



UNIVERSITY *of* NICOSIA

SCHOOL OF LIFE AND HEALTH SCIENCES

PhD Dietetics/Nutrition

Title

**Associations between Cypriot children's television food advertising exposure and their eating behaviour: An observational and diagnostic survey with the use of questionnaires and eating behaviour tests in 1088 Cypriot Children.**

**PhD Candidate Name:**

Xanthi Sophocleous

**Supervisor(s):**

**1<sup>st</sup> Dr. Eleni Andreou**

**2<sup>nd</sup> Dr Kyriakos Felekkis**

**3<sup>rd</sup> Prof Antonis Zampelas**

Nicosia

10/09/2020

## DECLARATION

This dissertation/thesis (please circle one) is submitted in partial fulfilment of the requirements for the PhD of University of Nicosia University

Degree of \_\_\_\_\_

The regulations for the degree are set out in the University of Nicosia Calendar and are elaborated in a practice manual known as House Rules for the Study of Doctor of Philosophy at University of Nicosia.

### Supervisor's Declaration

I confirm that, to the best of my knowledge:

- ☐ the research was carried out and the dissertation was prepared under my direct supervision;
- ☐ except where otherwise approved by the Academic Administration Committee of University of Nicosia, the research was conducted in accordance with the degree regulations and house rules;
- ☐ the dissertation/thesis (please circle one) represents the original research work of the candidate;
- ☐ the contribution made to the research by me, by other members of the supervisory team, by other members of staff of the University and by others was consistent with normal supervisory practice.
- ☐ external contributions to the research are acknowledged. (Delete if not applicable)

Supervisor \_\_\_\_\_ Date \_\_\_\_\_

### Candidate's Declaration

I confirm that:

- ☒ this dissertation/thesis (please circle one) represents my own work;
- ☒ the contribution of any supervisors and others to the research and to the dissertation/thesis (please circle one) was consistent with normal supervisory practice.
- ☒ external contributions to the research are acknowledged. (Delete if not applicable)

Candidate: Xanthi Sophocleous. Date \_\_\_\_\_

### Pre-Publication of Parts of this dissertation/thesis (please circle one)

Either:

1 We confirm that no part of this dissertation has been submitted for publication in advance of submission of the dissertation/thesis (please circle one) for examination.

Candidate: Xanthi Sophocleous. Date \_\_\_\_\_

Supervisor \_\_\_\_\_ Date \_\_\_\_\_

Or:

2 Parts of this dissertation/thesis (please circle one) have been submitted and/or accepted for publication in advance of submission of the dissertation/thesis (please circle one) for examination.

In this case, please set out on a separate page information on:

- ☐ which sections have been submitted, which have been accepted and which have appeared;
- ☐ which journals they have been submitted to;
- ☐ who are the co-authors.

Candidate: Xanthi Sophocleous. Date \_\_\_\_\_

Supervisor \_\_\_\_\_ Date \_\_\_\_\_



# Chapter I

## Abstract

**Background:** Children today live in an obesogenic environment. According to existing literature, television food advertising has long been recognized as a great impact on children's eating behavior and weight status. Television food advertising has attracted criticism for its potential role and impact on children's food preferences, purchasing requests, food knowledge and weight status as well. There hasn't been any work done directed towards this field in Cyprus.

**Aim:** An understanding of the current situation of television food advertising in Cyprus' television channels, perceptions, eating habits, television habits, food knowledge on children of age 6-12 will be helpful to acknowledge and identify any relations associated to existing literature.

**Methods:** This thesis presents findings from a quantitative research study. The data were collected in three phases, firstly with the help of parents/guardians (questionnaire) (N=1088) of age 6-12 in Cyprus, secondly with records of Cyprus Radio-Television Authority (365 days data) and thirdly with the use of focus group (knowledge tests) (N=71).

**Findings:** It is evident from the study findings that television food advertising scenery in Cyprus is dominated by unhealthy food product choices that form a distorted food pyramid. These data along with the responses of parents underline the relationship and responses of children and parents towards several aspects that television food advertising has a detrimental impact on their children's eating habits, television habits, purchase requests, food knowledge, food preference, brand preferences. Furthermore, lack of applied policies and legislation on Cyprus television advertising has been identified.

**Conclusion:** Combining these findings, relations between television food advertising and children's eating behavior (food knowledge, purchase requests, food preferences, brand preferences, eating habits) have been identified. Furthermore, suggestions have been proposed to stakeholders.

**Keywords:** advertisements, eating habits, purchase requests, brand logo recognition, advertisements recall, television content, children, television habits, food preferences, food knowledge.

## Originality Statement

‘I hereby declare that this submission is my own work and to the best of my knowledge, it contains no materials previously published or written by another person, or substantial proportions of material which have been accepted for the award of any other degree or diploma at University of Nicosia or any other educational institution, except where due acknowledgment is made in the thesis. Any contribution made to the research by others, with whom I have worked at University of Nicosia or elsewhere, is explicitly acknowledged in the thesis. I also declare that the intellectual content of this thesis is the product of my own work, except to the extent that assistance from others in the project’s design and conception or in style, presentation and linguistic expression is acknowledged.’

Signed 

Date .....



## **Instead of a Preface**

As I begin to write these lines, my mind takes me back to the summer of 1995 when I heard on the national radio station that I had passed the Pancyprian Exams, gaining one of three places at the Harokopio University, Athens, the Department of Nutrition and Dietetics.

Barely one month after I had lost my beloved grandmother, I would soon leave my parents and my brother (with special needs) to follow my dream... My suitcases packed with fear of the unknown, I set out on a four-year journey to a demanding university and an even more demanding field of study.

I was full of insecurity and uncertainty as to whether I would ride out the storm and rise up to the challenges of my field which, as I would soon discover, were literally huge.

My parents and brother had come with me for the first few days. On their last day when they were set to travel back to Cyprus, a stroll down the area of Monastiraki, at the center of Athens, was meant to define my life path.

Through several souvenir shops, my father had picked a small copper plate, engraved with two verses from Cavafy, that have stayed with me to this day: "Keep Ithaca always on your mind, arriving there is your destination".

For the following years, that same plate, leaning against the wall opposite my desk in my student studio, would nurture my soul and keep me on the right track.

Four years later, degree in hand, I knew I had come to the end of a long and difficult road. Then, when I started postgraduate studies while working full time, Cavafy once more showed the way to Ithaca. Two years later, I would earn a postgraduate degree.

At age forty, married, with two children and a dog, the decision to venture into doctoral studies was a true challenge; but "Cavafy", the plate which through all those years had stood its ground everywhere I had chosen to take it as I moved from Athens back to my family home and then to a house of my own, silently nodded that yet another Ithaca was waiting for me...

In the three and a half years that followed my decision, I had had to face a variety of highly demanding challenges; yet Ithaca, another Ithaca, was once more my destination.

This thesis is dedicated to all those who believe in their own Ithaca and to those who believe in them, adamant in their belief that they will sail through stormy seas to calm waters – but they will definitely get there.

I offer my heartfelt thanks to those who believed in me and supported me, each in their own way: my family, my mother, my father, my brother, my husband, even my two little children, my friend and professor, Eleni Andreou, but also my few treasured friends.

This is the end of yet another journey. My Ithaca is drawing near. But who knows? Perhaps I'll find another one along the way.

And to quote a verse from a song I love: "*Set sail for what we have dreamed of, let's head straight to tomorrow...*"

## Acknowledgments

My deep gratitude goes firstly to my first supervisor and friend Dr. Eleni Andreou. Dr. Andreou expertly guided me through this education journey and shared with me the excitement of these years' discovery of knowledge. Her enthusiasm and support in every way kept me constantly engaged with my demanding research and made it more enjoyable.

My appreciation also extends to my other two supervisors Dr. Kyriakos Felekakis and Dr. Antonis Zambellas who their guidance and encouragement was valuable.

My sincere thanks also go to Mr. Apostolos Apostolides, school director who helped me contact other schools, all schools directors who gladly enrolled their school in the study, Mr. Neophytos Epaminondas- director of Cyprus Radio-Television Authority (CyRTA), who approved my request to provide all the necessary data for the research, my long-time friend Mrs Korina Papanearchou, administrator at CyRTA for her valuable help and support, Mrs Sophia Christofi secretary of director of CyRTA for her valuable cooperation, Mrs Georgia Christodoulou at the library and information centre of UNIC for her expert guidance on specific issues, Mr Christoforos Christoforou, professor of statistics in UNIC for his assistance and suggestions, Mrs Maria Perikli for her valuable input.

Above ground I'm indebted to my family, my husband Loizos, my two children Anassa and Christopher, my mother Maro, father Charis, brother Demetris and my few but extremely valuable friends (you know who you are) for their constant support in many aspects and encouragement that kept me going. I dedicate this PhD thesis to both my family and my friends who are my other family and this thesis would not have been possible without their love, patience and support.



## Abbreviations

- A1: first grade, section 1, 6-7-year-old elementary school
- AFPM: Adapted Food Preference Measure
- ANOVA: Analysis of Variance
- B1: second grade, section 1, 7-8-year old elementary school
- BMI: Body Mass Index
- C1: third grade, section 1, 8-9-year old elementary school
- CHO: Carbohydrates
- CyDNA: Cyprus Dietetic and Nutrition Association
- CyRTA: Cyprus Radio Television Authority
- D1: fourth grade, section 1, 9-10-year old elementary school
- E1: fifth grade, section 1, 10-11-year old elementary school
- EYHS: European Youth Heart Study
- EWP: Eat Well Plate
- F1: sixth grade, section 1, 11-12-year old elementary school
- FA: Food advertisement
- FACT: Foods commonly advertised on television
- HFSS: High in Fat Salt and Sugar
- HFSW: High, fat, sweet
- HFSAV: High, fat, savoury
- Kcal: Kilocalories
- LC: Licenced character
- LFCT: Leeds Forced Choice Test
- LFPM: Leeds Food Preference Measure
- LFSW: Low fat sweet
- LFSAV: Low fat savoury
- L-VPA: Light to Vigorous Physical Activity
- NW: Normal Weight
- NKAN: Nutrition knowledge, attitudes and norms.
- OB: Obese
- OW: Overweight
- PIA: Purchase Influence Attempts
- PSA: Public service announcement.
- SCAN: Studies of Child Activity and Nutrition
- SHFP: Sum of Healthy Food Preferences
- SPSS: Software Program for Social Sciences
- TV: Television
- TA: Toy advertisement
- TEI: Total Energy Intake
- USA: United States of America
- WHO: World Health Organization

### Note:

1. When in the document we refer to “study” (with no references) we refer to the current study.

## Table of contents

Chapter II .....	1
Literature Review.....	1
Chapter III.....	57
Methodology.....	57
3.1 Overview of the experiment/design. ....	58
3.2 Nature of the study. ....	59
3.2.1 Research Questions.....	59
3.2.2 Research methods and Validation of questionnaire. ....	60
3.3 Population, Research Sample and Data Sources.....	69
3.4 Materials and Tests.....	70
3.5. Data Collection Method-Procedures-Protocols.....	71
3.5.1 Data collection:Protocol 1, Distribution and collection of questionnaires.....	72
3.5.2 Data collection:Protocol 2,Collection and documentation of television advertisements. ....	75
3.5.3 Data collection: Protocol 3, Steps followed for the preparation of the tests. ....	77
3.5.4 Data collection: Protocol 4, Steps followed at the beginning of the test session. ....	80
3.5.5 Data collection: Protocol 5, Steps followed during the test sessions. ....	82
3.6 Validation and Focus group Tests.....	83
3.6.1 Test 1: Product recognition test (Tool 2).....	84
3.6.2 Test 2: Brand logo recall-recognition measurement test (Tool 3).....	86
3.6.3 Test 3: Food preference test (Tool 4) .....	88
3.6.4 Test 4: Food preference using branded and unbranded products test (Tool 5). ....	89
3.6.5 Test 5: Food knowledge (relatively healthy/relatively unhealthy) test (Tool 4). ....	92
3.7 Data Analysis and Synthesis-Statistical Treatment.....	94
3.8 Originality of Research. ....	94
3.9 Limitations of Methodology and Ethical Considerations. ....	95
3.9.1 Limitations of methodology. ....	95
3.9.2 Ethical limitations.....	96
Chapter IV.....	97
Analysis and Research Findings .....	97
4.1 Introduction. ....	100
4.2 Methods of data analysis and tests used.....	101
4.3 Research Findings. ....	101
4.4 Study Part 1: Questionnaire's results. ....	102

