslot as reflected in the content analysis results. Specifically, many children watch

TV on weekday afternoons (41.2%) and evenings (59.6%), where F&B ads are found to be highly prevalent. This largely increases their likelihood of exposure to F&B ads.

The current study also highlighted a high incidence of F&B ad repetition. Out of the 1453 food advertisements recorded, only 73 are unique. High repetition and frequency of exposure to F&B ads may be problematic repetition are found to have favourable effects in influencing attitude accessibility and confidence (Berger & Mitchell, 1989), as well as believability of ad claims (Hawkins & Hoch, 1992).

Ads for sweet snacks or desserts (mostly chocolate and confectionery) are the single most common type of F&B ad, comprising over one-quarter of all F&B ads. This is followed by fast food and spreads, which are chocolate, or peanut butter based. The ads most frequently shown promote junk food items, which, if consumed in unhealthy proportions, would lead to a relatively high intake of sugar, fat or sodium. The advertised food products are inconsistent with the dietary recommendations by the HPB, which encourages the intake of fruits, vegetables, whole-grains and calcium (HPB, 2010).

The results from the current study are in line with previous research in countries such as Australia and New Zealand, which found sweetened snacks (Dibb & Harris, 1996; Hammond et al, 1999; Hill & Randimer, 1997; Lewis & Hill, 1998; Morton, 1990) and fast food (Australian Consumers Association, 1990; Morton, 1990) as the most heavily advertised food items. Previous research found that 50% to 84% (average 72%) of advertised foods were of low nutritional value (Australian Consumers Association, 1990; Chan & Hedge, 1995; Hammond et al, 1999; Hill & Randimer, 1997; Morton, 1990), being generally high in fat, salt or sugar, or low in fibre. In this study, using AGHE as a tool, 71.9% of the advertised foods are considered non-core food (not accounting for arbitrary food products such as health supplements and restaurants).

Evidence from the snack food industry has shown that approximately 75% of snack food purchases are influenced by children aged six to 14 years old, in contrast to the purchasing decisions for other foods which are usually made by adults (O'Brien, 1996), demonstrating the potential harmful effects of excessive junk food advertising.

It can be seen that television F&B advertising directed towards children disproportionately promotes the consumption of foods that are not recommended to be part of a regular healthy diet and this raises public health concerns. Consumption of these promoted unhealthy foods is associated with an increased risk of obesity, heart disease, diabetes and cancer in adulthood (National Health and Medical Research Council, 1995; National Obesity Prevention Group, 2000).

In terms of common content themes, the current study also found a high frequency of healthy or nutritious themes, even though a significant proportion of the ads coded for advertise junk food. Such skewed representations are problematic as they fail to reflect the true nutritional value of the product, thus misleading children.

The emotional appeal of mood alteration is predominately the most frequently shown problematic content theme in our study. This is consistent with many past studies which found that fun/happiness/mood alteration messages were often utilized as promotional strategies to increase children's emotional response to the advertised food. This is troubling given children's susceptibility to such messages, especially if utilized to promote unhealthy foods (Kunkel, 2001). Internal gratifications such as social and personal enhancement themes are also prevalent in the sample. This creates a problem as such themes may attenuate children to place emphasis on social status and reputation, which is shown to be 'achievable' if they were to consume the advertised food.

As for other message features, it is notable that jingles are recurrently used in F&B ads. Almost all the ads coded in this study consist of a jingle, music or song. This high incidence is not surprising as jingles, like animation, is highly effective in engaging children as they enhance attention to and recall of ads (Neeley & Schumann, 2004).

No pro-nutritional ads were found in the sample. Findings from the content analysis suggest that the food advertising landscape in Singapore contains many unhealthy food products with problematic themes which are advertised repeatedly. As such, it will be meaningful to examine, in Study Two, the effects of PNA placement in promoting healthier food choices among children. This will help inform policy decisions on the creation of potential regulatory frameworks governing ads. Such information will help health authorities and social marketers better use PNAs to encourage healthy eating patterns among children.

Study Two

Key findings of the experiment show that when there is a time delay between the two opposing messages, a recency effect is more likely, thus placing the PNA after the F&B ad will produce a greater effect for the PNA as compared to the food ads, hence influencing children's intention to consume less amount of food and a lower proportion of unhealthy food. However, when there is no time delay, message order only made an impact on the total number of food items chosen, but made little impact on the proportion of unhealthy food items chosen, regardless of whether the PNA is placed before or after the F&B ads.

Overall, the results indicate a stronger effect of time delay and message order on the total number of food items chosen, but not the proportion of unhealthy food items chosen. This finding is in line with previous research findings on the beyond-brand and beyond-product effects of food ads. Experimental studies have found that food ads can increase the consumption

of food in general, regardless of whether the food items have been advertised (Goldberg et al., 1978; Harris, Bargh & Brownell, 2009) and regardless of their nutritional value (Halford et al., 2004; Halford et al., 2007). Such beyond-brand effects may be explained by the cognitive mechanism of behavioural priming (Harris, Bargh & Brownell, 2009), in which complex behaviours can be activated by remotely relevant stimuli. Lowe and Butryn (2007) argue that food-related stimuli can induce hedonic hunger - a desire to consume food without experiencing actual physiological hunger. Such tendency of food ads to promote consumption of food in the absence of hunger is definitely a cause for concern.

The results from the one-way ANOVA test indicate that when there was a time delay, the PNA placed after the F&B ads (condition 1) was effective in achieving the intended outcome of reducing the number of food items and proportion of unhealthy items children intend to consume. This is consistent with our framework, which predicts that a time delay between two opposing messages will likely give rise to a strong recency effect (Miller & Campbell, 1959). When the PNA was shown after the food ads and a cartoon, children are likely to forget the content of the food ads, but still be able to retain the contents of the PNA. Thus, these children intended to consume less food items and a higher proportion of healthy food items after the media exposure, as compared to children who were not exposed to any PNA.

When there was no time delay, the PNA which was placed before the food ads (Condition 3) was also effective in reducing the number of food items chosen, but not effective in reducing the proportion of unhealthy food items chosen. The discrepancy for results between conditions 1 (PNA After X Time Delay) and 3 (PNA Before X No Time Delay) is explained as follows.

The strong recency effect for PNA which occurred in condition 1 (PNA After X Time Delay), allows for the children to remember specific content of the PNA, such as the advice to

avoid fried food and to eat more fruit and vegetables. However, the primacy effect for PNA, which occurred in condition 3 (PNA Before X No Time Delay), is relatively weaker than the recency effect in condition 1 (PNA After X Time Delay). Children in this condition may remember seeing pro-nutritional messages but may not be able to retain memories of the specific content after going through time delay in the process. This is consistent with research which found no support for the primacy effect when measurement of effects is done some time after opposing communications were presented back to back (Insko, 1964; Thomas, Webb & Tweedie, 1961). However, in comparison to the other treatment conditions, condition 1 (PNA After X Time Delay) and 3 (PNA Before X No Time Delay) can be seen as more effective in achieving the intended positive health behaviors – with condition 1 (PNA After X Time Delay) being most effective in reducing the number of food items and proportion of unhealthy food items chosen and condition 3 (PNA Before X No Time Delay) being effective in reducing food intake generally.

The fact that there is no difference between conditions 2 (PNA Before X Time Delay) and 4 (PNA After X No Time Delay) and the control group confirms our predictions that certain placement positions of PNA relative to food ads render the PNA ineffective in moderating the effects of F&B ads on eating intention. Hence, it is important to identify the optimal combinations of both variables that can positively influence children to adopt healthy dietary habits.

Academic Contributions

Study One of this paper pioneers the examination of TV F&B ads in Singapore. The data collected from the two weeks of recording provides valuable insight into the local TV F&B advertising scene. The data is useful as a basis for the development of coding schemes in future

content analysis studies on F&B ads in Singapore and other countries; on TV or other media channels. The results of the content analysis also provide useful information for media effects researchers who wish to explore the consequences of exposure to TV F&B ads with different executional characteristics and content.

Study Two applied previous research findings (Insko, 1964; Miller & Campbell, 1959) on the effects of message order and time delay on two opposing persuasive messages in a health context: between TV F&B ads and pro-nutritional messages. Results proved that the relative placement of two opposing persuasive messages affect 11-year-old children in a similar way to adults, in terms of primacy or recency effects. The present study also highlighted the relevance of the primacy and recency effects concept on persuasive health communication. Specifically, it contributed to the literature which supports the proposition that retention of persuasive messages is an essential antecedent to changes in behavioural intention (Watts & McGuire, 1964; Wilson & Miller, 1968), in this case, eating behaviour.

Implications

Our research results have shown that in Singapore, there is a large proportion of unhealthy F&B ads compared to healthy F&B ads on TV. In addition, there was not a single public service advertisement advocating healthy dieting habits in the sample of 1453 ads. Furthermore, placement of PNAs affects its effectiveness in promoting healthy dietary habits. These findings bear considerable implications for broadcasters, the ASAS and Singapore health authorities such as Ministry of Health (MOH) and HPB.

Advertising Regulations

The results show a significantly high quantity of unhealthy TV F&B ads broadcasted during timeslots and channels that children are likely to watch television. Projecting the advertised food products on the food pyramid structure (see Figure 6), the current study shows that they are disproportionate to HPB's recommended dietary intake (HPB, 2010).

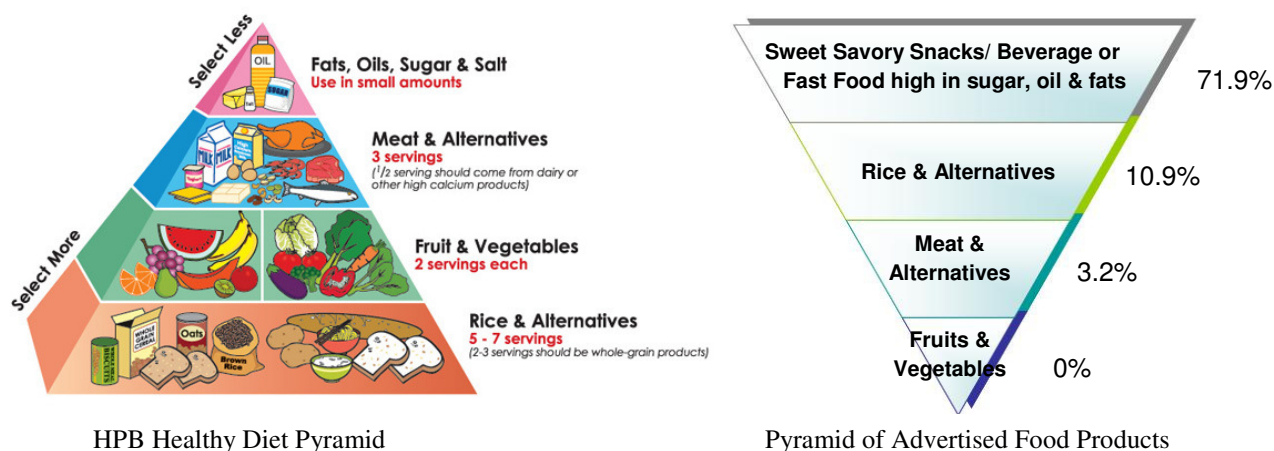


Figure 6. Comparison of HPB's Healthy Diet Pyramid v. A Pyramid of Advertised Food Products.

Perhaps ASAS could stipulate quota limitations and type of F&B ads allowed according to channels and timeslots that children are most likely to be exposed to. Such regulations could encompass advertising space surrounding children's programmes as well. For example, the number of unhealthy F&B ads for every half an hour during children's programming content could be capped. In Australia, the maximum permitted levels of commercial screen time is five minutes of ads plus one minute of program promotions in each 30 minutes of C-rated programmes and 15 minutes per hour for G-rated programmes screened before 6 pm (Federation of Australian Commercial Television Stations, 1993). Alternatively, ASAS could place a required number of healthy F&B ads for every fixed number of unhealthy F&B ads. For instance,

for every six unhealthy F&B ads allowed to air, there must be at least one healthy F&B ad. This creates a better mix of both healthy as well as unhealthy F&B ads in the Singapore television landscape, instead of the current ratio which is highly skewed towards unhealthy F&B ads.

Governmental bodies could consider proposing legislation pertaining to TV F&B ads, instead of merely drawing up guidelines and hope that the advertising industry practices self-regulation. The effects of TV F&B ads can be strong, as demonstrated by results of Study Two. F&B ads constantly function as food cues that encourage children to consume more food (Halford et al., 2004).

Therefore, it is crucial for governmental bodies to re-consider its current laissez faire stance and perhaps take UK Ofcom's lead in ensuring F&B ads targeted towards children inculcate desirable dietary habits. This ensures that children receive some mediation in their exposure to unhealthy F&B ads.

Health and Social Marketing

Study Two shows that the placement of PNA relative to TV F&B ads impacts its effectiveness in advocating healthy eating habits. Thus, when a pro-health advertiser such as HPB wishes to buy advertising spots for their PNAs, they should spend their capital to maximize effectiveness. This could be done by choosing a time slot that either works via primacy or recency effects, relative to programming and F&B ads. One particular way that recency could work is to air the PNA just before meal times. Families watching television would be last exposed to the PNA, just before food consumption. Thus, they would be most influenced by the PNA they saw last rather than any F&B ads shown before the PNA (Miller & Campbell, 1959).

Conversely, it is important for policy makers to be aware of conditions that may not be as effective in generating the desired outcome. Specifically, the current study shows that it is not

advisable to place the PNA before the F&B ads when there is a time gap in between. It is also not advisable to place the PNA immediately after the F&B ads before a programme, because such an arrangement would facilitate a primacy effect of F&B ads over time – children would be more likely to retain content of the F&B ads which came first instead of the PNA, and this may result in negative ramifications on children's food consumption intention.

According to results of our media viewing habits and parental mediation questionnaire, 32.3% of children (see Appendix G) do not discuss content of F&B ads with their parents. Without proper guidance or explanations, impressionable children are highly likely to take in junk F&B ad content exactly as advertised, unaware of the negative health consequences from consuming too much junk food items. With such an evident lack of parental mediation in advertising literacy for children, PNAs can take on an educational role, teaching children to achieve a healthy diet, thereby moderating effects of unhealthy F&B ads.

Limitations and Future Research

This study has some limitations. For Study One, recording of the ads was conducted near the Christmas festive season, so it may not be entirely representative of the prevalence of types of F&B ads for all periods. Future research could study ads broadcast during more varied times of the year, in order to paint a more representative picture of the Singapore TV advertising scene.

This research is cross-sectional in nature. Future research could focus on longitudinal study to allow comparability of data over time and trend analysis to examine if certain types of food products or execution styles have become more prevalent in TV F&B ads. Examining marketing practices targeted towards children through other media outlets is also necessary. The proliferation of new marketing channels, such as online media, has equipped food marketers with

diverse ways of reaching the children audience. Investigating a variety of media would allow for comparative analysis across these media types in terms of how F&B ads are presented and used.

Another limitation is that only six television channels were studied. There were methodological and expertise constraints in coding for the F&B ad content on the Malay and Indian terrestrial channels in Singapore, namely Suria and Vasantham. However, based on the responses gathered from the media viewing survey conducted in Study Two, this should not be a major problem as Suria and Vasantham were two of the least watched channels as indicated by the sample. Future research could perhaps look into a greater diversity of channels; it is conceivable that language based or genre-oriented channels may carry ads with markedly different styles and content.

For Study Two, the style format used by the PNA in the current study could have been better in executional characteristics and presentation styles, in terms of its ability to attract and retain the children's attention. With a higher budget, future research could examine different formats of PNAs to investigate if some formats, possibly those that mimic actual ads, work better than others.

In addition, future research could also explore the effects of message order and time delay between healthy TV F&B ads and unhealthy TV F&B ads. This eliminates executional style differences. The number of healthy TV F&B ads could be manipulated to be in similar proportion to unhealthy TV F&B ads to remove duration as a potential confounding variable. Previous research has found limited evidence for effects of healthy TV F&B ads in influencing food preference, when in the presence of junk F&B TV ads (Dixon et al., 2007). Thus, it is worthwhile to examine whether placement of ads could enhance the effectiveness of healthy TV F&B ads in countering junk F&B TV ads.

Conclusion

The current study has contributed to the study of TV F&B advertising. In the content analysis, a profile of ads has been catalogued, mapping the Singapore advertising scene in terms of how food products are presented and marketed to audiences. With particular relevance to combating the problem of obesity, the experimental study has examined the effects of pro-nutritional messages using a combination of PNA and F&B ads. This was done through extending previous literature on message order characteristics, bridging a research gap by exploring time delay effects on pro-nutritional messages and F&B ads. Findings from the current paper can serve as a resource for scholars to utilize in creating studies for further research in either the advertising context or in health communication. More importantly, health authorities and marketers in will be able to use information detailed in the current study to decide how to better develop regulations or choose placement criteria for pro-nutritional messages, to create an optimal balance between commercial advertising priorities and a societal awareness for healthy dietary habits.

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Appendix A

Content Analysis Code Book

Criteria for Sample

- 1) Sample consists of all F&B ads recorded from the following TV channels: Channel 5, Channel 8, OKTO, Nickelodeon, Disney Channel and Cartoon Network, from 7th December 2009 to 20th December 2009.
- 2) Trailers will **not** be considered as one sample unit of ad.