4.4.1 Section A: Demographics. ....	102
4.4.1.1 Student's grade.....	102
4.4.1.2 Sample distribution. ....	103
4.4.1.3 Mother's age. ....	104
4.4.1.4 Father's age. ....	104
4.4.1.5 Mother's level of education. ....	105
4.4.1.6 Father's level of education. ....	105
4.4.1.7 Monthly family income.....	106
4.4.1.8 Overweight/Obese mother and/or father.....	107
4.4.1.9 Children's BMI. ....	107
4.4.2 Section B: Parent's /Child perceptions regarding body weight.....	109
4.4.2.1 Child's and parent's perceptions regarding the child's weight.....	109
4.4.2.2 Justification regarding the child's excess weight.....	110
4.4.3 Section C: Child's eating behaviour/habits. ....	111
4.4.3.1 Meals during which television set is on.....	111
4.4.3.2 Number of hours spend watching TV during weekdays and weekends. ....	112
4.4.3.3 What children usually eat for breakfast at home. ....	114
4.4.3.4 What children usually eat at school during break.....	115
4.4.3.5 What children usually drink along with their food. ....	116
4.4.3.6 What children usually eat between meals.....	117
4.4.3.7 As to the statement: "If I let my child unsupervised, he/she will always have food in his/her mouth". ....	118
4.4.3.8 As to the statement: "My child enjoys trying new food items".....	118
4.4.3.9 As to the statement: "If I don't intervene, my child will eat a very large quantity of food".....	118
4.4.3.10 As to the statement "Even when my child feels full, he/she will make "room" for his/her favorite snack/sweet". ....	118
4.4.3.11 The relationship between overweight/obese children and food.....	119
4.4.3.12 To what level parents believe their children ask for advertised food/snacks while watching TV.....	120
4.4.3.13 To what level parents believe their children are influenced by television food advertisements.....	120
4.4.3.14 To what level children sing TV advertisements jingles.....	120
4.4.3.15 To what level parents believe children's attention is distracted because of the features of the advertisements.....	121
4.4.4 Section D: Family eating habits.....	123

4.4.4.1 Frequency of cooking and visiting fast food-type restaurants. ....	123
4.4.5 Section E: Family knowledge/perceptions regarding healthy eating habits.....	125
4.4.5.1 Healthy eating habits knowledge and level of education.....	125
4.4.5.2 What parents believe is the most suitable way to educate children regarding healthy eating habits. ....	127
4.4.5.3 Reasons that usually prevent children to have better eating habits. ....	128
4.4.5.4 How parents assess their family's eating habits. ....	129
4.4.5.5 How satisfactory is the level of information offered by school to children regarding healthy eating habits. ....	129
4.4.5.6 The level of influence parents believe they exert on their children in terms of what their children choose to eat. ....	129
4.4.5.7 To what level parents believe children are "used" by food companies (in food advertisements) as the "means" in order to achieve sales.....	129
4.4.6 Section F: Child's television viewing habits and TV impact. ....	130
4.4.6.1 To what level parents believe children are influenced by the "standards-role models, men/women" promoted through television food advertising.....	130
4.4.6.2 The level to which children understand the difference between advertisements and the rest of the TV program. ....	132
4.4.6.3 The level to which advertisements attract children's attention.....	134
4.4.6.4 The extent to which children watch television depending on their age.....	136
4.4.6.5 The presence of a television set in the children's bedroom. ....	137
4.4.6.6 Advertised product most persistently asked for by children.....	138
4.4.6.7 Television advertisement jingle mostly sang by children.....	140
4.4.6.8 Children's favorite television food advertisement hero.....	141
4.4.7 Section G: Family buying/shopping habits. ....	142
4.4.7.1 To what level family's buying habits are being influenced by TV food advertisements.....	142
4.4.7.2 To what level parents are aware regarding the food item their child asks for at the supermarket is a TV advertised product. ....	142
4.4.7.3 How frequently parents buy food items after their promotion on television..	142
4.4.7.4 To what level children encourage parents to buy an advertised food item for the first time at home during or after the advertisement.....	142
4.4.7.5 To what level children encourage parents to buy an advertised food item for the first time in the supermarket. ....	142
4.4.8 Section H: Child's physical activity. ....	143
4.4.8.1 Frequency of children's engagement in extra curriculum physical activity...	143
4.4.8.2 Most frequent reasons that prevent children to engage in extra curriculum physical activities.....	143



4.5 Study Part 2: Analysis of Television Advertisements. ....	144
4.5.1 Frequency of advertisements per television channel. ....	144
4.5.2 Number of advertisements aired per year trimester. ....	145
4.5.3 Total number of advertisements per year trimester that aired during weekdays and during weekends. ....	146
4.5.4 Frequency of all aired advertisements(Single and Supermarket advertising products). ....	147
4.5.5 Mean duration (seconds) for food product advertisements. ....	149
4.5.6 Frequency of food product advertisements per television channel. ....	150
4.5.7 Television's channel's most promoted food products(Single product advertisements). ....	151
4.5.8 Frequency of advertised food products per day (Single product advertisements)	151
4.5.9 Relationship between TV advertised products and time slots (07.00am-21.30pm). ....	152
4.5.10 Frequency of food advertisements (Single product advertisements). ....	153
4.6 Supermarket Advertisements. ....	155
4.6.1 Frequency of supermarket advertisements per television channel. ....	155
4.6.2 Frequency of Supermarket advertisements air per hour. ....	156
4.6.3 Frequency of Supermarket food product advertisements. ....	157
4.6.4 Advertisements(Single and Supermarket product)throughout the study year. ....	159
4.6.5 Core vs Non-Core Food Products per month in Study Year. ....	159
4.6.6 Study's formed Food Pyramid vs Eat Well Plate Pyramid. ....	160
4.7 Frequency of food advertisements (Single and Supermarket) per month. ....	162
4.7.1 Frequency of all food advertisements (Single & Supermarkets) in January. ....	162
4.7.2 Frequency of all food advertisements (Single & Supermarkets) in February. ....	164
4.7.3 Frequency of all food advertisements (Single and Supermarkets) in March. ....	166
4.7.4 Frequency of all food advertisements (Single and Supermarkets) in April. ....	168
4.7.5 Frequency of all food advertisements (Single and Supermarkets) in May. ....	170
4.7.6 Frequency of all food advertisements (Single and Supermarkets) in June. ....	172
4.7.7 Frequency of all food advertisements (Single and Supermarkets) in July. ....	174
4.7.8 Frequency of all food advertisements (Single and Supermarkets) in August. ....	176
4.7.9 Frequency of all food advertisements (Single and Supermarkets) in September. ....	178
4.7.10 Frequency of all food advertisements (Single and Supermarkets) in October. ....	180
4.7.11 Frequency of all food advertisements (Single and Supermarkets) in November. ....	182
4.7.12 Frequency of all food advertisements (Single and Supermarkets) in December. ....	184

4.8 Frequency of all food advertisements (Single and Supermarkets) per year trimester.	186
4.8.1 Frequency of all food advertisements (Single and Supermarkets) in 1st trimester: January-February-March.....	186
4.8.2 Frequency of all food advertisements (Single and Supermarkets) in 2nd trimester: April-May-June.....	188
4.8.3 Frequency of all food advertisements (Single and Supermarkets) in 3rd trimester: July-August-September.....	190
4.8.4 Frequency of all food advertisements (Single and Supermarkets) in 4th trimester: October-November-December.....	192
4.9 Study Part 3: Focus Group and Results of Test validation. ....	194
4.9.1 Focus group demographics.....	195
4.9.2 Hunger Scale results. ....	196
4.9.2.1 Focus Group Eating Habits- (breakfast habits).....	198
4.9.2.2 Focus Group Eating Habits- (lunch habits). ....	198
4.9.3 Test 1: Brand Logo Recognition Test.....	199
4.9.3.1 First place that children can recall/obtain these tests products. ....	204
4.9.4 Test 2: Brand logo recall- recognition measurement test. ....	205
4.9.4.1 Instant food preference for intake. ....	207
4.9.5 Test 3: Food Preference Test (Relatively Healthy Unbranded vs Relatively Unhealthy Unbranded food products). ....	209
4.9.6 Test 4: Food Preference using Branded and Unbranded food products. ....	212
4.9.7 Test 5: Food Knowledge (healthy/unhealthy) Test. ....	215
4.9.7.1. Children's shopping behavior and purchase requests. ....	217
4.9.7.1.(a) Frequency of Children's' Shopping Requests at "ideal school canteen"..	217
4.9.7.1.(b) Frequency of Shopping intention at the Supermarkets. ....	218
4.9.7.1.(c). Frequency of Food Requests from Parents at the Supermarket .....	220
Chapter V .....	221
Discussion of Research Findings .....	221
5.1 Introduction .....	222
5.2 Discussion of principle findings with regard to the research questions .....	223
5.2.1 Research Question 1: What is the composition of the television food advertising scenery in Cyprus (Study Part 2)? .....	223
5.2.2 Research Question 2: "What are the responses of parents and children (age 6-12) towards television food advertising, children's eating behaviour, television habits and advertised product preferences in Cyprus (Study part 1)"?.....	236

5.2.3 Research Question 3: “What are the responses of children (age 6-12) towards television food advertising regarding brand logo recognition and brand logo recall ability?” .....	249
5.2.4 Research Question 4: “What are the responses-preferences of children (age 6-12) towards Unbranded food products and Branded vs Unbranded products?” .....	260
5.2.5 Research Question 5: “What is the level of food knowledge of children (age 6-12) towards relatively healthy and relatively unhealthy food products?” .....	268
5.3 Children’s Eating Habits, Food Preferences for Intake.....	271
5.4 Policies Regarding Television Food Advertising.....	274
5.5 Strenghts, Limitations of research and further recommendations.....	280
Chapter VI.....	287
Conclusions.....	287
Bibliography .....	290
Appendices.....	301



## List of Tables

Table 1: Factor loading of the statements of the seven factors which were extracted using orthogonal (Varimax) rotation.....	63
Table 2: Means, standard deviations and Cronbach' alpha of the seven factors. ....	68
Table 3: Sample Distribution. ....	69
Table 4: Elementary schools participated in the study.....	71
Table 5: Food and drink products selected for Test 1.....	84
Table 6: Type of each food product for Test 1.....	85
Table 7: Food and drink products selected Test 2.....	86
Table 8: Pairs of food/drink products used in Test 3. ....	88
Table 9: Pairs of branded and unbranded food and drink products used in Test 4. ..	90
Table 10: Pairs of food/drink products used in Test 5. ....	93
Table 11: Frequencies by children's BMI categorization. ....	107
Table 12: Number of hours children spend watching TV during weekdays & weekends. ....	112
Table 13: Breakfast choices according to children's preferences. ....	114
Table 14: To what level parents believe children's attention is distracted because of the features of the advertisements. ....	121
Table 15: Frequency of cooking and visiting fast food-type restaurants. ....	123
Table 16: Two-Way analysis of variance of parent's knowledge about healthy eating habits by their level of education. ....	125
Table 17: One-Way ANOVA of parents' knowledge about healthy eating habits by the mother's educational level.....	126
Table 18: Two-way analysis of variance of the level of influence exerted on children by the "standards-role models" men/women promoted through television food advertising by their gender and age.....	130
Table 19: Two-sample t-test of the level of influence exerted on children by the "role models" of men and women promoted through TV by gender. ....	121
Table 20: Two-way analysis of variance of the level of understanding the difference between advertisements and the rest of the TV program by children's gender & age.	132
Table 21: Two Sample t-test of between the level of understanding the difference of advertisements from the rest children program by gender.....	133
Table 22: Two-way analysis of variance of the level in which advertising attracts children's attention by gender and age. ....	134
Table 23: One-way analysis of variance of the extend in which advertising attracts children's attention on the interaction of gender x age.....	135

Table 24: One-way analysis of variance on the extent to which children spend time watching Kids TV shows depending on their age (1 <sup>st</sup> to 6 <sup>th</sup> Elementary School Grades).....	136
Table 25: Advertised products most persistently asked by children.....	138
Table 26: Television advertisement jingle mostly sang by children.....	140
Table 27: Frequency of advertisements per television channel. ....	144
Table 28: Frequency of all aired advertisements (single and advertising products).....	148
Table 29: Mean duration (seconds) for food product advertisements.....	149
Table 30: Frequency of food product advertisements per television channel.....	150
Table 31: Television's channel's most promoted food products (single product advertisements).....	151
Table 32: Frequency of advertised food products per day (single product advertisements).....	151
Table 33: Relationship between TV single advertised products and time slots (07.00am-21.30pm).....	152
Table 34: Frequency of food advertisements (Single product advertisements). ....	153
Table 35: Frequency of supermarket advertisements per television channel.....	155
Table 36: Frequency of supermarket advertisements air per hour. ....	156
Table 37: Frequency of Supermarket food product advertisements. ....	157
Table 38: Frequency of all food advertisements (Single and Supermarkets) in January. ....	162
Table 39: Frequency of all food advertisements (Single & Supermarkets) in February. ....	164
Table 40: Frequency of all food advertisements (Single and Supermarkets) in March. ....	166
Table 41: Frequency of all food advertisements (Single and Supermarkets) in April. ....	168
Table 42: Frequency of all food advertisements (Single and Supermarkets) in May. ....	170
Table 43: Frequency of all food advertisements (Single and Supermarkets) in June. ....	172
Table 44: Frequency of all food advertisements (Single and Supermarkets) in July. ....	174
Table 45: Frequency of all food advertisements (Single and Supermarkets) in August. ....	176
Table 46: Frequency of all food advertisements (Single & Supermarkets) in September.....	178

Table 47: Frequency of all food advertisements (Single and Supermarkets) in October.....	180
Table 48: Frequency of all food advertisements (Single & Supermarkets)in November.....	182
Table 49: Frequency of all food advertisements (Single & Supermarkets)in December.....	184
Table 50: Frequency of all food advertisements (Single and Supermarkets) in 1 <sup>st</sup> trimester: January-February-March.....	186
Table 51: Frequency of all food advertisements (Single and Supermarkets) in 1 <sup>st</sup> trimester: January-February-March.....	188
Table 52: Frequency of all food advertisements (Single and Supermarkets) in 3 <sup>rd</sup> trimester: July-August-September.....	190
Table 53: Frequency of all food advertisements (Single and Supermarkets) in 4 <sup>th</sup> trimester: October-November-December.....	192
Table 54: Frequencies by BMI Categorization.....	195
Table 55: Time since last meal.....	197
Table 56: Frequency of Brand Logo Recognition.....	199
Table 57: Frequency of Students' Recall of Advertised Food Products.....	205
Table 58: Instant food preference for intake.....	207
Table 59: Frequency of Students' Food Preference Per Pair.....	210
Table 60: Frequency of children's' Product Preference per Pair.....	212
Table 61: Frequency of Students' Preference of Healthy Food per Pair.....	215
Table 62: Frequency of Children's' Shopping Requests at "Ideal school canteen". .....	217
Table 63: Frequency of Shopping intention at the Supermarkets.....	218
Table 64: Frequency of Food Requests from Parents at the Supermarket.....	219

## List of Figures

Figure 1: Hunger scale. ....	80
Figure 2: Student's grade. ....	102
Figure 3: Sample distribution. ....	103
Figure 4: Age range for mothers and fathers. ....	104
Figure 5: Mother's and father's level of education. ....	104
Figure 6: Monthly family income. ....	106
Figure 7: Children's BMI categorization. ....	107
Figure 8: Child's and parent's perceptions regarding the child's weight. ....	109
Figure 9: Justification regarding the child's excess weight. ....	110
Figure 10: Meal(s) during which TV is on. ....	111
Figure 11: Number of hours children spend watching TV during weekdays&weekends. ....	112
Figure 12: What children usually eat at school during break. ....	115
Figure 13: What children usually drink along with their food. ....	116
Figure 14: What children usually eat between meals. ....	117
Figure 15: The relationship between overweight/obese children and food. ....	119
Figure 16: To what level parents believe children's attention is distracted because of the features of the advertisements. ....	121
Figure 17: Frequency of cooking. ....	124
Figure 18: Frequency of visiting fast food-type restaurants in a month. ....	124
Figure 19: The most suitable way to educate children regarding healthy eating habits. ....	127
Figure 20: Reasons that usually prevent children to have better eating habits. ....	128
Figure 21: Advertised product most persistently asked for by children. ....	139
Figure 22: Television advertisement jingle mostly sang by children. ....	140
Figure 23: Children's favorite television food advertisement hero. ....	141
Figure 24: Most frequent reasons that prevent children to exercise. ....	143
Figure 25: Number of advertisements aired per year trimester. ....	145
Figure 26: Total number of advertisements per year trimester that aired during weekdays and during weekends. ....	146
Figure 27: Frequency of food advertisements (Single product advertisements). ....	154
Figure 28: Frequency of supermarket advertisements air per hour. ....	156
Figure 29: Frequency of supermarket food product advertisements. ....	158
Figure 30: Advertisements (single product and supermarket product) throughout the study year. ....	159

Figure 31: Core vs Non-Core Food Products per month in Study Year. ....	159
Figure 32: Study results vs Eat Well Plate recommendations. ....	160
Figure 33: Study results vs Eat Well Plate recommendations. ....	161
Figure 34: Scale showing the extent of the students' hunger.....	196
Figure 35: Frequency of breakfast eating among students.....	198
Figure 36: Where students have lunch. ....	198





## **List of Appendices**

Appendice 1: Cyprus Bioethics Committee Research Approval .....	302
Appendice 2: Ministry of Education Research Approval. ....	304
Appendice 3: Cyprus Radio-Television Authority Agreement for Data Provision	308
Appendice 4: Cyprus Dietetic and Nutrition Association Research Approval .....	309
Appendice 5: General Data Protection Regulation (GDPR) Research Approval ...	310
Appendice 6: Information-Orientation Letter to School Directors. ....	312
Appendice 7: Consent Letter-Information-Orientation Letter for Parents/Guardians .....	314
Appendice 8: Questionnaire. ....	316
Appendice 9: Consent Letter-Information-Orientation Letter for Parents/Guardians for Focus-Test Group. ....	328
Appendice 10: Hunger Scale.....	330
Appendice 11: Test 1: Product Recognition Test-Photos Used .....	331
Appendice 12: Test 2: Brand Logo Recall-Recognition Measurement Test-Photos Used.....	353
Appendice 13: Test 3: Food Preference Test-Photos Used.....	374
Appendice 14: Test 4: Food Preference Using Branded and Unbranded Food Products-Photos Used .....	379
Appendice 15: Test 5: Food Knowledge, Relatively Healthy/Relatively Unhealthy Test-Photos Used.....	375
Appendice 16: PhD Photos .....	384

## **Chapter II**

### **Literature Review**

During the last decades' health organizations mention that rates of obesity in young children have considerably risen in many developed countries leading the world to speak of an "international epidemic of childhood obesity".

Several actions are required to address the problem of increasing levels of overweight and obesity in children. Actions needs to be well planned, targeted on the identified problem and based on a good understanding of that.

This review aims to examine the impact of television food advertising on children's eating behaviour, purchase requests, food preferences and weight status.

Since this review is focusing on the role of television food advertising to children, possible impacts like genetics as well as lifestyle factors were neglected- since they might be responsible for appetite modification, food intake, and food preferences.

Throughout the research main areas were identified as being of academic concern.

These main areas are listed below:

- The content of television food advertising targeting children.
- The impact of television food advertising on children's food preferences, knowledge, behaviour, purchasing requests.
- The impact of television food advertising on children's food intake.
- The impact of television food advertising on children's weight status, BMI.

World Health Organization WHO reports that worldwide obesity has more than doubled since 1980. 41 million children under the age of 5 were overweight and obese in 2014 (these data were updated in 2016).

Evidence like these had prompted enquiries into the possible elements that would possibly made a contribution to these trends.

One of the most identified possible influences was television food advertising to children. What is actually the marker for this complicated set of attitudes and behaviours, is it the presence or is it the absence of television and television food advertisements?

This review attempts to understand the impact, if any, television food advertising plays in children's food preferences, purchase requests, food intake, behaviour, and weight status.

The method used for this research was through the Databases of University of Nicosia Library: Pub Med, EBSCO, Pro Quest.

#### **Content of television food advertising targeting children.**

This review tried to identify and analyse studies that had examined and documented the amount of television food advertising presented and targeted at children and also to identify and categorise the types of foods that were advertised more during children's programming.

Through the research in the above databases many studies were identified but 9 of them were included in this review starting from 1970 until 2016.

The reason that this review included references even from the 80's is that those studies were cornerstone in investigating the impact of television food advertising on children's eating behaviour and weight status, but similar and additional results were found in newer studies that were included as well.

Television food advertising to children as a topic of great interest that was first emerged as an important public policy issue early in the 1970s.

The predominance of soft drinks, sweets, cereals and baked sugary and fatty goods in television food advertising were documented in studies conducted in the 1970s.

Food products like these are typically high in saturated fat, cholesterol, refined and processed sugar and/or salt. Research (Bolton, 1983) reports that the dietary goals proposed by the United States Committee of Nutrition, were not align with the content of advertised foods therefore the consumption of these food products is likely to have negative impact for children's nutritional health being.

Researchers identified that children below the age of 7-8 have limited if even haven't any awareness of the persuasive intent of the advertisements they viewed.

This suggests that this age group of children were susceptible to the influence of marketers' and advertisers' both claims and appeals and this also leads to raising basic questions regarding the fairness of the television advertising to children.

Furthermore, according to child developmental researchers, children below the age of 8 are defined as a population vulnerable to misleading advertising.

Research (Linn, S. E., 2004) reports that most of the times children watch television alone without the presence of an adult to help them process the marketing messages.

Research (Story, French, 2004, Linn, S. E., 2004) reports that the heavy marketing of HFSS food products (high fat, sugar and/or salt) to children can be viewed as exploitative.

Television food advertisements are designed to sell products and young children. As we have seen earlier children below the age of 8 don't yet possess the cognitive ability to understand or even to evaluate either the content, nor the messages of an advertisement.

This cognitive ability to understand and evaluate the advertisements is possessed by children of age group 8-10 but children do not necessarily do so. Children's thinking from early adolescence (11-12 years) becomes more multidimensional involving concrete thought. Adding to these, television food advertising and its promotional techniques have developed and changed through the last decades but to what level these changes in television advertising industry affects children?

Children and youth are considered to be a major market force for marketers, food industry and advertisers. For this reason, children and youth are used as the target of heavy, repeatable and specialized food advertising and marketing efforts.

Children nowadays live in a so-called media-saturated environment. Television is considered to be the largest single source of media messages about food products despite the fact of the growing popularity of internet and computer games.

Research (Folta et al., 2006) reports that when children watch television, this could probably displace less sedentary activities and on the other hand this could even lead to an increase in caloric intake due to the fact that television food advertising encourages the consumption of HFSS food products.

Research (Aktas Arnas 2006,(Buttriss, 2004, Lynch, 2012, Menendez Garcia, Franco Diez, 2009, Potvin Kent, Dubois & Wanless, 2012, Vaughn, 1980) reported that food industry, food advertisers and marketers are interested in children as current and also as future consumers.

Children and youth with their (limited) spending power but with their great purchasing influence also with their role as future adult consumers are considered to be a very valuable target audience for the food and beverage industries. Adding to these, research supports that children's food product consumption trends show a shift over the past few decades towards unhealthy patterns.

A fundamental rising question is why advertising of food products is so critical and why food products are considered to be the most frequently advertised category? Research (Story, French) answers the previous question by explaining that the food advertising market needs to be so big due to the following reasons, more specifically that food products captures a big percentage of consumers spending, furthermore, food products are considered to be a repeatable purchasing procedure, buyers and meaning consumers' views can change quickly and finally food products are the most highly branded items.

In 1992, research (Kunkel, Gantz) analysed the content of the television environment of 604 hours of children's programs in the USA. This analysis showed that the food products that dominated the market were mostly the same as previous studies.

Furthermore, analysis showed that several advertising techniques and promotional channels were used in order to reach children and youth. Marketers use successfully these advertising and marketing techniques and focus on children even when they are toddlers, with main objective to foster brand building and also to influence present or future food product purchasing behaviour.

According to that study researchers grouped the advertisements into 6 different categories: toys, cereal/breakfast foods, sugared snack/drinks, fast foods, healthy food/drinks.

They also assigned one primary theme/appeal to each advertisement in order to describe the marketing technique used. The themes used were "fun/happiness", "taste/flavour/smell", "product performance", "product in social content".

Significant description regarding the product itself was avoided by the food products that used the "fun/happiness" theme, and they only associated a positive affect with the use of the food product.

Appeals like "chocolaty good taste" or "fruity delicious flavour" were included in the "taste/flavour/smell" category.

Food products that used the “product performance theme” focused on the product’s particular features or capabilities like for example a demonstration of how a new product works.

Finally, food products that used the “product-in social-context” theme, they just focused on the social situations that surrounded the food product more than the product itself.

According to the results, the most frequently used appeal was the “taste/flavour/smell” mostly used in cereal/breakfast and in sugared snack/drink advertisements.

Fast-food advertisements used mostly the “fun/happiness” theme suggesting that having good/fun times is more important than great taste when it comes to selling fast food to children.

The most predominant approach to promoting healthy food products was the use of “fun/happiness” theme, also health/nutrition appeals were rarely employed even when they might have been most salient.

Furthermore almost 50% of all the advertisements included at least one disclosure/ disclaimer. Cereal/breakfast advertisements and toy advertisements were the most popular products that included disclosures and the most used disclosures for sugared cereal advertisements were “part of a balanced breakfast”.

Research (Boyland, E. J., Harrold, Kirkham & Halford, 2011) reports that the television advertising of healthier food products like fruits and vegetables remains either rare or non-existent.

The previous results show that the content of television food advertisements runs counter to prevailing health recommendations. The results of the television advertising analysis were mostly the same as another research (Kunkel, Gantz, 1992).

The UK television channels in 2008 promoted mostly energy-dense, HFSS foods. Furthermore, after analysing the 10 most advertised products, six of them were non-core food products (fast food, unhealthy breakfast cereals, chocolate/confectionary, high fat/sugar/salt spreads and snack foods) and only one food product from that list was core food (low fat dairy items).

Research (Reisch, Gwozdz et al.) in 2013 supports that there is a need to create a “junk-free environment” for children.

This emerges since the socialization environment in which children acquire their food knowledge, develop preferences and make food choices, towards a healthier direction, has limited success in an “obesogenic environment”.

Furthermore, the most predominant visual format for advertising to children is animation. Over the last decades the children’s media environment grows more complex and more diverse and there is a developed need to identify the role of the character of the media environment along with other factors that influences the patterns of children’s preferences, purchase requests, food intake, behaviour and weight status.

Research (Harrison, Marske, 2005, Halford, Boyland, Cooper et al., 2008) also analysed a sample of food advertisements viewed by children and resulted that HFSS food products (sweets, candy, soft drinks, fast foods) were advertised most frequently followed distantly by breads and cereals. Adding to these most of the advertisements didn’t feature any health-related messages.

In research (Harrison, Marske, 2005) according to advertising documentation and analysis a 2000-kcal/day diet composed of the most advertised food products would undersupply many nutrients and oversupply others.

Taking into consideration that in the USA the Nutrition Facts label was widespread adopted, the foods that were advertised during children's programming remained unbalanced. That analysis concluded that the most prevalent advertisements aimed at children were nutrient-poor high-sugar foods.

After analysing the results of the previous studies, a question that is developed, is that do these advertisements and to what level influence children's food purchase requests to their parents, and do these advertisements probably influence the children's purchase choices? This is something that this literature review will try to answer later on.