Instructions

- 1) Do not make judgments for the message themes based on the qualities (i.e. healthy or unhealthy) of the product.
- 2) Code for the advertising or marketing tactic used, not the characteristics of the product

Section 1: For all TV F&B ads recorded

Date shown: _____

Day shown – Choose 1

- 1) Monday
- 2) Tuesday
- 3) Wednesday
- 4) Thursday
- 5) Friday
- 6) Saturday
- 7) Sunday

Timing of ad – Choose 1

- 1) Weekday morning 12am-12noon
- 2) Weekday afternoon 12noon-6pm
- 3) Weekday evening 6pm-12am
- 4) Weekend morning
- 5) Weekend afternoon
- 6) Weekend evening

Channel – Choose 1

- 1) Channel 5
- 2) Channel 8
- 3) OKTO
- 4) Nickelodeon
- 5) Disney channel
- 6) Cartoon Network

Product Name: _____

Product Brand: _____

Type of product – Choose 1

- 1) Food
- 2) Beverage
- 3) Toys
- 4) Household
- 5) Automobile
- 6) Apparel and accessories
- 7) Pro-social message (from government organizations)
- 8) Programme promotion
- 9) Event promotion
- 10) Others: _____

Type of programme – Choose 1

- 1) News
- 2) Drama Serial
- 3) Documentary
- 4) Movies
 - Animated films are considered as movies
- 5) Adult Variety Show
 - Talk shows are included (e.g. The Ellen Degeneres Show, The Oprah Winfrey Show)
 - Game shows are included (e.g. Wheel of Fortune, Are You Smarter than a Fifth Grader?)
- 6) Infotainment (e.g. E!, Cooking / Travel Shows)
- 7) Reality TV (e.g. Survivor, Amazing Race, American Idol, Project Runway)
 - Unscripted dramatic or humourous situations
 - Usually features ordinary people instead of professional actors
- 8) Kid's Variety Show
- 9) Animation/Cartoon
- 10) Reality TV (e.g. Survivor, Amazing Race, American Idol, Project Runway)
 - Unscripted dramatic or humourous situations
 - Usually features ordinary people instead of professional actors
- 11) Others (Please State): _____

Section 2: Proceed for each unique advertisement

Length of advertisement (Round to the closest category) – **Choose 1**

- 1) 10 seconds
- 2) 15 seconds
- 3) 20 seconds
- 4) 30 seconds
- 5) 45 seconds
- 6) 60 seconds
- 7) 90 seconds
- 8) 120 seconds

Type of food product (Describe Core / Non-core) – **Choose 1**

Core food (based on AGHE)

- 1) Bread
- 2) Cereal
- 3) Dairy (milk, cheese)
- 4) Fruits
- 5) Vegetables
- 6) Meat product

Non-core food (based on AGHE)

- 7) Sweet snack/dessert (e.g. chocolates, ice-cream)
- 8) Savoury snack (e.g. biscuit, chips)
- 9) Carbonated Drink
- 10) Juice drink
- 11) Isotonic drink
- 12) Fast food
- 13) Restaurant (not fast food)
- 14) Others (please state) _____

Situations presented -- Code: Yes 1; No 0 (NOT mutually exclusive)

People

Family

Any activity with family members

Friends

Any activity with friends involved

Strangers

Any activity with strangers involved

Romantic Partners

Any activity with romantic partners involved

Alone

Any activity alone

None

Others (please state): _____

Activity

Work

Any activity with work-related setting

School

Any activity with a school setting, ie. Class, canteen

Sports

Any activity with physically competitive and recognized activities

Game

Any activity portraying games such as hopscotch, five stones

None

Others (please state): _____

Presentation Style -- Code: Yes 1; No 0 (NOT mutually exclusive)

Live Action/Setting

Animation/Cartoon

- Virtual characters or virtual setting

Presence of Jingle/Background Music/Song

Presence of Voice-over (VO)

-Narrator or any voice not belonging to any of the presenting characters)

Female Adult VO

Male Adult VO

Female Child VO

Male Child VO

Cartoon/Toy VO

Main Presenting Character –Choose 1

(Most significant character/ group of characters in the ad based on number of frames featured in)

- 1) Third-party Character (e.g. Shrek)
- 2) Brand Mascot (e.g. Ronald MacDonald, KoKo Krunch Koala Bear)
- 3) Customized Mascots Specifically for Certain Lines of Products
- 4) Entertainment Celebrity
- 5) Athlete
- 6) Expert/Professional
- 7) Ordinary Child
- 8) Group of Ordinary Children
- 9) Ordinary Adult
- 10) Group of Ordinary Adults
- 11) None (no emphasis on one main character)
- 12) Others (please state): _____

Gender of main presenting character – Choose 1

- 1) Male
- 2) Female
- 3) Mixed
- 4) Can't Tell
- 5) None

Secondary Presenting character – Choose 1

(Second most significant character/ group of characters based on number of frames)

- 1) Third-party character (e.g. Shrek)
- 2) Brand mascot (e.g. Ronald MacDonald, KoKo Krunch Koala Bear)
- 3) Customized Mascots Specifically for Certain Lines of Products
- 4) Entertainment Celebrity
- 5) Athlete
- 6) Expert/Professional
- 7) Ordinary Child
- 8) Group of Ordinary Children
- 9) Ordinary Adult
- 10) Group of Ordinary Adults
- 11) None (no emphasis on one main character)
- 12) Others (please state): _____

Gender of Secondary Presenting Character – Choose 1

- 1) Male
- 2) Female
- 3) Mixed
- 4) Can't Tell
- 5) None

Manifest Health Claims (i.e. explicit words, text used)

Code: Yes 1; No 0 (NOT mutually exclusive)

(Please transcribe health-claim-related statements where applicable)

Nutrient Content Claims

Low Calorie

Low Fat/ Fat-free

Low Cholesterol

Less Sugar/No Added Sugar/ Sugar-free

High in Fibre

High in Calcium

Vitamins

Minerals

Protein-related

Sodium/Salt-related

Non-additive Claims

Fresh
Natural
No Preservatives
No Artificial Flavours
No MSG
100%

Non-nutrient Content Claims

Whole Grain
Organic
Fruity
 -claims ingredients have real fruit component for natural flavouring
Taste-related
"Real"; "Genuine"; "True"; "Original"
Energizing
Probiotic
None
Other claims (e.g. omega 3, iron, gluten-free, low lactose, intelligence, no artificial colouring),
(please state):_____

Transcribe:

Latent Health Claims (i.e. pictorial depictions, inference from words)

Code: Yes 1; No 0 (NOT mutually exclusive)

Note: If claim is manifest, do not code for latent

(Please transcribe health-claim-related images/statements where applicable)

Nutrient Content Claims

Low Calorie
Low Fat/ fat-free
Low Cholesterol
Less Sugar/No Added Sugar/ Sugar-free
High in fibre
High in Calcium
Vitamins
Minerals
Protein-related
Sodium/Salt-related

Non-additive Claims

- Fresh
- Natural
- No Preservatives
- No Artificial Flavours
- No MSG
- 100%

Non-nutrient Content Claims

- Whole Grain
- Organic
- Fruity
 - claims ingredients have real fruit component for natural flavouring
- Taste-related
- "Real"; "Genuine"; "True"; "Original"
- Energizing
- Probiotic
- None
- Other claims (e.g. omega 3, iron, gluten-free, low lactose, intelligence, no artificial colouring), (please state): _____

Transcribe:

Common Themes

Code: Definitely No 0; Implied 1; Definitely Yes 2 (NOT mutually exclusive)

Unique Products/ Experience

- Suggests that product or restaurant has special features uncommon to products or restaurants of the same category
- Special flavour of cereal not considered uncommon feature
- Examples of uncommon feature include cereal that changes colour, a restaurant with special features other than food.

Taste/Flavour/Smell

- Suggests that the product is tasty, flavourful or smells pleasant and is desirable for consumption

Premiums

- Premiums will be obtained with purchase of products

Healthy/Nutritious Product

- Suggests that product consumption is associated with an improvement in overall health (e.g. mention of vitamins and minerals in the product)

None

Others (please state): _____

Transcribe:

Problematic Themes

Code: Definitely No 0; Implied 1; Definitely Yes 2 (NOT mutually exclusive)

Damage to Good Dietary Habits

- Suggests the product (e.g. vitamin pills or juices) can **replace** the consumption of meals or fruit and vegetables
- “Part of a complete breakfast” alone do not qualify.
- Products that can inherently be eaten as a meal do not qualify
- Emphasizes that it can replace a meal (code for the tactic, not the product).

Excessive Consumption of Food

- Portrayal of disability to avoid temptation of the product
- Portrayal of second, third helpings or upsizing of meals
- Character shown to consume excessive quantities of food (e.g. a whole box of chocolates)

Superiority of Consumer

- Suggests that product consumption will lead to attainment of a desired goal or extrinsic benefits; better performance in sport, physical ability or academic grades, etc. (achievement)
- Suggests that product consumption will lead to intrinsic benefits such as increased self esteem, independence, feelings of superiority (self-fulfillment)

Inferiority of the Loser

- Character who fails to get a product is shown to be inferior to others

Social Enhancement

- Suggests that product consumption will lead to peer acceptance or popularity

Social Degradation

- Suggests that not using the product will lead to discrimination by others
- Implied to be disloyal or would have let someone down, if they or their family do not buy, consume or use a product or service

Mood Alteration

- Suggests that product consumption will have the immediate effect of removing negative feelings and creating pleasure and enjoyment
- Ad must show a **change** in mood (from negative to positive, or from neutral to positive or from neutral to negative)
- Must show a physical expression of mood change OR character shown to be in distress if not able to get product

Premiums with Problems

- Emphasis on premiums, rather than the food product
- Directly encourage premiums to be collected (i.e. a series of toys)
- Encourage larger quantity of purchases to obtain premiums
 - Note: If ad has this theme, it should be coded for in the common-premium theme too

Minimizing Pricing

- Ads should not minimize the price of the product with words such as, “only”, “just”, or “bargain price”.

Sales Pressure

- ‘High pressure’ and ‘hard sell’ techniques (e.g. urging) characters to buy or persuade others to buy, creating a sense of urgency by using words such as “buy it now”, “limited offer” etc.
- Words used or the tone of the ad suggest that young viewers are being bullied, cajoled, coerced or otherwise put under pressure to acquire the advertised item

Begging / Pestering

- Ad that directly advise or ask characters to ask their parents or other adults to make enquiries or purchases
- Scene(s) where character try to persuade/pester parents, friends or other people to buy them the product

Unrealistic Expectations

- Create unrealistic performance expectations (e.g. showing character being able to fly after food consumption, losing weight in short period of time)

None

Others (please state): _____

Transcribe:

--

Other Message Features -- Code: Yes 1; No 0 (NOT mutually exclusive)

- Third party approval (i.e. endorsement from institutions e.g. Halal logo, Healthier choice logo, Singapore Heart Foundation logo)
- Packaging/logo shown or displayed
- Food as toy

Premium Offers -- Code: Yes 1; No 0 (NOT mutually exclusive)

- Free Toys
- Coupon
- Discount
- Concert
- Additional Amount for Free
- Others (e.g. Free containers)

Appendix B

Inter-coder Reliability Scores for Items in Coding Scheme

Intercoder Reliability for Items in Coding Scheme

I_r^a

Date Shown	1.000
Day Shown	1.000
Timing of Ad	1.000
Channel	1.000
Product Name	1.000
Product Brand	1.000
Type of Product	1.000
Type of Programme	.839
Length of Ad	.921
Type of Food Product (mutually exclusive)	.964

Situations Presented

People

Family	.856
Friends	.856
Strangers	.931
Romantic Partners	1.000
Alone	.931
None	1.000
Others	.931

Activity

Work	1.000
School	1.000
Sports	1.000
Game	.931
None	1.000
Others	.856

Presentation Style

Live Action/Setting	1.000
Animation/Cartoon	1.000
Presence of Jingle/Background Music/Song	1.000
Presence of Voice-over (VO)	1.000
Female Adult VO	1.000
Male Adult VO	1.000
Female Child VO	1.000
Male Child VO	1.000
Cartoon/Toy VO	1.000

TELEVISION FOOD ADVERTISING TOWARDS CHILDREN

76

Main Presenting Character (mutually exclusive)	.963
Gender of Secondary Presenting Character	.913
Secondary Presenting character (mutually exclusive)	.842
Gender of Secondary Presenting Character	.866
Health Claims (Manifest)	
Nutrient Content Claims	
Low Calorie	1.000
Low Fat/ Fat-free	1.000
Low Cholesterol	1.000
Less Sugar/No Added Sugar/ Sugar-free	1.000
High in Fibre	1.000
High in Calcium	1.000
Vitamins	1.000
Minerals	1.000
Protein-related	1.000
Sodium/Salt-related	1.000
Non-additive Claims	
Fresh	.931
Natural	.931
No Preservatives	1.000
No Artificial Flavours	1.000
No MSG	1.000
100%	1.000
Non-Nutrient Content Claims	
Whole Grain	1.000
Organic	1.000
Fruity	.856
Taste-related	.856
Real, Genuine, True, Original	.931
Energizing	1.000
Probiotic	1.000
None	1.000
Other claim(s)	.856

Health Claims (Latent)

Nutrient Content Claims

Low Calorie	1.000
Low Fat/ Fat-free	1.000
Low Cholesterol	1.000
Less Sugar/No Added Sugar/ Sugar-free	1.000
High in Fibre	1.000
High in Calcium	1.000
Vitamins	.931
Minerals	1.000
Protein-related	1.000
Sodium/Salt-related	1.000

Non-additive Claims

Fresh	.931
Natural	.856
No Preservatives	1.000
No Artificial Flavours	1.000
No MSG	1.000
100%	1.000

Non-Nutrient Content Claims

Whole Grain	1.000
Organic	.931
Fruity	.775
Taste-related	.931
Real, Genuine, True, Original	.856
Energizing	.856
Probiotic	1.000
None	.775
Other claim(s)	.856

Common Themes

Unique Product/ Experience	.949
Taste/ Flavour/ Smell	.894
Premiums	1.000
Healthy/Nutritious Products	.949
None	1.000
Other Common Theme(s)	1.000

Problematic Themes

Damage to Good Dietary Habits	.949
Excessive Consumption of Food	.949
Superiority of Consumer	.949
Inferiority of the Loser	1.000
Social Enhancement	.837
Social Degradation	1.000
Mood Alteration	.837
Premiums with Problems	1.000
Minimizing Pricing	.949
Sales Pressure	1.000
Begging / Pestering	1.000
Unrealistic Expectations	1.000
None	1.000
Other Theme(s)	1.000

Other Message Features

Third Party Approval	.931
Packaging/Logo Shown or Displayed	1.000
Food as Toy	.931

Premium Offers

Free Toys	1.000
Coupon	1.000
Discount	1.000
Concert	1.000
Additional Amount for Free	1.000
Other Premium(s)	.856

^a I_r is the intercoder reliability index as found in Perreault & Leigh (1989, p141, formula [7]).

Appendix C

Presence of Health Claims in the F&B Ads

Table 3

Frequency and Percentage of Manifest and Latent Product Health Claims(N = 1453)

Ad Claims	Manifest	Latent
Nutrient Content Claims		
Low Calorie	-	-
Low Fat/Fat Free	59 (4.1%)	99 (6.8%)
Low Cholesterol	119 (8.2%)	-
Less sugar/No Added Sugar/ Sugar-free	24 (1.7%)	-
High in Fibre	26 (1.8%)	17 (1.2%)
High in Calcium	10 (0.7%)	252 (17.3%)
Vitamins	120 (8.3%)	-
Minerals	33 (2.3%)	17 (1.2%)
Protein-related	131 (9%)	-
Sodium/Salt-related	-	-
Non-additive Claims		
Fresh	190 (13.1%)	44 (3%)
Natural	59 (4.1%)	8 (0.6%)
No Preservatives	70 (4.8%)	-
No Artificial Flavours	-	-
No MSG	-	-
100%	17 (1.2%)	-
Non-nutrient Content Claims		
Whole Grain	52 (3.6%)	17 (1.2%)
Organic	-	-
Fruity	83 (5.7%)	28 (1.9%)
Taste-related	553 (38.1%)	197 (13.6%)
"Real"; "Genuine"; "True"; "Original"	15 (1%)	3 (0.2%)
Energizing	147 (10.1%)	47 (3.2%)
Probiotic	3 (0.2%)	-
None	700 (48.2%)	856 (58.9%)
Other Claims	160 (11%)	29 (2%)

Appendix D

Comparative Analysis of F&B Ads during Child-oriented and General-audience programmes

Table 5

Cross Tabulation of Type of Food Products Advertised and Child-oriented Programmes