According to the previous research it is thought believed that food marketing is a factor in children's consumption of unhealthy food.

Research (Reisch, Gwozdz et al. 2013) states that *"the impact of TV advertising is influenced by three variables, firstly the children's access to media, secondly their penchants for TV programmes that carry more or less advertising and thirdly their actual exposure. Assuming that exposure to advertising affects children's food knowledge and preferences- and accepting that advertising has the power to shape preferences, food knowledge should be lower and preferences should be unhealthier when exposure is high. Such high exposure has consequences for both diet and weight status"*.

The way that children understand the persuasive intent of advertising depends on their advertising literacy, their depth of knowledge regarding the goals and mechanisms of advertising.

When in research (Reisch et al.) are referring to knowledge they refer to *"children's perceptions, including suspiciousness, of advertisement value that the advertisements hold for children"*.

In 2004, research (Story, French) reports that food marketers develop heavy marketing techniques towards children.

This advertising storm is driven largely by industry's desire to develop, build and establish brand awareness/ recognition, brand preference and brand loyalty. Research suggests that brand preference begins before purchase behaviour does.

Further research was conducted through monitoring television advertisements during children's programming in 13 countries in 1996. Among Australia, Austria, Denmark, Belgium, UK and USA, Greece was included as well. The results indicated that the advertising of HFSS foods to children was considered to be an international issue.

In 2005 research (Lobstein, Dobb) used data from consumer organizations in 13 countries by documenting and analysing television advertisements for approximately 20 hours of children's programming covering children's weekday afternoon and weekend morning children's programmes.

Analysis of these data demonstrated an association between airing of advertisements during children's television programmes and the prevalence of overweight among children. The type

of food advertisements that was mainly HFSS food products appearing to be particularly strongly linked to overweight and obesity, while the advertising of healthier food options like fruits and vegetables appearing to be mildly protective against overweight and obesity.

Research (Linn, Susan, 2006) reported that television food advertising now extends far beyond the traditional 15 or 30 seconds.

Public schools are used as advertising and marketing venues in the USA, and this phenomenon had grown because of the marketer's desire to increase profits, develop and establish product loyalty to children. According to research (Story, French, 2004) 20% of USA high schools offer brand-name fast foods.

Nowadays there are several types of direct advertising in schools. Some examples are the use of branded soft drinks, branded fast food, or snack food corporate logos on either athletic scoreboards, or the sponsorship banners in gyms, branded food advertisements in school newspaper and yearbooks, free textbook covers with branded advertisements, and branded screen-saver advertisements on school computers related to foods and beverages.

Adding to these, the product placement marketing technique is increasing in popularity and considered as a standard marketing channel. When marketers refer to product placement, they refer to products that are inserted into the content of a television program.

This marketing technique makes television sets look more realistic and that brands help define not only characters but settings as well. When marketers achieve to associate the television program with a particular branded product, then the television program itself becomes an advertisement for that product. Supermarket shelves are full of examples like these and also, these are considered to be the links between television programs and food marketers and food industry as well.

Research (Linn, Susan, 2006) reports that product placement was found in children's books, including those for babies for example M&M Brand (chocolate) Counting Book, or Kellogg's (sugared cereal) Froot Loops Colour Fun Book. The marketing technique was specific and these cardboard books' covers looked exactly like the packaging of the corresponding food products.

Another marketing technique used in order to create and maintain a communication with children are branded kid's clubs. Branded kid's clubs are designed in such a way that allow mass marketing on a personalized basis and children as club members may receive apart from membership cards, birthday cards, holiday greetings and newsletters, they can receive coupons and branded items such as posters, screensavers and discounts for items with the club's logo.

An increasingly significant role in the lives of children and teenagers is online media. Food companies use the electronic advertising environment and provide entertaining, animated and interactive areas that are specifically developed around their food products for pre-schoolers and school age children.

Online sites like these include several options for children like games, word-find puzzles, quizzes, desktop wallpapers and screensavers. The important thing is that all these online options feature branded food products usually featured by popular spokes-characters and animated cartoon characters.

Research (Linn, S. E., 2004, Linn, Susan, 2006) characterised “advergaming” as the marketing maelstrom to children. Advergaming is a way that companies use to lure children having products incorporated into computer and video games as a means of advertising.

By incorporating branded products in advergames companies manage to keep children’s attention focused on those products much longer than with a traditional advertisement.

Some advergames provide players with the advantage or reward to purchase specific foods under certain conditions like the advergence of Disney “Virtual Magic Kingdom” rewarded players after they entered secret codes that were found on specially marked packages of Kellogg’s cereal with extra game credits and virtual accessories for their characters.

All the above data suggests that television food advertising is effective since according to research children’s requests for food products and more specifically for branded food products, misperceptions about nutrition and what constitutes a healthy diet, increased food consumption and thus caloric intake have been shown to be linked to television food advertising. As research stated *“one 30second commercial can affect the brand choices of children as young as 2 and repeated exposure has even greater impact.”* (Borzekowski, Robinson, 2001).

Brand licencing is another marketing way of advertising and targeting children. This marketing technique is used when an image or logo is leased for use on products other than the one it was created for.

Furthermore, tie-ins marketing technique are also designed to lure children into selecting foods that are associated with either favourite movie or television characters and they are designed in such a way in order to keep children continually reminded of products.

For example, in Nickelodeon’s (television channel in which most of its programming is aimed at children 2-8 of age) program the famous cartoon character SpongeBob was Kraft’s top selling Macaroni and Cheese in 2002. With the use of tie-ins food companies try to establish a situation where children are exposed to their branded products in as many different places as possible throughout the day or even the week, or almost anywhere they turn in.

Research (Linn, Susan, 2006) reports that since there is a growing concern regarding any associations between childhood obesity and television food marketing, Nickelodeon announced that very appealing cartoon characters like SpongeBob, Dora the Explorer and others would appear on packages of spinach, carrots and other frozen vegetables.

On the other hand, Nickelodeon continued to licence these same characters to products of questionable nutritional value. Research (Linn, Susan) also reports that marketing techniques that target children accompany films designed for a more general audience like for example in Star Wars: Episode III-Revenge of the Sith, which was released in 2005.

More specifically, that episode included 16 food promotions that featured 25 different products. Many of those promotions encouraged young children to consume large portions of specific branded HFSS food products.

More specifically if children wanted to collect the whole series of 72 Star Wars M&M wrappers, they would have to buy 45 pounds of M&M (containing more than 10.000 grams of sugar), and in order to collect the whole series of 31 Star Wars Super D toys they would have to buy more than 5 Burger King children’s meals.



Another example according to research (Linn, Susan, 2006) was that in 2005 according to Business Week, the brand “Coca Cola” paid \$20 million for product placement in American Idol ( one of the most popular music shows for children aged 2-11) which was considered to be a great exposure of children of age 2-11 to product placement.

In 2011, research (Keller, Schulz) examined the type of food advertisements children were exposed to during children’s programming in television channels in Switzerland.

They grouped the food advertisements into categories and the results were represented in a form of a food pyramid. Results of the documentation and advertising analysis of all advertisements showed impressive results like fast food restaurants 24%, candies 13%, sweet beverages 14%, fruits/vegetables 3%.

Another food pyramid was formed that included only the food advertisements that targeted children assuming that the attention of children did caught particularly- if not exclusively-by advertisements targeted to them and the share of the rather unhealthy food categories like fast food restaurants was 47%, candies 24%, sugared cereals 23%, fruits/vegetables 1%.

The food pyramid that included all the advertised food products targeting children was changed radically. According to the above results the food pyramid was presented with completely inversed layers with respect to the recommended food pyramid, fast food restaurants, sweets and sugary cereal compromised more than 90% of all of the broadcast advertisements that targeted children.

Researchers supports that this new form of inverted food pyramid that was developed during the advertising breaks was an association between the role of television food advertising and its impact on childhood obesity.

Research from 2013 (Powell, L. M., Schermbeck & Chaloupka) comes to an agreement with all the previous analyses, that children in USA are exposed to a significant amount of food/beverages advertising from general-audience programming.

Furthermore, analysis of children’s programming food advertising exposure revealed even poorer nutritional content. This level of exposure to advertising for HFSS food products was shown to be consistently higher across every food and beverage product category from children versus general-audience programming.

When the nutrition recommendations were applied to evaluate the exposure during children’s programming, that revealed poorer nutritional content on child-related advertisements seen by 2-5 and 6-11 years of age.

In 2006 a content analysis of television food advertising targeting school-age children (Folta, Goldberg et al.) was conducted. Purpose of that study was to determine whether physical activity and athletic ability were associated with the product more often in food advertisements than in those for toys and games.

In order for the researchers to explore those claims, they compared the frequency of moderate to vigorous physical activity presented in food advertisements with in toy/game advertisements.

This research documented and analysed 31 hours of children’s programming. For that study, researchers defined physical activity as an activity executed by a child or childlike character

that would raise his or her heart rate like for example running, jumping or playing a sport. If by consuming or using a particular product that resulted to improve the physical activity, then the product was considered to be associated with increased athletic ability. Explicit or implicit associations were coded and evaluated as persuasive techniques. Explicit association was considered an association if it was stated explicitly (“if you eat this, you will be stronger”), or if the character was using or consuming the product directly and resulted in the characteristics (the child consumes the cereal and immediately is able to perform an athletic feat that he or she could not do immediately before). On the other hand, implicit association was considered an association if words, images or actions implied the association, but it was not stated explicitly or shown.

Results of the analysis showed that physical activity was part and presented more often in food advertisements in relation to toy/game advertisements. Results showed that 48.6% of food advertisements included some type of physical activity by a child-like animated character that would raise his or her heart rate, whereas only 20.6% of the toy/game advertisements presented this type of physical activity.

Furthermore, the food product was associated with increased athletic ability in 35.1% of the food advertisements and in only in 12.7% in toy/game advertisements and that was also a significant difference.

The food products that were advertised were most of the times associated with feelings of happiness, having fun and good times, great taste, being hip or cool. Many food products were associated with toys being given away with, while others were associated with athletic ability. Innovation or newness, friendship or social success, magical or superhuman abilities and deceiving or tricking adults were other associations identified.

On the other hand, it was less often documented for food products to be associated with convenience, deceiving or tricking older kids or siblings, turning a bad situation into a good one, fun or interesting packaging and especially nutrition or healthfulness.

The previous study's results confirmed that television food advertising link their products with physical activity. The optimistic view was that these portrayals of physical activity could encourage children to become more active and at the opposite, marketers and advertisers could be using them to divert the emphasis on food as a contributor to obesity.

Results of the previous studies show that children in USA and in Europe as well, are exposed to substantial amount of television food advertising especially for food products of questionable nutritional value like candy, sweets, soft drinks and convenience/ fast foods, products with high fat and/or high sugar. Results like these raise the question whether this substantial amount of advertising is affecting the children's food preferences.

During research a respectable amount of evidence was found supporting that children do enjoy watching television especially children's programs and that they also enjoy watching television advertisements.

## The impact of television food advertising on children's food preferences, knowledge, behaviour, purchasing requests.

On the other hand, it is a complex issue to understand and evaluate how much is the effect of television food advertising on children's food preferences.

This review searched for studies that had examined any possible effects of television food advertising to children's food preferences and weight status. The research through the databases identified many studies for this field but only 64 were included in this review from 1978 until 2012.

According to research (Birch, 1999) the term "preferences" refers to "*the factors that shape the development of human's food selection of one item over others*". In general usage, when someone likes something this works as the basis for the selection-preference procedure although liking is only one of a number of motives that affect food selection.

Experience with food and eating is the key to learn what to prefer. On the other hand, research supports that food preferences are unlearned, innate reflections of the body's need for nutrients.

What emphasizes the source of pleasure that eating provides is determined by food selection, food preferences and taste supreme.

Furthermore, taste refers only to those sensations arising from the taste system, which includes basic tastes of sweet, salt, sour and bitter, although genetic differences contribute to a variability in human reactions in regards to bitter and sour substances.

The preference of sweet and salty and the rejection of sour and bitter are genetic predispositions altered via experience with food and eating.

Taking into consideration that food suggests a more complex system that, in addition to taste, it stimulates the olfactory, tactile, and visual sensory systems. Most of what we refer to as the "taste" of food is really flavour, a combination of taste and smell, as well as mouth-feel and other texture cues.

Researchers (Birch, 1999, Dovey et al., 2011) stated that the developmental systems perspective implies that environmental factors work together with genetic predispositions to produce food preferences.

The genetic predispositions that initially constrain food preferences include the predisposition to prefer foods that are sweet and salty and to reject those that are sour and bitter. Another predisposition is to reject novel food (food neophobia) and to learn preferences for the more familiar and finally the predisposition to learn preferences by associating foods with contexts and consequences of eating them.

According to Birch, food neophobia, meaning "fear of the new", serves a protective function. Since nourishment by milk exclusively during early infancy is the only choice, food preferences are not an issue at that point.

After the early infancy period and during the solid food introduction food preferences begin to influence food intake. It has been noted that the neophobic response can be reduced by repeated opportunities (between 5-10) to consume new foods.

During development there is a curvilinear relationship between age and the neophobic response, minimal in infancy, increases through early childhood and declines from early childhood to adulthood.

An important factor in shaping children's preferences and intake patterns is the parent-child interactions in the feeding context. Enhanced preference for specific foods usually results when children are given foods as rewards usually for any approval behaviour.

On the other hand, when children are rewarded for eating, (if you eat your vegetables, then you can watch TV), the foods eaten to obtain rewards become less preferred. Practices like these have shown that can induce children to eat more vegetables only for a small period of time.