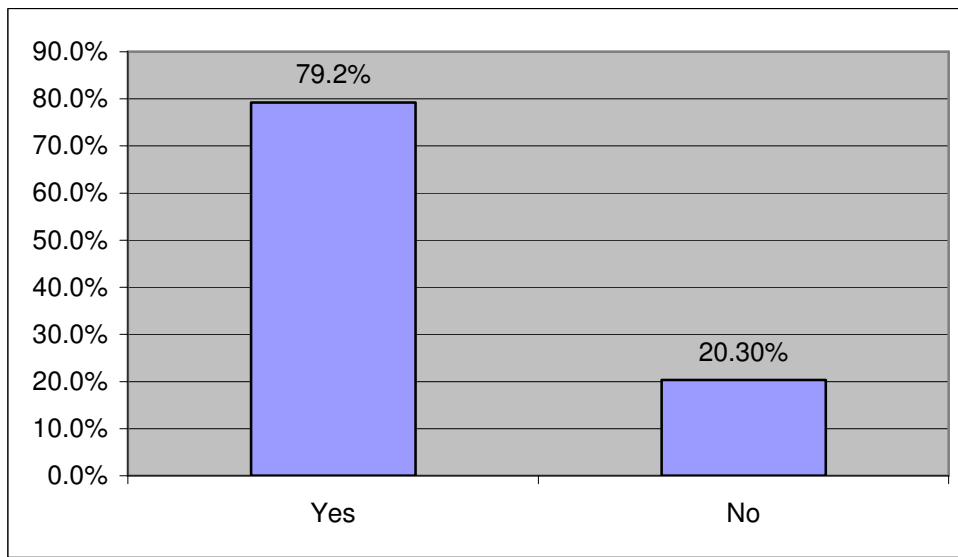
Type of Food Products	Type of Programmes		χ^2	Φ
	Child-oriented Programme	General-audience Programme		
Core Food			287.8**	.445
Bread	-	-		
Cereal	27 (0.1)	65 (-0.1)		
Dairy	29 (6.7)	8 (-6.7)		
Fruits	-	-		
Vegetable	-	-		
Meat Products	6 (2.2)	4 (-2.2)		
Rice	0 (-3.8)	51 (2.5)		
Noodles	0 (-2.6)	16 (2.6)		
Non Core Food				
Sweet Snack/ Dessert	136 (1.7)	285 (-1.7)		
Savoury Snack	20 (-3.5)	108 (3.5)		
Carbonated Drink	0 (-5.4)	67 (5.4)		
Juice Drink	8 (4.0)	1 (-4.0)		
Isotonic Drink	-	-		
Fast Food	26 (-4.0)	138 (4.0)		
Powdered Drinks	6 (-1.8)	32 (1.8)		
Arbitrary Food				
Restaurant	0 (-4.3)	44 (4.3)		
Health Supplements	30(-2.9)	127 (2.9)		
Spreads	134 (11.5)	83 (-11.5)		
Others	0 (-0.6)	1 (0.6)		

Note. **= $p < .01$. Adjusted standardized residuals appear in parentheses beside group frequencies

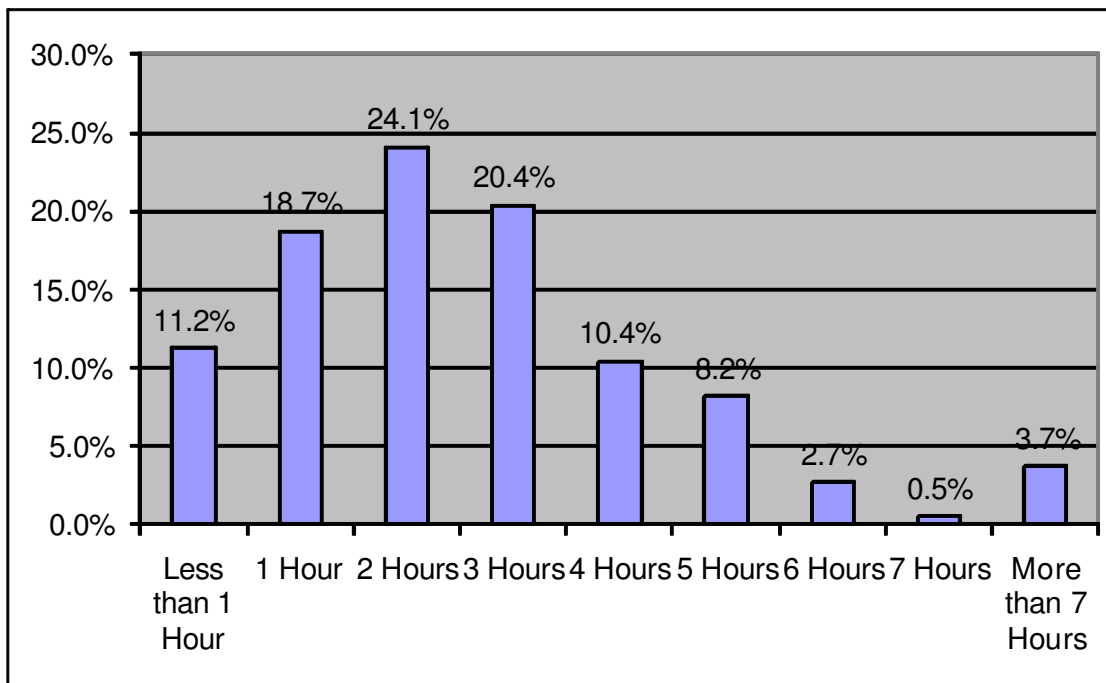
Appendix E

TV Viewing Habits of Participants

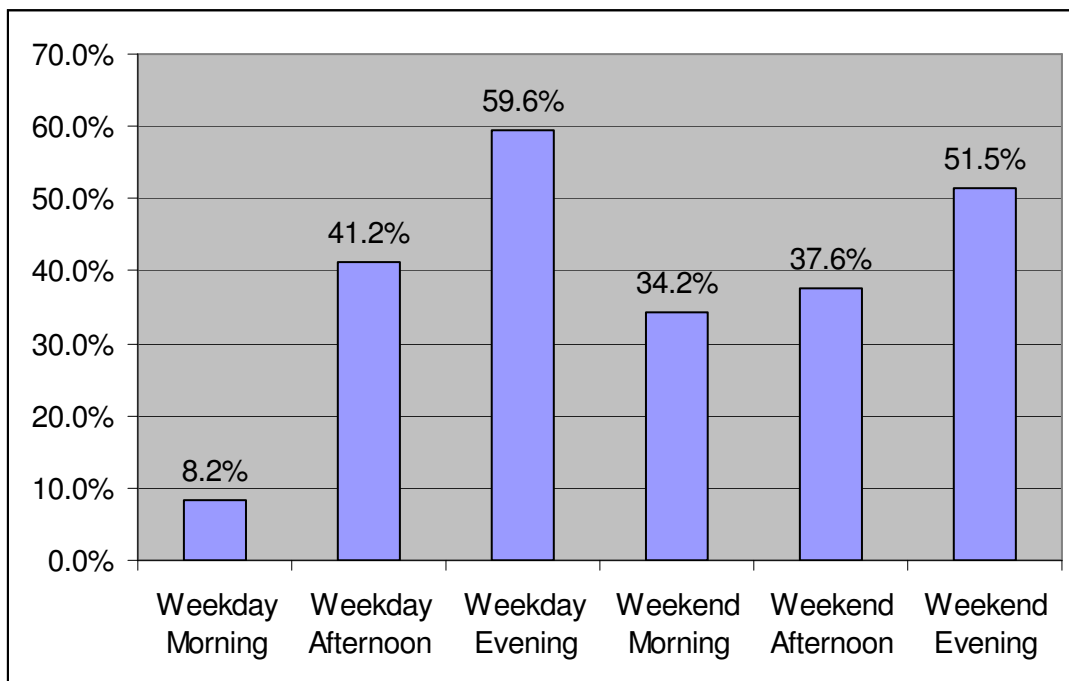
1. Do you watch television?



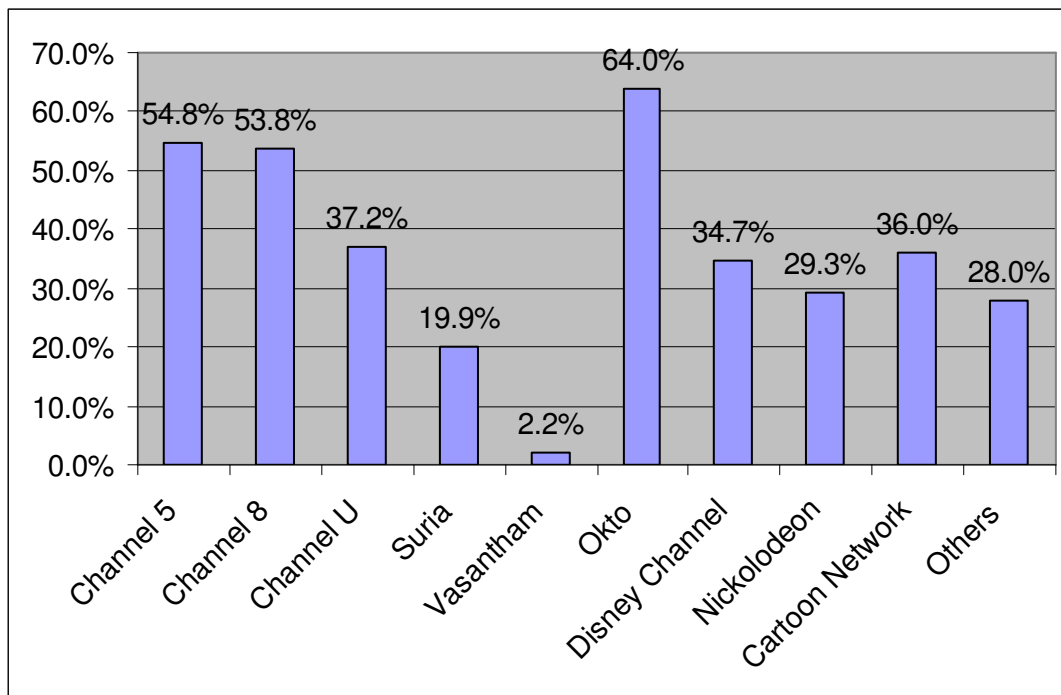
2. On average, how many hours of television do you watch in a day?



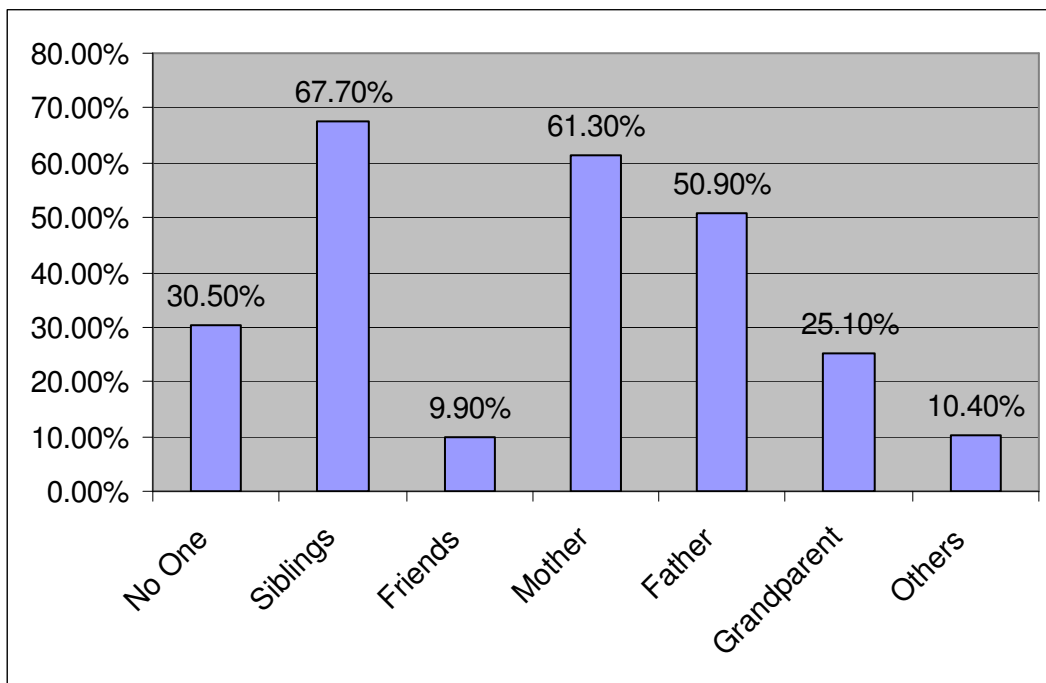
3. What time do you usually watch television? (Multiple options allowed)



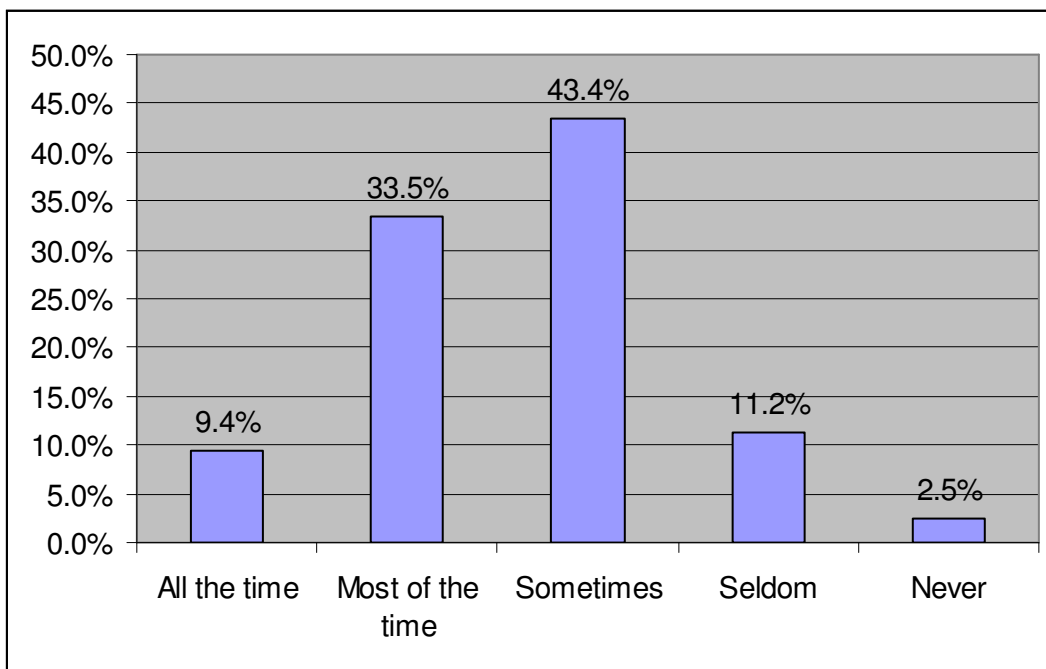
4. What television channel (s) do you usually watch? (Multiple options allowed)



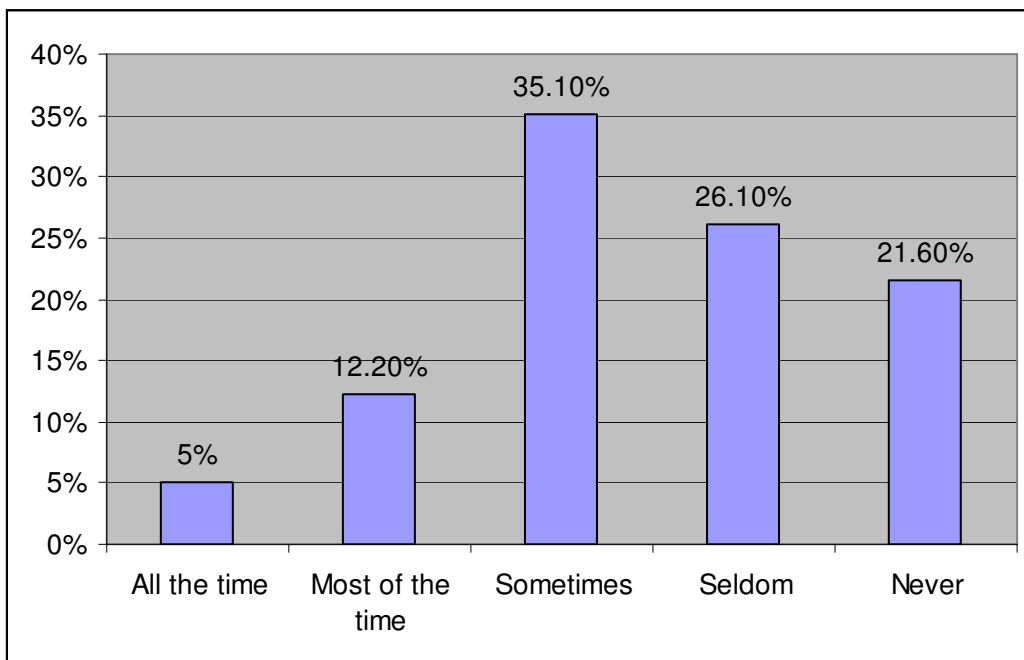
5. Who do you usually watch television with? (Multiple options allowed)



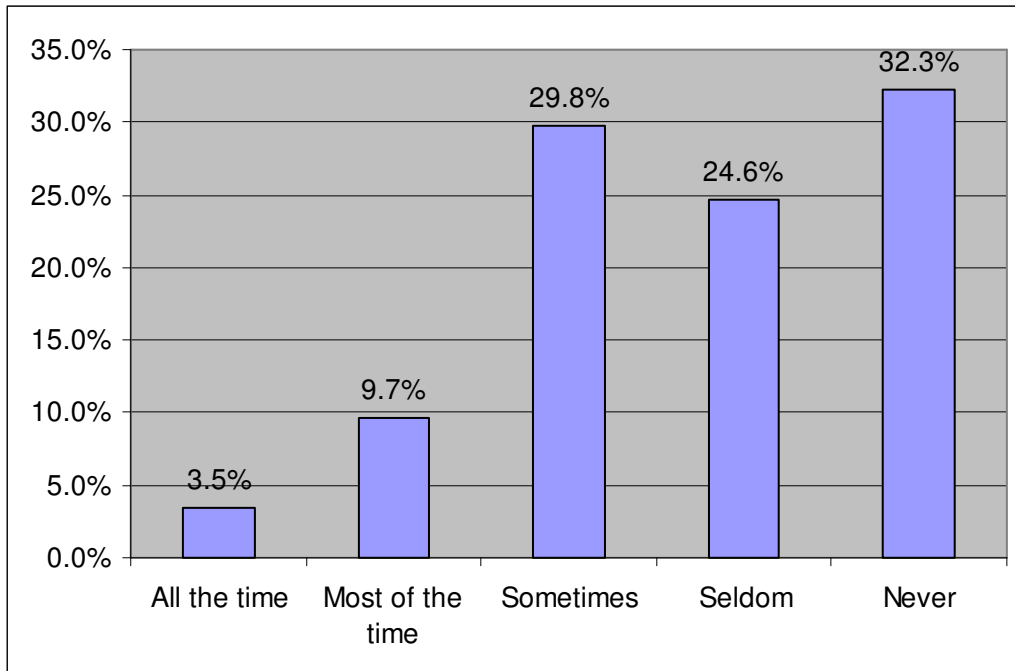
6. How often do you watch television with your parent(s)?