The parenting key to foster good food preferences is moderation and variety when it comes to children's food intake. Labelling foods as "good" or "bad" with total restriction from the children's diet, it actually transforms all the restricted foods to more attractive choices for selection and preference than all the unrestricted foods.

Research (Aktas Arnas, 2006) supported that eating habits have a major impact on human's health. A nutrition that is rich in fats and more specifically in saturated fats, nutrition that is low in fruits and vegetables consumption is linked to several health problems like increased risks of coronary heart disease, certain cancers, diabetes, hypertension and obesity.

Television food advertising contributed to shift consumption trends towards more unhealthy patterns. By consuming these types of food products most advertised on television which contain excessive amounts of sugar, fat and salt seems to have an adverse effect on dietary quality in several ways that could increase the risk of obesity and unhealthy weight levels among children.

The largest source of media messages about food to children is television and there is great interest how these messages form children's food preferences.

Research (Dixon et al., 2007) also supported that television advertising exposure had an adverse effect on children's dietary behaviour since eating behaviour during or immediately after food advertising messages may influence daily energy intake, food selection and preferences.

Since children are a major market force, food and beverage industry target them intensively and they are under specialized food marketing and advertising efforts.

In 1978, research (Goldberg, Gorn & Gibson) attempted to evaluate the exposure to advertising of highly sugared snacks and cereals and children's preferences towards foods like these.

Research (Gorn, Goldberg) exposed 151 children (ages 8-10 years old) to several numbers of a branded ice-cream (not yet been launched in the market) advertisements, (Condition 1: one advertisement inserted in the middle of the program, Condition 2: three same advertisements of the branded ice cream inserted toward the beginning/middle/end of the program, Condition 3: three same advertisements repeated three times, Condition 4: five same exposures, Condition 5: five different exposures, Condition 6: a control group viewed only the program without advertisements).

Results showed that although recall of the brand name was achieved with a minimum number of exposures to the advertisement, the altering of preferences towards either the brand or specific flavour required additional exposures.

Research (Gorn, Goldberg) in 1982 also evaluated the exposure of 72 children in television advertising using 4 conditions (Condition 1: children watched a television program with candy advertisements, Condition 2: television program with no advertisements, Condition 3: television program with fruit advertisements, Condition 4: television program with public service announcements). That was a 14-day session.

Children viewed a different 30minute show on each of the 14 days of the study. That study suggests according to the results that children's beverage and snack food choices were significantly affected by exposure to different television food messages.

The condition that included no advertisements was as effective as the fruit advertisements or public service announcements (PSA)'s in encouraging the children to select fruit. A single advertisement exposure can make a product salient in the minds of children for a half-hour and needs no repetition. Also, across the 14-days period of the study, that daily exposure was probably useful in maintaining the product's salience.

Research (Gorn, Goldberg, 1982) supports that an occasional PSA or fruit advertisements aired against a plethora of heavily sugary, candy messages is not likely to change children's snack preferences and behaviour.

Research (Bolton, 1983) suggests that if television food advertising plays a role in the development of children's food preferences, then it is possible that the composition of their diets may also be differentiated, which will affect children's nutritional status in the long run and probably their physical development.

The following study attempted to evaluate to what level this cause-effect relationship that was identified with one food advertisement would show itself across a broader range of foods and food messages.

Researchers (Goldberg, Gorn & Gibson, 1978) predicted that if children were exposed to messages for more healthy options like wholesome or less sugared snack and breakfast foods, these messages could become more familiar and salient, which will drive children to prefer more types of foods like these.

Researchers (Goldberg, Gorn & Gibson, 1978) included in their study 80 children (6 years old) (divided randomly into 5 Condition groups). The reason behind the selection of the particular age group is that food habits at that age are still developing.

Several types of sugared snacks and breakfast food advertisements were included in that test. The study presented the food products in such a realistic way, with emphasis on characters/models exuding energy, settings that are physically and/or socially appealing, and fast action, rapid cuts, up-beat music.

Main objective for researchers was to evaluate if and how much the following types of exposure (Condition1: 9, 30sec advertisements inserted into a neutral animated 24minute cartoon program, 4.5 minutes of exposure) would increase the preference for these products.

Each of the commercials was shown once during the first half of the program and repeated once in the second half of the program and the reason behind that was to evaluate the effect of repetition (Condition 2: 9 minutes of exposure). (Goldberg, Gorn & Gibson, 1978)

The repetition condition was added to the study to test the scenario if with increased exposure, preferences for advertised products might be more likely to generalize to non-advertised sugared snacks and cereals (generalization of preferences).

In Condition 3 a pro-nutrition service announcements (PSA's) for more wholesome snack and breakfast foods (8, 30seconds PSA's for fruits, vegetables and breakfast foods, milk, eggs were inserted in the same cartoon as in condition 1 and 2, total 4.5 minutes of exposure) was presented. Researchers (Goldberg, Gorn & Gibson, 1978) hypothesised that increased preferences for the healthier options like fruits, vegetables, milk, eggs etc. would follow exposure to PSA's that featured foods.

In Condition:4 they repeated the PSA's (9 minutes of exposure like in condition 2). The reason behind this repetition is in one hand the children's exposure to sugared snack and breakfast food commercials, on the other hand the relative absence on television of comparable exposure to advertisements for healthier options like wholesome, less sugared snack and breakfast foods, it was considered likely that increasing the exposure to these PSA's would increase their effectiveness.

It was hypothesised that this group Condition:5 (control group-not exposed to any program) would prefer sugared snack and breakfast foods less than those exposed to commercials for those products- Conditions 1 and 2, but more than those exposed to PSA's for fruits, vegetables, milk, eggs etc. (Conditions 3 and 4).

After analysis, results suggested that children's short-term snack and breakfast preferences tend to reflect their exposure experience. When children viewed advertisements for highly sugared foods, they showed preferences for more of these and where they viewed pro-nutrition PSA's they showed preference for snack and breakfast foods considered higher in nutritional value.

The exposure to either HFSS food advertisements or PSA's can shape children's preferences and this is based on the "mere exposure model" of preference formation.

Mere exposure according to Albert Harrison (1977) is "*a frequent exposure to a stimulus (including a product), by making the stimulus more familiar, can lead to increased liking for it*".

The influence process involves the mere exposure model as well, that drive children to prefer more sugared snacks and cereals since children are the audience that are given a volume of advertisements for HFSS food products taking also into consideration the relative absence of advertisements for healthier options.

The control group was much more naïve with regard to the products advertised that's why there was a significant difference between those exposed to the HFSS food advertisements.

The duration of 4.5 minutes had almost identical results as the 9 minute duration of PSA's and the duration of 4.5 minute or 9 minute of commercials suggest that it may be more realistic and meaningful to test for frequency of exposure over a more extended period of time, meaning

that frequency of the commercials might have more impact on children's preferences over duration of the commercials.

Harrison also noted in 1977 that by lengthening the interval between exposures that resulted in increasing the likelihood of repetition effects because the exposures were presented at a time when the effects of the initial exposures were decayed.

According to research's results there were no differences found in short-term preferences as a result of repetition during the 30minute period, but a more continued exposure over an extended period of time is more possible to facilitate changes in preferences and behaviour.

Another important issue is the generalization of preferences, since it was earlier hypothesised that the repetition of advertisements for HFSS food products was possible to increase the preference of non-advertised HFSS food products. Analysis showed that by increasing the amount of exposure to HFSS food products did not increase the number of non-advertised HFSS food that were selected although this field needs further investigation.

A second study was conducted under the same umbrella in order to evaluate how effective are some audio-visual techniques used in children's television program in an effort to shape children's snack and breakfast food preferences.

Jenkins stated in 1975 that even when concepts like balanced nutrition and other basic nutritional information are learned, they sometimes appear insufficient to significantly influence children's behaviour and food preferences. That part of the study used a very popular 24 minutes television children's program called "Fat Albert" starring Bill Cosby.

Animations, tone, feelings and comedy were all incorporated in order to create a positive context that not only motivated children to attend but also to process issues that were developed around healthy nutrition habits. One of the episodes was called "Junk Food" and the story around that was to evaluate its capacity to influence children's snack and breakfast food preferences.

Groups were formed as follow, Condition:1 food program, Condition:2 was food program plus PSA's. Condition 2 was hypothesized to be more effective than the "Junk Food" program alone (Condition:1) in influencing children's snack and breakfast food preferences. Condition:3 was Condition:1 plus advertisements in order for this condition to mirror the reality.

Results showed that the "Fat Albert" program was successful in changing children's short-term food preferences even in the face of typical commercials for HFSS food products.

Results like these imply that a well-designed program-length television material can be more effective in influencing children's eating habits than just the advertisements they normally view.

The use of animation and comedy was probably the success factor of the program. These factors were able to hold the children's attention and entertain them at the same time, while dealing effectively with a meaningful theme like nutrition and balance diet.

As far as the PSA's approach is concern researchers (Goldberg, Gorn & Gibson, 1978) suggest that "gentle reminders" in the form of advertisements using children enjoying wholesome foods and saying so, can also be effective.

The “Fat Albert” approach suggests that focusing on the consequences of eating unhealthy-low in nutritional value foods (like too much sweets and junk food can lead to unwanted visits to the dentist) was most effective in motivating the children to use the healthy-unhealthy dimension in making their choices.

Apart from this, another important dimension in children’s choices are also affected by brand preferences. Researchers (Story, French, 2004) support that the children’s positive experiences with a specific brand and having one or even both parents liking that brand are two major factors that drive brand preferences in children.

Numerous studies as we have seen earlier have shown that the most heavily advertised food products to children are predominantly high in sugar and fat. These types of the most advertised food products are the complete opposite of any eating recommendations for children.

As we saw earlier children that were exposed to food advertising preferred and choose advertised food products more frequently than those not exposed to such advertisement.

According to researchers (Kopelman, Roberts & Adab, 2007) 7 out of 10 advertisements on children’s weekday television were for food products and it has been well documented that children are both receptive and responsive to advertising messages.

Experimental findings suggest that exposure to television food advertising has a direct impact on children’s food preferences and eating behaviour and is a recognised link between television viewing, good nutrition habits and healthy weight status.

Researchers (Kopelman, Roberts & Adab, 2007) evaluated 476 children of age 9-11. The reason behind the age inclusion criteria was that it has been found that children start to develop self-care activities including food preferences and food choices between the ages of 3 and 8 and that these self-care activities are stable by the ages 9-11.

In that cross-sectional questionnaire-based survey they evaluated children’s brand logo recognition ability.

The food product logos inserted in the survey had been chosen based on a review of commonly advertised food products in children’s and family television viewing times. Some of the logos were “Mc Donald’s”, “Pizza Hut”, “KFC”, “Kellogg’s”, “Kinder” etc.

Adding to these, a questionnaire was used to collect information related to children’s eating behaviours.

Other part of the test used 10 matched pairs of food products, one being healthy and the other unhealthy like “Orange juice” versus “Orange squash”, or “Bran flakes” versus “Frosties” (sugary breakfast cereal), or “Jacket potato” versus “French fries”.

Children were asked to select for each pair which food product they believed to be the healthiest and also the food product they would prefer for consumption the most.

According to the results boys had a poorer knowledge than girls of what foods were healthy, and although children in overall demonstrated a good food knowledge regarding which foods were “healthy” or “unhealthy” they showed a specific preference for the less healthy options out of the food pairs. Also, children demonstrated a high brand logo recognition ability with



88% recognising at least 16 out of the 20-brand logos in the test and only 2.3% recognising less than 5.

According to the analysis greater recognition rates of the brand logos were significantly associated with high snacking of HFSS food products and a better food knowledge in terms of what foods were considered to be “healthy” or “unhealthy”.

This brand logo recognition ability demonstrated that children of age 9-11 were aware of food promotion by the food industry, advertisers and marketers.

The higher brand logo recognition ability among girls in comparison to boys are believed to be a reflection of young girls overall better ability and greater awareness and several researchers have to further investigate if boys and girls are differently affected by food marketing.

Apart from the higher brand logo recognition ability among girls, research (Pine, Nash, 2003, Kopelman, Roberts & Adab, 2007) identified that girls also expressed greater preferences for heavily advertised, branded products than boys, however this outcome does not conclusively demonstrates that girls were more persuaded by the advertising than boys.

These results do confirm that the most popular brands advertised do reflect the dietary pattern associated with increased risk of obesity in children and also the food products most advertised are not align with healthy authority recommendations.

According to National Health & Medical Research Council, *“children and adolescents should be encouraged to enjoy a wide variety of foods and limit consumption of foods containing high amounts of fat and sugar, collectively referred to as “junk” or unhealthy foods”*.

Research (Dixon et al., 2007) reported that “anti-junk food” advertisements that directly challenge the messages of junk food advertisements should be applied, or even broadcast a greater number of healthy foods advertisements in relation to junk food advertisements than currently occurs.

In this study 919 children (age 10-11) participated. Purpose of the study was to enhance the evidence base concerning the persuasive impact of television food advertising on children’s food related attitudes.

Children rated 3 “Healthy foods” (fruit, vegetables, dairy foods) and 3 “Junk foods” (chocolate, fizzy drinks, fast food) using a Likert scale (pre- and post-test) on a series of pairs of objectives (boring-fun, yucky-yummy, unfamiliar-familiar). These items were combined to form a valid attitude scale for each food.