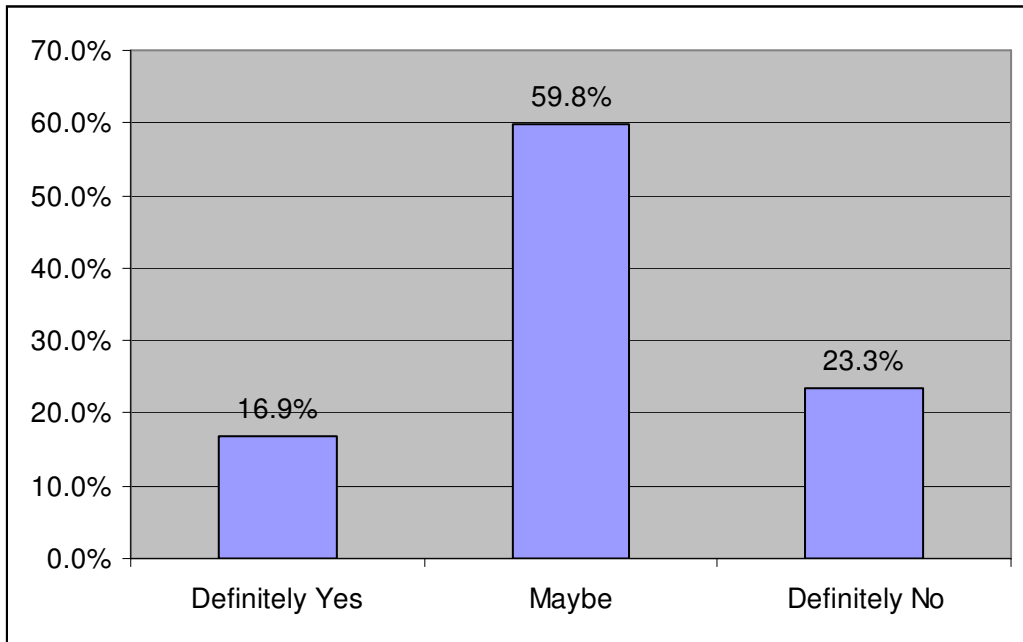
7. Do your parent(s) discuss the content of television programmes with you?



8. Do your parent(s) discuss the content of advertisements with you?

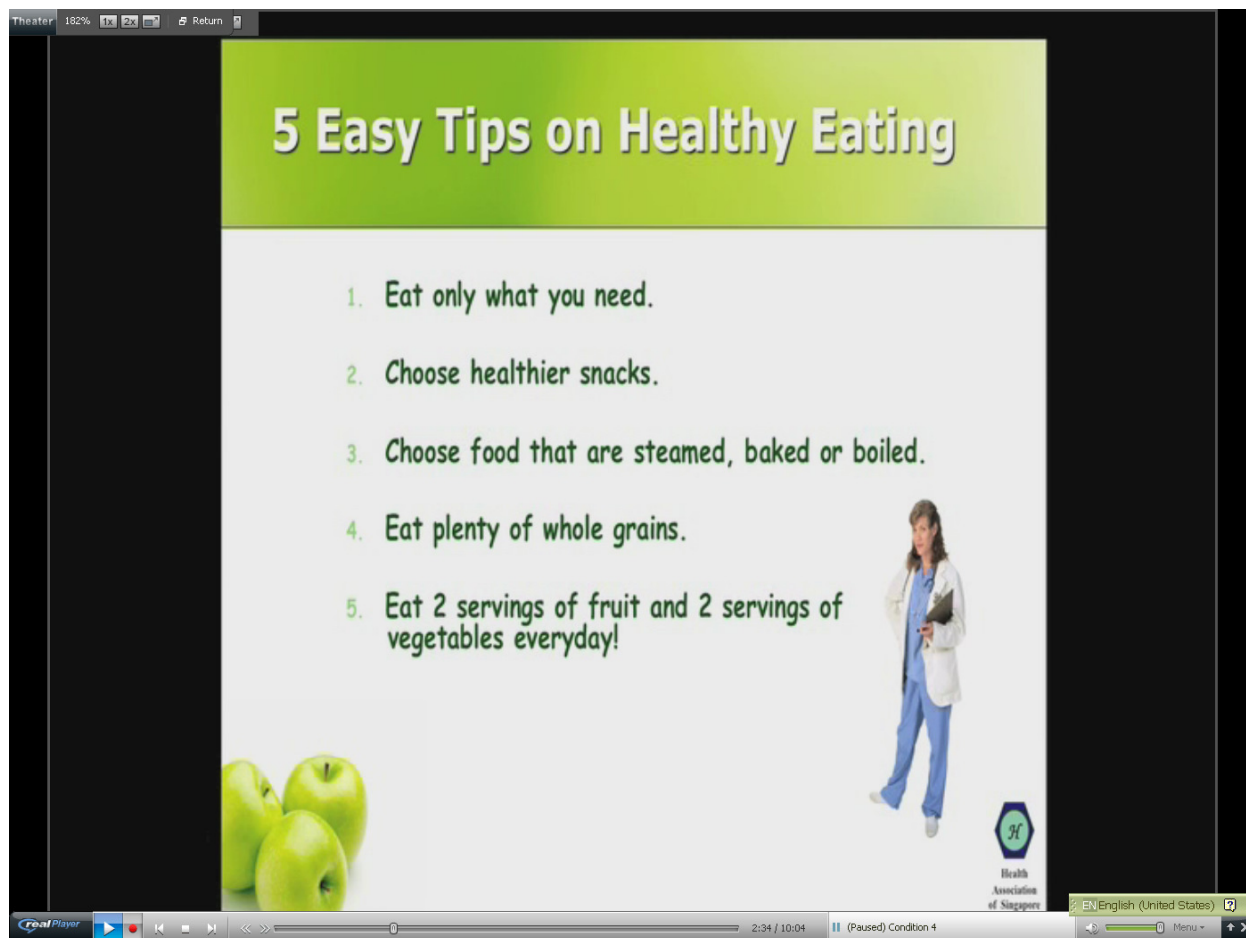


9. Do you like to watch television advertisements?



Appendix F

Video Screenshots of Experimental Stimuli



Pro-nutritional advertisement



F&B Ad 1: Nestle Milo Energy Drink



F&B Ad 2: Skippy Peanut Butter



F&B Ad 3: Juicy Jelly



F&B Ad 4: Nestle Koko Krunch Breakfast Cereal



F&B Ad 5: Oreo Cookie



F&B Ad 6: Kinder Joy Chocolate



Cartoon: Shaun the Sheep

Appendix G

Final Questionnaire






Class: _____

Register No.: _____






Survey 1

Please circle the option that **best describes how you feel** towards each statement shown below. Please tick (✓) **only one option** per question.






1) Eating too much is bad for me.

				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Strongly Agree	4 Agree	3 Neither Agree nor Disagree	2 Disagree	1 Strongly Disagree






2) Eating 1 serving of fruit everyday is enough for me.

				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Strongly Agree	4 Agree	3 Neither Agree nor Disagree	2 Disagree	1 Strongly Disagree






3) It is important to eat more whole-grains (e.g. brown rice, wholemeal bread).

				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Strongly Agree	4 Agree	3 Neither Agree nor Disagree	2 Disagree	1 Strongly Disagree






4) Eating fried food is good for me.

				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Strongly Agree	4 Agree	3 Neither Agree nor Disagree	2 Disagree	1 Strongly Disagree

5) Eating 2 servings of vegetables everyday is the right thing to do.

				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Strongly Agree	4 Agree	3 Neither Agree nor Disagree	2 Disagree	1 Strongly Disagree
















6) It is important to choose healthier snacks that are low in fat, sugar or salt.

				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Strongly Agree	4 Agree	3 Neither Agree nor Disagree	2 Disagree	1 Strongly Disagree
















Survey 2

Shown below are pictures of some food and drink items. Imagine that it is recess time now. What would you like to eat for recess?

Please tick (✓) the food and drink item(s) you would like to eat for recess. You may tick as many items as you like. Imagine that the food and drink items are free of charge; you do not have to pay for the food and drink items.