Children rated 4 “Junk foods” and 6 “Healthy foods” in terms of how much they like each food (liking factor), how healthy they think it is to eat each food and how much of each food they eat now (healthiness factor).

They also reported the frequency of the consumption of these foods in a week and they also reported how many hours of television they usually watch on weekdays and on weekends respectively.

These were used to examine associations between children’s exposure to television advertising and food-related beliefs, attitudes and behaviour.

The results support that exposure to television food advertising promotes beliefs and attitudes supportive of those most heavily represented in food advertising on children's television.

The previous study was followed by an experiment and included 4 conditions: Condition:1 junk food advertisement only, Condition:2 junk foods and healthy foods advertisements, Condition:3 healthy food advertisements, Condition:4 zero food advertisements (control group).

A 30minute episode of the famous children's cartoon "The Simpsons" was used with 4 clusters of 5 advertisements (total 20 advertisements) embedded. Within each condition all ads were shown twice.

Results of that experiment supported the hypothesis that children's exposure to television advertising was positively correlated with junk food attitudes and beliefs and reported junk food consumption.

Television exposure was associated with more positive attitudes towards junk food. These findings were consistent with the hypothesis that children that are heavier television viewers are more inclined to hold beliefs and attitudes that reflect television's repeated advertising messages, like perceiving fast food to be healthy food choice and other misperceptions regarding nutrition.

Other outcomes showed that when children were exposed to healthy foods advertisements would show more favourable attitudes and intentions toward healthy foods and higher nutrition knowledge than children who were not exposed to healthy food advertisements.

Furthermore, there was no support for hypothesis that exposure to junk food advertisements would promote more positive attitudes and intentions toward unhealthy foods in general than exposure to a combination of junk food and healthy food advertisements.

This result suggests that by broadcasting healthy food advertisements along with junk food advertisements, this did not lead to a demonstrable reduction in the impact of the junk food advertisements.

There was little support for hypothesis that exposure to healthy food ads would promote more positive attitudes and intentions toward healthy foods and higher nutrition knowledge than exposure to a combination of healthy food and junk food ads.

Furthermore, results showed that there were no significant changes in attitudes toward vegetables for children who viewed only healthy food advertisements.

This outcome suggests that the combination of junk (unhealthy) and healthy food advertisements had a negative impact on attitudes towards vegetables (healthy options), whereas by viewing healthy food advertisements or junk food advertisements had no impact.

Also, these findings support the proposition that increasing the amount of healthy food advertisements on children's television may serve to promote the appeal of these foods to children.

The presence of unhealthy food products like junk food alongside healthy food product advertisements did not weaken the healthy food products advertisements' impact and when

airing healthy food advertisements alongside junk food advertisements did not reduce the effect of the junk food advertisements in promoting unhealthy food options.

Adding to these, when healthy food advertisements were aired along with junk food advertisements, children showed more negative attitudes toward vegetables, etc (healthy options), whereas no such change was evident when the same number of healthy foods was aired without accompanying with junk food advertisements.

Results like these suggest that increasing airing of healthy food advertisements on children's television would be an improvement on the current situation where such advertisements are rarely or even under-represented.

Finally, the positive association that was observed between television exposure and children's reported junk food consumption is consistent with the evidence base that suggests that television has an adverse effect on children's dietary behaviour.

The previous outcome agrees with research (Borzekowski, Robinson, 2001) that larger "doses" of exposure to food advertisements have a stronger effect on children.

Finally, the results indicated that children already knew that healthy food options were a better and healthier choice for them rather than junk food, but still they showed less favourable attitudes towards healthy foods rather than junk foods.

In conclusion research (Dixon et al., 2007) supported that one of the factors in our obesogenic environment that children live in is television food advertising and public health intervention emerges.

According to research (Dixon et al., 2007) *"changing the food advertising environment on children's TV to one where nutritious foods are effectively promoted and junk foods are relatively unrepresented would help to normalize and reinforce healthy eating and could empower those with poor diets to recognize their eating behaviour as unhealthy and seek to change it"*.

In 2008 research (Halford, Boyland, Cooper et al.) evaluated the effects of exposure to food and non-food advertisements on children's preferences for branded and non-branded foods on 44 children (age 11-13). A control group (toy advertisements TA) was used and the other one was the experimental group (food advertising FA).

On both tests children were shown a video consisted of a series of 10 television advertisements each 30seconds length for a total advertisement exposure time of approximately 5 minutes cartoon (an episode of the famous children's cartoon "Scooby Doo"), but in the control condition the advertisements presented were for toys, and in the experimental condition the advertisements were for branded food items like "Burger King" restaurant, "Kellogg's Coco pops", "McDonald's", "Nestle Cheerio's", "Nestle Milky Bar".

Advertisements were recorded from both children's and family programming. In both conditions, following viewing of the video, the children were given 4 tests to complete: 2 food preference tests, a food choice test and an advertising recall test.

Children were asked to complete a series of checklists. First was the Leeds Food Preference Measure (LFPM) which was a checklist of 32 unbranded food items by marking the item if they would like to eat it at that particular moment.

This list consisted of 8 high fat items (large chocolate bar, cream-filled chocolate éclair), 8 high CHO items (crusty white or brown bread roll, medium-sized bowl or fried rice), 8 high protein items (roast chicken breast, grilled lean lamb cutlet) and 8 low energy density items (small green salad, two sticks of celery). The maximum score could be 32.

Secondly, children were also asked to complete the Adapted Food Preference Measure (AFPM) which was a similar checklist, requiring the children to mark an item if they would like to eat it at that moment.

The difference between the LFPM is that the food items featured were specific brands. This checklist AFPM contained only 16 items because high protein and low energy density foods do not tend to be branded. So, the AFPM list contained 8 high fat (portion of McDonald's fried nuggets, slice of Cadbury fudge cake) and 8 high CHO (2 pieces of Warburton's bread, medium-sized dish of Heinz spaghetti). The maximum score could be 16.

Thirdly, children were also asked to complete the Leeds Forced-Choice Test (LFCT) which was a photographic food choice measure. This test consisted of 30 fixed pairs of photographs, with each photograph representing a single unbranded food item. In this test children were instructed to choose which of the 2 foods presented they would most like to eat (A or B).

Four categories of food were presented: high fat sweet HFSW (jam doughnut), high fat savoury HFSAV (portion of cheese), low fat sweet LFSW (portion of marshmallows), and low-fat savoury LFSAV (portion of boiled potatoes).

According to the results OW/OB (overweight/obese) children showed different preferences related to branded and unbranded food products compared to NW (normal weight) children.

In the control group (TA), NW children showed a preference for unbranded over branded CHO (an effect not seen in the OW/OB children), and also OW/OB children showed a greater preference for branded high fat items over unbranded high fat items.

Overall, the OW/OB children selected significantly more total branded items than NW children in the control (TA) group.

As it was shown in the previous study as well, brand awareness and exposure in children influences product choice.

That was the first study that demonstrated that obese and overweight children's food preferences were different than normal weight children's in the number of branded over unbranded food items requested.

Another important finding was that the amount of television viewed was correlated with both the consumption of advertised foods and children's attempts to influence food preferences.

The changes in preferences that were observed in the group as a whole were explained by increases in food item selection in the NW children.

The number of branded CHO, branded high fat, total branded, total unbranded and the total number of food items selected by the NW children increased after the food advertisements compared with the control (TA) condition.

This outcome leads to the conclusion that when children are exposed to television food advertisements, this condition may temporarily produce an “obesogenic” food preference response in NW children, although it is not known how long this behavioural modification lasts.

Furthermore, results showed that OW/OB children did not recall more food advertisements than NW children.

A relationship was found between the number of food advertisements recalled and the number of food items selected after FA exposure, in line with predictions and this association was apparent in the group as a whole, and specifically in the OW/OB children.

Similar results were shown in another research (Borzekowski, Robinson, 2001) where children who were exposed to television food advertisements preferred the advertising products significantly more often than the children who did not view the advertisements.

Finally, the previous results suggest that television food advertisements can have a negative impact on children’s nutrition habits and food intake. Television food advertisements do not only work only on brand choice, television food advertising has also an impact on food choice in general.

Dr Hastings stated in 2003 that food marketing *“can have and is having an effect on children, particularly in the areas of food preferences, purchase behaviour and consumption. It is also clear that these effects are significant, independent of other influences and operate at both brand and category level”*.

Research (Anschutz, Engels et al. 2009) suggests that young children are especially vulnerable and under the influence of the media and especially by television food advertising messages. According to Anschutz *“children learn through observing others and by imitating the behaviour of an appealing model when they expect a positive outcome from the behaviour. Thus, children might learn to associate the food portrayed in the commercials with positive, likeable features and adopt the behaviour they see in commercials”*.

Research (Chernin, 2008) suggests that younger children are more vulnerable to food marketer’s messages than older children because young children do not possess yet the capability to process, evaluate and understand the persuasive nature of advertising.

This study involved 133 children (5-10 years old). According to the Institute of Medicine, advertisements form children’s food preferences and short-term eating habits and increase the number of purchase requests directly to parents.

Research (Kopelman, Roberts & Adab, 2007) reported that children start to develop self-care activities like food preferences and food choices between the ages of 3 and 8 and these preferences are more stable by ages 9-11.

Research (Story, French) in 2004 reported that ages from 8-10 do possess the cognitive ability to process and evaluate advertisements but do not necessarily do so.

Children’s thinking from early adolescence (11-12 years) becomes more multidimensional and have more concrete thought. Knowledge of persuasive intent of television food advertising tends to increase with age.

Age is frequently used as a moderator, and it is often assumed that younger children are more vulnerable to advertising than older children.

According to research (Jeffrey, McLellarn & Fox) in 1982 a significant relation was identified between gender and the control group (4-5 year children watching television embedded with television food advertisements low in nutritional value, food products high in nutritional value or toys-control condition, and then children were invited to eat as much as they wanted of 12 foods than had been featured in the low and high nutrition commercials).

Results showed that boys that were exposed to the low-nutrition advertisements consumed more low-nutrition food and more food overall than girls who had seen low nutrition advertisements.

Even though that study revealed gender associations, we can still say that there is minimal evidence that gender moderates the effects of television food marketing.

Research (Chernin, 2008) examined the influence of 2 advertisements a breakfast cereal originally marketed to children but it was unknown to children involved in the study (133 children 5-11 years old) and the other food product was an orange-flavoured, powder drink also unknown to children involved in the study.

Researchers developed two groups, each group view one of the 2 advertisements. 15 days later participants watched a 15minute cartoon. The cartoon was embedded with one of the two experimental advertisements, in addition to the advertisements that originally aired during the episode.

The experimental advertisement the child was assigned to, was seen twice, once during the first break and once during the second advertisements break.

Two product preference measures were created, one for each of the advertised products. All participants completed both tests, one associated with the product they seen in the experimental advertisement, the other associated with the product they had not seen advertised.

The effect of the exposure to advertisements was positive on product preferences. Exposure to the advertisements was positively and significantly associated with preference for the advertised product.

The main effect of age was not statistically significant. On the other hand, gender was not correlated with preference. Another result indicates that younger and older children were equally convinced by the advertisements. As far as the gender is concerned results showed that boys were more influenced by the advertisements than girls.

That study's results go along with all the previous studies that support that advertisements significantly increase children's preferences for advertised products.

Results showed that age did not moderate the effects of advertising exposure on product preferences while it is often argued that younger children are more perusable than older children.

This suggests that knowledge of persuasive intent of advertisements did not influence children's responses to them.

Research (Halford, Boyland, Hughes et al., 2008) also investigated the effect of television food advertising on children's food intake.

(Crespo et al., 2001, Cox et al., 2012, Fuller-Tyszkiewicz et al., 2012, Janz et al., 2002, Hancox, Poulton, 2006, Lowry et al., 2002, Taras et al., 1989, Matheson et al., 2004) Research showed a strong association between the duration of daily television viewing and children's weight status and also demonstrated that television viewing was also associated with specific differences in food intake, and also with reduced consumption of fruits and vegetables. Furthermore, research (Brody et al., 1981) presented results showing that food advertising can change children's preferences for specific brands.

Research (Halford et al., 2007) showed that there was an association between recognition of food advertisements and BMI.

This study (Halford, Boyland, Hughes et al., 2008) enrolled 59 children (9-11 years old). The study used 3 videos that included 10 non-food related advertisements, 10 food-related advertisements, and a cartoon.

According to researchers, children were instructed to select and eat from an assortment of the following food products, "Snack-a-jacks", "Haribo jelly sweets", "Cadbury's chocolate buttons", "Walker's potato crisps", and "Fruit".

The food products were each and every one selected in order to represent a specific food category: low-fat savoury, low-fat sweet, high-fat sweet, high-fat savoury, low-energy density. There was also a control (toy advert) and experimental group (food advert). Each child underwent both conditions.

According to the results, across the group as a whole, total energy intake was significantly higher after exposure to food advertisements than after the exposure to the control (toy) advertisements.

After children were exposed to the food advertisement's condition, OB children consumed more food than the NW and OW children. This result suggests that there was an underlying difference in the impact food advertisements had on children of different weight-status. In general, there was a significant positive correlation between BMI score and energy intake after exposure to food adverts.

A general conclusion resulting from this study is that television food advertising exposure increased the intake of all food items in the group as a whole.

More specifically, children in the control group consumed significantly more energy from jelly sweets and chocolate than from chips, significantly more energy from chips than from fruit (grapes) and significantly more energy from fruits than from snack-a-jacks.