 1 cupcake <input type="checkbox"/>	 1 slice of watermelon <input type="checkbox"/>	 1 egg tart <input type="checkbox"/>
 1 handful of strawberries <input type="checkbox"/>	 1 bar of chocolate <input type="checkbox"/>	 1 burger <input type="checkbox"/>
 1 ice-cream cone <input type="checkbox"/>	 1 apple <input type="checkbox"/>	 1 curry puff <input type="checkbox"/>
 1 kiwi fruit <input type="checkbox"/>	 1 chocolate chip cookie <input type="checkbox"/>	 1 plain cracker <input type="checkbox"/>
 1 fried chicken wing <input type="checkbox"/>	 1 cup of yoghurt <input type="checkbox"/>	 3 pieces of chicken nuggets <input type="checkbox"/>

TELEVISION FOOD ADVERTISING TOWARDS CHILDREN

 <p>4 sticks of chicken Satay <input type="checkbox"/></p>	 <p>1 handful of grapes <input type="checkbox"/></p>	 <p>1 plate of french fries <input type="checkbox"/></p>
 <p>1 bowl of vegetable Salad <input type="checkbox"/></p>	 <p>1 banana <input type="checkbox"/></p>	 <p>1 egg sandwich <input type="checkbox"/></p>
 <p>1 cob of corn <input type="checkbox"/></p>	 <p>2 slices of wholemeal bread <input type="checkbox"/></p>	 <p>1 piece of roti prata <input type="checkbox"/></p>
 <p>1 glass of bubble milk tea <input type="checkbox"/></p>	 <p>1 cup of baked beans <input type="checkbox"/></p>	 <p>1 doughnut <input type="checkbox"/></p>
 <p>1 glass of milk <input type="checkbox"/></p>	 <p>1 can of soft drink <input type="checkbox"/></p>	 <p>1 glass of plain water <input type="checkbox"/></p>

Survey 3

This survey is about television watching. Please be honest in answering the questions. Please tick (✓) the option that best describes you. **Tick only one option unless otherwise stated (Questions 3, 4 and 5).**

- 1) Do you watch television?
 Yes.
 No, I don't watch television (please turn to the next section and wait for further instructions).

- 2) On average, how many hours of television do you watch in a day?
 Less than 1 hour
 1 hour
 2 hours
 3 hours
 4 hours
 5 hours
 6 hours
 7 hours
 More than 7 hours

- 3) What time do you usually watch television? **You may choose more than one option.**
 Weekday morning (before 12 noon)
 Weekday afternoon (12pm to 6pm)
 Weekday evening and night (6pm onwards)
 Weekend morning (before 12 noon)
 Weekend afternoon (12pm to 6pm)
 Weekend evening and night (6pm onwards)

*Weekday = Monday, Tuesday, Wednesday, Thursday or Friday; Weekend = Saturday or Sunday

- 4) What television channel(s) do you usually watch? **You may choose more than one option.**
 Channel 5
 Channel 8
 Channel U
 Suria
 Vasantham
 Okto
 Disney Channel
 Nickelodeon
 Cartoon Network
 Others: _____ (please state)

5) Who do you usually watch television with? **You may choose more than one option.**

- No one, I watch television alone
- My sibling(s)
- My friends
- My mother
- My father
- My grandparent(s)
- Others: _____ (please state)

6) How often do you watch television with your parent(s)?

- All the time
- Most of the time
- Sometimes
- Seldom
- Never

7) Do your parent(s) discuss the content of television programmes with you?

- All the time
- Most of the time
- Sometimes
- Seldom
- Never

8) Do your parent(s) discuss the content of advertisements with you?

- All the time
- Most of the time
- Sometimes
- Seldom
- Never

9) Do you like to watch television advertisements?

- Definitely yes
- Maybe
- Definitely no

Survey 4

1) From the list of options below, **please choose** (✓) **1 option** that best describes what you saw in the video just now.

I watched some food advertisements, then the cartoon, then the health tips.

Food Ads	Cartoon	Health Tips
----------	---------	-------------

I watched the health tips, then the cartoon, then some food advertisements.

Health Tips	Cartoon	Food Ads
-------------	---------	----------

I watched the health tips, then some food advertisements, then the cartoon.

Health Tips	Food Ads	Cartoon
-------------	----------	---------

I watched some food advertisements, then the health tips, then the cartoon.

Food Ads	Health Tips	Cartoon
----------	-------------	---------

I watched some food advertisements, then the cartoon, then some food advertisements.

Food Ads	Cartoon	Food Ads
----------	---------	----------

Survey 5

Read the following questions and indicate your answer. Your answers are important to us. We will not tell others your answers. Please be honest.

1. What is your gender?

- Male
- Female

2. How old are you this year? _____

3. What is your race?

- Chinese
- Malay
- Indian
- Others, please state: _____

4. What is your religion?

- Buddhism
- Islam
- Christianity
- Taoism
- Hinduism
- Others, please state: _____
- No Religion

5. What is your height?

_____ CM

6. What is your weight?

_____ KG

7. On average, how much pocket money do you get in one day?

- Less than \$1
- \$1 - \$2
- \$2.10-\$3
- \$3.10 - \$4
- \$4.10-\$5
- More than \$5

***END OF SURVEY**

Appendix H

Experimenter Script

Hello class! I am _____ from NTU and today we will be doing an activity together. We will first watch a video clip and then answer some questions afterwards. Here is the video. Please watch attentively. *Show video*

Now, I will give out a set of questions. Please take one set each and pass the rest out to your classmates. We will do the questions together. *Distribute questionnaire*

I have some instructions for you, so please listen carefully. This is individual work - do not discuss with your friends. There is no right or wrong answers to the questions. It is important to be honest; we will not tell anyone your answers. If you have any questions while doing the survey, please raise your hand and we will help you.

Now, let us begin. *Experimenter takes one set of survey on hand and guides the students page by page*

Page 1: Survey 1 (Attitude)

First, please write down your class and register number at the top of page one.

Now, please only refer to page 1. Please answer all the questions on page 1 ONLY. Please circle the option that **best describes how you feel** towards each statement shown below. Please circle only one option for each question. After you have completed page 1, please sit still quietly and wait for the rest of the class to finish.

Do not turn over to the next page. Please raise your hand if you have any questions and we will help you. You may start answering the questions on page 1 now.

Page 2: Survey 2 (Food Consumption Intention)

Now please turn to page 2. *Experimenter shows coloured version of food items on projector screen*

Shown below are pictures of some food items. Imagine that it is recess time now. What would you like to eat for recess? Please tick the food and drink item(s) that you will like to eat for recess. You can tick as many items as you like. Imagine that the food and drink items are free of charge; you do not need to pay for the food and drink items. You may refer to the screen for the coloured version of the food and drink items.

Ok, you may start ticking the options now. Please raise your hand if you have any questions and we will help you. When you finish this page, please wait at your seat quietly until everyone has finished.

Page 3: Survey 3 (Media Habits)

Ok, now please turn to page 3.

This survey is about television watching. Please be honest in answering the questions. Please tick the option that best describes you. **Tick only one option unless otherwise stated (Questions 3, 4 and 5).**

Page 4: Survey 4 (Manipulation Check)

Ok, now please turn to page 4 and answer the question.

Page 5: Survey 5 (Demographics Questions)

Ok, now please turn to page 5. Please answer all the questions in this page. If you have any questions, you may raise your hand and we will help you.

Appendix I

Experiment Debrief Form

We are a group of students from Nanyang Technological University and we thank you for your participation!

The purpose of our study is to find out how children perceive food and beverage TV advertisements. In addition, we wish to investigate whether food and beverage TV advertisements affect children's attitude and food preference. Specifically, we want to see if it encourages children to consume more food, particularly unhealthy food.

This is because in recent years, obesity has become one of the most prevalent concerns regarding children's health. Advertisements are often blamed to be the culprits that attract and induce children to consume more food, especially junk food, causing health problems.

Furthermore, many other countries such as the United States, the United Kingdom and Australia have rules and regulations to safeguard the interests of children by limiting the content and format of TV advertisements targeted at children. Hence, we hope that the results of our study would equip us with strong evidence to propose similar regulations for Singapore to protect children like yourselves.

If you have any queries on the study, please email Wendy at wend0004@ntu.edu.sg.

Project Coordinators: Wendy Chen, Glenn Lim, Lin Jieying, Tang Shu Xia.

7 Easy Tips on Healthy Eating!

- 1) When you go shopping with your parents at the supermarket, look out for products with the Healthier Choice Symbol! These products contain less fat, sugar and salt.



- 2) When eating in restaurants, choose items in the Healthier Children's Menu with this cute logo.



- 3) Eat 2 servings of fruit and 2 servings of vegetables everyday!
- 4) Drink 2 glasses of milk everyday. Milk contains calcium to keep your bones strong!
- 5) Eat breakfast everyday. Breakfast gives you energy to perform well in school.



- 6) When eating at hawker centres, buy food from stalls with a healthier choice logo displayed on their Food Hygiene Certificate.

- 7) Many food advertisements are trying to get you to buy unhealthy snacks, which are bad for your health. Find out if the advertised food product is healthy before spending your precious pocket money on them!