In response to the food advertisements, the obese children increased their intake by (471kcal) from the control condition compared to (306kcal) in the overweight and (250kcal) in the normal-weight children.

The increase in intake in the overweight group was primarily driven by the increase in the intake of jelly sweets and chocolate.

The increase in intake in the obese children was primarily driven by an increase in chocolate consumption. This suggests that it is the effect of food advertisements exposure on the intake of sweet, energy-dense foods which differentiates the weight status groups.

In the food advertisements condition, total energy intake of all the high-energy-density foods (jelly sweets, chocolate, crisps) were significantly and positively correlated with the children's standardised BMI scores.

The advertising exposure generated different changes in intake of all of the differing food items that were available to children. The most significant effect was for the three most energy-dense foods (high in fat and or/sugar), on the other hand the intake of the low-fat savoury food item was very low.

Furthermore, according to researchers (Halford, Boyland, Hughes et al., 2008) *“there are probably two interrelated factors mediating the effects of TV viewing on energy intake: the type of foods that are easiest to consume while viewing and second, the type of foods most promoted during viewing. These items are often snack foods high in fat and sugar, and are likely to promote positive energy balance”*.

Finally, this study provides clear evidence of weight status differences, both in terms of total energy intake and in food choice, in response to food advert exposure.

As research (Story, French, 2004) stated, *“today's children live in a media-saturated environment. In spite of the growing popularity of the Internet and computer games, the largest single source of media messages about food to children, especially young is television, and television viewing starts early between the ages of 2 and 4”*.

Research (Roberto et al., 2010) supports that children by the age 2 or 3 years old, are not only able to recognise but they also develop liking for characters that are well known to them. Also, at that age, most children can identify products in supermarkets and also, they request them by their brand name. Research findings suggested that children at the age of 2 years old, rated popular, brand-name food products as tasting better in regards to supermarket-brand equivalents (Gregori et al., 2017, Marty et al., 2018).

Another important finding in research (Robinson et al., 2007) that agrees with the previous results is that children had demonstrated preferences for the same foods when they were presented in “McDonald's” packaging compared to non-branded packaging.

That study enrolled 63 children (age 4-5 years old). Children tasted 5 pairs of identical foods and drinks that were presented in a packaging from McDonald's and matched but unbranded packaging and were asked to indicate if they tasted the same or if one tasted better.

The reason behind researchers (Robinson et al.) had chosen “McDonald's” was due to the fact that it was the largest fast food advertiser in United States and they expected that most if not all children to be familiar with the “McDonald's” brand since the brand has extensive marketing.

The types of foods that were used in the study were the following: (1)  $\frac{1}{4}$  of a “McDonald's” hamburger wrapped in a “McDonald's” wrapper showing the logo and the word “Hamburger” and the other wrapped identically in a matched plain white wrapper of the same material. (2) a chicken “McNugget” in a “McDonald's” bag and the other one in a matched plain bag, (3)



“McDonald’s” French fries in a “McDonald’s” logo box and the other one in a matched plain box, (4) 1% fat milk in a “McDonald’s” logo cup and the other in matched plain cup, (5) 2 “baby” carrots placed on top of a “McDonald’s” French fries bag and on top of a matched plain white bag.

All food products were bought from a “McDonald’s” local store except from the carrots that were not available or even marketed by “McDonald’s”.

Tests results showed that children preferred the tastes of foods and drink with the “McDonald’s” logo and packaging. This outcome demonstrated that brand identity can influence young children’s taste perceptions. This outcome was even extended for carrots, a product that was not marketed by or even available at the “McDonald’s” stores.

All of the food samples were presented in the same clear packaging with the name of the food printed at the top of the packaging. For all 3 pairs of food products the packaging involved the same colour, material, shape, font, and design. One package in each food pair, however had a sticker that featured a licenced character affixed to the bottom left corner.

These taste preferences were strongly emerged despite the fact that 3 of the foods were from “McDonald’s” and only the branding was changed, indicating that the effects were not due to familiarity with the taste or smell of “McDonald’s” food.

According to research (Roberto et al., 2010) *“children can express desire for certain products and characters but are not old enough to be sceptical of commercial messages”*.

Researchers selected specific licenced characters because of their popularity among children, their frequent appearance in television programs, commercials and movies and their common presence on items marketed to that particular age group.

Children were exposed to all 3 food conditions and 3 characters. The results indicated that children perceive the food items with licenced characters to taste better than those presented in plain packaging.

Results of the study provided empirical evidence demonstrating a causal relationship between the appearance of licensed characters on food packaging and children’s reported taste and snack preferences.

The majority of children favoured the taste of the licenced-character snacks across all 3 food categories selecting the carrots, gummy fruit snacks and the graham crackers respectively with a character on it.

Even participants who did not prefer the taste of the licenced-character samples selected those samples for snacks over their equivalents in plain packages.

Adding to these the majority of children recognized all the characters. The explanation behind that was that this group of children had sufficient exposure to television and movies in order to foster familiarity with the characters used in the test.

Finally, we can say that licenced characters can influence children’s eating habits in a negative way by increasing positive taste perceptions and preferences for junk foods.

As we saw, licence characters are one of the factors that affect children's food preferences and is of great importance to identify other factors that have an effect on the development of children's food preferences since these are established early in life are difficult to change later.

In 2011, research (Hare-Bruun et al.) examined the cross-sectional and prospective associations between television viewing habits and food preferences.

This research used data from the Danish part of European Youth Heart Study (EYHS) conducted among 8-10 and 14-16-year-old children in 1997-98 and then 6 years later 2003-4 the 8-10-year-olds were followed up at age 14-16-year-old and a new group of 8-10-year-old were included. 232 children completed data at baseline and follow up.

Since so far, we analysed the development of food preferences in children, we can say that it is essential that healthy food preferences are encouraged and promoted from early childhood in order to establish healthy eating habits later in life.

On the other hand, by identifying factors that have an impact to the development of food preferences it becoming easier to apply more targeted strategies for the development of more healthy food preferences.

For the food preferences and food habits evaluation, children answered a questionnaire and also were asked about their preferences for French fries, carbonated drinks, fruit, vegetables, pizza, salad, crisps, burgers and sweets/ chocolate with answers given on a point scale.

For the television exposure the variables for measurement was television viewing during meals (times/week) and television viewing (hours/day). The food preferences test results showed that more television viewing (hours/day) was associated with lower SHFP (Sum of Healthy Food Preferences) in all 8-10-year-old and in 14-16-year-old girls. Especially for girls, more hours of television viewing per day at age 8-10 years was inversely associated with the subsequent 6-year change in SHFP. The 6-year change in television viewing (hours/day) was not associated with the 6-year change in SHFP among girls.

No associations between either baseline television viewing (hours/day) and the 6-year old group change in SHFP or the 6-year change in television viewing (h/day) and the 6-year in SHFP was observed among boys.

Boys aged 8-10 years, who watched television during meals every day or most days had less healthy food preferences than those who rarely watched TV during meals whereas 8-10-year old girls who watched TV during meals 1-2 hours per week had higher SHFP than those who rarely watched TV during meals. There were no associations in the 14-16-year-olds between SHFP and TV viewing during meals. The 6-year change in the SHFP was not related to either baseline or 6-year change in TV viewing during meals.

The finding that less healthy food preferences were observed among boys could suggest that boys' food preferences may be more susceptible to be influenced by TV viewing than girls' food preferences as we saw in previous studies.

Poorer food habits included a higher consumption of French fries, carbonated drinks, pizza, crisps, burgers, and sweet/chocolate.

Furthermore, the results of this analysis support as we saw in other research that food preferences and food habits are established early in life and that later changes are likely to be small.

It was also reasonable that younger children have less influence on their intake and in consequence, associations between food preferences and habits in that age group would be expected to be poorer than in older groups.

When television viewing was measured as hours per day was much more associated with food preferences than when the frequency of television viewing during meals.

Finally, analysis showed that both food preferences and food habits were associated with television viewing cross-sectionally. The time spent on television viewing, and television viewing during meals even the smallest degree, were associated with poorer food preferences and food habits among children. Also, boys seemed to prefer and eat less healthy foods in general compared to girls. After 6 years of follow-up these associations were not generally persistent.

Adding to existing evidence, in additional research (Goldberg, Gorn et al. 1978, (Gorn, Goldberg 1982) was found that when children were exposed to highly sugared foods advertisements, they chose more advertised than and to non-advertised sugared foods.

Also, exposure of children to sugary products for 15 days had let children to prefer and choose more sugary food products than fruits as an afternoon snack.

Further research in 2013 (Boyland, E. J., Halford) analysed the effects of television branding on children's preferences and eating behaviour.

As we have seen in the previous studies television food advertising influences food preferences and eating behaviour of children. Television viewing and the resulting exposure to food advertising and branding have been proposed as important factors in influencing food choice decisions.

According to WHO *"it is clear that the foods advertised reflect a dietary pattern that would be associated with increased risk of obesity and are not in line with recommended nutritional guidelines"*.

As we saw earlier research (Kunkel, Gantz, 1992, Harrison, Marske, 2005, Halford, Boyland, Hughes et al., 2008, Boyland, E. J., Harrold, Kirkham & Halford, 2011) showed that the majority of food advertisements in children's programming are for energy-dense, HFSS foods.

Of the 10 most advertised products, six were non-core (fast food, unhealthy breakfast cereals, chocolate/confectionary. High fat/sugar/salt spreads and snack foods) with only one core food featuring in this list (low fat dairy items).

These HFSS foods are part of children's television viewing so advertisers focus on several persuasive techniques appealing to children in order to affect the popularity of the product and finally to increase their sales.

Children naturally focus their attention on several techniques as we saw earlier, such as animation and visual effects, and emotional appeals that do distract children from other aspects

of advertisements like disclaimers or product information like research (Kunkel, Gantz, 1992) supported in 1992 that half of all commercials included at least one disclosure/ disclaimer.

Disclosures were most common in cereal/breakfast ads and in toy ads. The two most frequent disclosures “parts sold separately” for toy ads that display multiple products and “part of a balanced breakfast” for sugared cereal advertisements have a long history of use in advertising to children.

It was also suggested that exposure to a brand early in childhood was critical for the creation of emotional attachments and the solidification of the relationship with that brand.

The following research (Reisch et al., 2013, Pala et al., 2013) used data for analyses that were obtained from the IDEFICS study, (a prospective cohort study that described children’s lifestyle, television habits, diets etc. by the use of questionnaires). The study began with a baseline survey in 2007-8 and continued with a follow up 2 years later. The total IDEFICS cohort consisted of 16.225 children aged 2-10 years from 8 European countries.

The resulting sample size was 229 children 6-9 years old. Children’s knowledge and preferences were collected via a choice experiment. The stimuli were 2 leaflets that showed 10 matched pairs of food cards, one picture relatively healthy food, the other relatively unhealthy food like sugar free cereals vs sugared cereals, or water vs coke, or cereal bar vs chocolate bar. The experimental procedure evaluated knowledge and preference.

For preference test children drew a smile or a frown for each matched pair according to their preference. The same procedure was followed for the knowledge part of the test.

Both indicators (food preference/ food knowledge) ranged between 0 (no healthy food chosen) and 10 (only healthy food chosen). The order of the tests was not random, but was chosen based on pre-test results showing that conducting the preference test first would reduce framing results. Among the 229 children that participated in the choice experiment the average score for food knowledge was 7.76 higher than the average score 4.78 of food preference both measured on the same scale.

Access to media showed no statistically significant effect, it had no effect in either food knowledge or food preferences, also, children that felt entertained by advertisements showed also less healthy food knowledge than others.

The entertainment dimension was measured by media literacy and food knowledge. The last outcome was something that was demonstrated in studies that we referred to earlier and children who were less sceptical of advertising had less healthful food preferences.

Finally results showed that better food knowledge was not apparently linked to healthier food preferences.

In consequence, the old WHO moto “*making the healthy choice the easy choice*” should be reevaluated by health organizations and health educators that are responsible for children’s nutrition and wellbeing. Above all according to research (Story, French, 2004) “*food choices are affected by the “triple A” of food items- availability, affordability and accessibility- particularly if paired with and supported by social norms*”.

The National Obesity Task Force (NOTF) considered the issue and recommended “*Better protection for young people against the promotion of high-energy poor nutritional value foods and drinks*”.

According to the results of all previous research, it comes naturally to believe and to expect that since television food advertising as we have already seen, had a definite impact on children’s food preferences, that children’s food preferences will be translated into purchase requests to their parents.

Research (Story, French, 2004) supported that children younger than the age of 6, have considerable purchase influence and can with great success negotiate purchases through what marketers use as a term the “nag factor” or “pester power”. Research suggests that a child’s first request occurs around the age of 2 and 75% of the time this request occurs in a supermarket and further research (Harrison, Marske, 2005) supports that parent’s food purchases are directly influenced by children’s requests.

Research even conducted in 1976 (Galst, White) stated that “*children’s attempts to affect purchases during the supermarket visit were linked to the reinforcement value of television advertisements and to the amount of television children were exposed to at home*”.

The potential influence of television advertisements on children’s behaviour becomes apparent when according to research 1 out of every 5 hours of the child’s television viewing is spent watching advertising messages especially developed to influence children’s consumer behaviour.

In 1983 research (Bolton) supported that children’s exposure to television food advertisements had short-term effects on their food choice behaviour. Research suggests that there are major factors that seem to influence children’s nutritional behaviour, first is the television food advertising that are exposed to and secondly parents.

Passive or overt are the two categories of parental influence towards television food advertising regarding its impact towards children’s nutrition. Parents may also influence children’s diets indirectly by influencing their television viewing.

Furthermore, research (Galst, White, 1976) evaluated 41 children (age 3-5 and 5-11) and their mothers in the following study. That study involved two parts, the first was an experimental television-viewing study conducted within the child’s school.

That part was designed in order to determine the advertisements reinforcement value for each child. The second part of the study involved a field study in order to evaluate the direct observation of the child’s purchase-influencing attempts at a supermarket.

During the advertising reinforcement value, children were given 2 minutes of taped advertisements. The advertisements were presented as a typical part of a television program.

Mother and child were accompanied to the supermarket where the purchase-influencing attempts were evaluated. Mothers were not aware of the true purpose of the study. The study defined as purchase-influencing attempt (PIA) “*the child’s attempt to influence purchases by making an independent request for an item (by asking, pointing, putting it in the shopping basket, or grabbing) buying an item with his or her money, or making a decision when given a choice by the parent*”.

The overall television-reinforcement value and the number of the PIA's (Purchase Influencing Attempts) at the supermarket generated a significant positive relationship.

Furthermore, the age factor was also positively correlated with the advertisement's reinforcement ratio and the overall television reinforcement value. On the other hand, the age factor was not significantly related to the successful percentage of PIA's.

Finally, there was no significant relationship between the number of PIA's and the percentage that were successful.

An important outcome was the significant association between the total number of hours of television embedded with advertisements watched per week and the number of PIA's made, meaning that those children who watched more television embedded with advertisements made more purchase requests at the supermarket.

Furthermore, television advertisements were related to at least one aspect of children's consumer behaviour namely, their purchase-influencing attempts at the supermarket.

This study's results suggest that children who may be more "tuned in" to television and thought television advertisements is possible to develop a specific approach toward consumerism and product acquisition especially derived from television food advertising.

Research (Brody et al.) in 1981 stated that *"the impact of television on children's food preferences occurs within the larger family social system"*. According to marketers, television advertisements are designed in such a way in order to influence children who in turn are assumed as we saw to influence the consumer behaviour of their parents. As research states *"the purpose of advertising to children is to capitalize on their ability to be "very successful naggers"*.

This study (Brody et al., 1981) was another attempt to investigate the same aspect by addressing whether children attempt to influence the food purchasing behaviour of their parents as a result of watching television food commercials.

This study enrolled 57 mothers and their children (3-5 years old). Mother and child watched a 25minute children's cartoon program that included specially selected food advertisements (candy bars, salty snack bars, chocolate drink mix, grape jelly) aimed at children. After the cartoon viewing, mother and child were escorted to a large room which was designed to look exactly like a mini supermarket.

That supermarket was designed based on recommendations made by food marketing specialists. The 6 advertised products were displayed in the appropriate section for each product. The parents were instructed to shop as they normally would. The parents were not aware of the real purpose of the study.

Researchers randomly divided mother-child pair to one of three conditions. Condition1: was mother-child viewing condition where they watched the television program together. Condition 2: was mother and child assigned to the child exposed to advertisements condition, mother and child did not view the television presentation together, rather only the child viewed the television program with the food advertisements in the living room while the mother viewed a situation comedy without any advertisements in another room. Condition 3: mother and child

assigned to the control condition that viewed the television program together. Their television program didn't include any advertisements.

According to the results, children in the child alone viewing condition (condition 2) and children in the mother-child viewing condition (condition 1) made more requests for the advertised products than did children in the control group (condition 3), meaning that children who were exposed to the television food advertisements made more requests for the advertised foods than did children who were not exposed to the television advertisements during the visit at the supermarket.

The above results suggest that the television advertisements were effective in getting children to nag their parents for advertised foods. It also means that when children and their mothers viewed the advertising messages together (condition 1), children tried to convince their mothers to buy more of the 6 advertised products than did children in the condition group (condition 3).

Furthermore, the study was designed in 2 parts. The first part was the one we analysed above and the second part was designed to examine the impact that television food advertisements had on children's preferences and food knowledge. In order to evaluate these factors, mother and child who were assigned to the mother-child viewing condition (condition 1) were tape recorded while they watched the cartoon program during the television viewing phase.

All the verbal interactions of the mothers and children were analysed in order to quantify parental attempts to counterinfluence the information that were presented by the television advertisements. Analyses showed that none of the 17 mothers attempted to counterinfluence the food advertisements.

This result suggests that, (at least in the laboratory-supermarket setting), mothers didn't spontaneously make use of the information provided in the television food advertisements in order to educate their children regarding better nutrition habits.

Since that was a "laboratory-supermarket setting" in order to investigate whether the above findings were representative of what naturally occurs in the home, the same procedures used above were replicated in the homes of those 30 families.

Families were provided with a tape-recorder in order to tape the conversations while watching the afternoon television program which was originally accompanied by food advertisements targeted children. When verbal interactions were analysed results showed that despite mothers talked frequently to their children while viewing the television programs, they did not provide any nutritional information to their children related to the food advertisements.

The non-response of the parents towards advertised foods could mainly give children the impression that these products are nutritious, because after all, the information was not called into question. Based on that it might even come as a surprise to children that their parents often were not willing to purchase a food product that was advertised on television.

That study and similar research (Brody et al., 1981, Donkin, Neale & Tilston, 1993) proved once again that children's exposure to television food advertising messages are effective to influence the purchasing behaviour of their parents.

Research (Chamberlain, Wang & Robinson) in 2006 also examined in a prospective cohort study that involved 827 children (8 years old) and 386 children that were followed up for 20

months, the effects of children's media exposure and requests for advertised toys and food/beverages.

Children reported the time spent "watching television", their requests and responses that were made to their parents.

Results demonstrated that baseline screen media exposure predicts future requests for advertised toys and food/beverages and television exposure can be defined as a true risk factor for future requests.

Furthermore, children reported an average of nearly 11 hours per week on television viewing and nearly 23 hours per week of total screen time use (playing video games, watching movie). They also reported requesting an average of about 1 advertised toy per week and 2 foods or drinks every 3 weeks.

A causal relationship has been established and between children's exposure to food advertisements and also between food choice and products requests. This supports the scenario that by reducing children's exposure to television and television food advertising may reduce children's requests for advertised food and drinks.

In 2006 research (Aktas Arnas) evaluated the purchase requests of 347 children (3-8 years old) with the use of a questionnaire answered by their mothers.

It was observed that preschool children (below the age of 6) were more insistent on crying for advertised products while they were shopping. That study showed that there was no correlation between the amount of time that children spent watching television and requesting a product while shopping.

On the other hand, it was observed that the children of the parents indicated that they talked about the products presented in the advertisements showed more purchasing requests of the products and insisting/crying than the children of the parents who indicated that they did not talk about the products presented in the advertisements.

This study's results showed that younger children (preschool age) children paid more attention to advertisements than the older children. Parent's reactions towards their children during prior shopping experiences may affect the children's future shopping demands. Parents usually accept the demands of their elder children on buying some specific goods or they can convince them about their decisions.

Research (Aktas Arnas, 2006) also states that *"television takes away the children's playtime, prevents their creativity and social development, and decreases their communication skills"*. Adding to this television viewing is mostly associated with the consumption of the most advertised low-nutrition foods that are rich in fat, salt and sugar.

Finally, it was also observed that the foods which were requested the most by children during shopping where the foods rich in fat and sugar and which were found more in the advertisements.

Since parents were involved in that evaluation it was also important to examine and evaluate their perceptions regarding the influence of television food advertising on their children's food preferences.



Research (Ip, Mehta & Coveney) in 2007 evaluated 32 parents in focus groups discussions since at that point there was limited information regarding how parents experience the impact of television food advertising on their children's food preferences.

Results of that evaluation showed that the majority of parents considered television advertising as a major influence in which their children found out about food products. Food packaging was also persisted as an important way that children became aware of food products.

Toys giveaways and premiums in advertisements were thought to be factors that affected their children's desire to purchase particular food products. Parents were also under the impression that and they had ultimate control over what their children choose to eat, but television and peers had the greatest influence on children's desires.

Parents also stated that themes of happiness and having fun along with animation were key elements that attract children's attention. Children's use of "pester power" to buy a particular product was seen as another way in which food advertisements mediate children's influence.

Parents also agreed that television food advertisements could also have an effect on the perceptions of children regarding the advertised foods and that preschool children (below the age of 6) would literally believe the advertised message.

Induction of the appetite even when children are not hungry was another effect of television food advertising according to parents' beliefs.

Television food advertisements was considered to be the reason of parent-child arguments over food preferences and due to that they felt the need to give in to "pester power" on some occasions even when they believed that the food product was unsuitable or questionable nutritional value.

In general, the overall parent's view was negative in regards to the effects of television food advertising on children's attitudes, food preferences etc.

Finally, parents expressed the following concern about television food advertisements *"television is being coercive by taking advantage of children's naiveté and playing on their emotions and food companies and advertisers have little care and consideration about children"*.

The truthfulness of television food advertising messages was questioned by the parents. Parents also suggested that the number of food advertisements directed to children need to be reduced and more healthy options and healthy food advertisements should be increased.

Healthy food advertisements should be designed in such a way to be more appealing to children by using similar techniques as the food marketers use for the less healthy food products.

Since we can accept that television food advertisements do have an influence on children's food preferences and they also have an impact in their purchase requests we can see through research that all these results lead to higher levels of food intake by the children as well.

We already saw that children's food choices and preferences are shaped by different parameters like individual, societal and cultural and environmental factors like factors that made available to children inside and outside the home and the modelling that parents provide.

As we analysed earlier, children are exposed to a plethora of verbal and nonverbal messages about food from either parent, teachers and especially from television food advertisements.

Television food advertisements are able (as we have seen in research) to shape children's expectations of what a balance nutrition and healthy eating is composed of.

It is a fact that television is the largest single media source of messages about food and the vast majority of money spent on food advertising comes from branded food manufacturers and fast-food chains, and television is the primary medium used by these companies.

We referred earlier that (Linn 2006) *"in 2005 according to Business Week Coca Cola paid \$20 million for product placement in American Idol (one of the most popular music shows for children aged 2-11) which was an "excellent" exposure of children of age 2-11 to product placement"*.

Furthermore, the food products advertised most frequently to children according to research (Kunkel, Gantz, 1992, Linn, S. E., 2004, Linn, Susan, 2006, Harrison, Marske, 2005, Story, French, 2004, Halford, Boyland, Hughes et al., 2008, Boyland, E. J., Harrold, Kirkham, Corker et al., 2011, Keller, Schulz, 2011, Powell, L. M., Schermbeck & Chaloupka, 2013) are poor in nutritional content. Exposure to advertising for HFSS food products was consistently higher across every food and beverage product category from children versus all programming.

These highly advertised products showed a tendency to be overconsumed relatively to federal dietary guidelines, whereas fruit and vegetables which are almost never advertised showed a tendency to be less consumed.

#### The impact of television food advertising on children's food intake.

In 2001, research (Coon et al.) evaluated the relationship between the presence of television during meals and children's food consumption patterns.

Children learn television-viewing habits as well as eating habits mostly at home. Parent's decisions regarding the use of television during meals may be associated with choices that they make regarding the foods they buy and make available to their children, independently of children's direct requests for advertised foods.

Research (Coon et al., 2001) evaluated 91 parent-child pairs (9-11 years old). Parents were interviewed whether the television was usually on or off in the presence of children during their meals, more specifically during breakfast, after school snacks and dinner. A 24h dietary recall was also completed.

Results showed that children from families with television on during 2 or more meals per day consumed less frequently healthy options like grains, fruit, green and yellow vegetables, potatoes, beans and nuts than did children from families in which the television was either not on at meals or was on only for one meal.

Children from families with television on during 2 or more meals consumed more red meat and processed meat and less chicken, eggs and fish, compared with other children. Children from families with television on during 2 or more meals had higher consumption of less healthy food products like pizza/salty snacks and soda than other children.

Overall children from families with television on during 2 or more meals per day obtain 6% more of their total daily energy from meat, 5% more of their total daily energy intake from pizza, salty snacks, and sodas combined and nearly 5% less of their total daily energy intake from fruits, vegetables, and juices combined than did children from families in which the television was either on at meals or was on only for one meal.

Furthermore, children from families in which the television was on during 2 or more meals per day derived less energy from CHO and more energy from total fat and saturated fat than did other children.

The above results showed the positive association between the presence of television during meals and children's consumption of less healthy food products like red meats, pizza and salty snacks and sodas, and the negative associations between presence of television during meals and children's consumption of more healthy food choices like fruits and vegetables. Parent's general knowledge around aspects related to nutrition (nutrition knowledge, attitudes and norms (NKAN) was evaluated and results showed that was not significantly associated with children's consumption of any of the food groups tested in the study. Also, less educated women had low score in general nutrition awareness.

Research (Coon et al.) stated that *"the presence of television during meals is part of a cluster of attributes, which includes attachment to meat-base meal patterns and poor understanding of relationships between diet and disease, and that this cluster is more likely to characterize households in which the parents have lower rather than higher educational attainment"*.

Adding to these, the way that television food advertising shapes a family's expectations of what constitutes a normal, balanced diet may be associated with family television use and children's food intake patterns.

Since television advertising mainly promotes and shape the use of HFSS food products like sugary cereals and snacks, convenience foods and fast foods, it is sensible that children's food consumption patterns have shifted in directions promoted and modelled by television. Furthermore, television and television food advertising has become over the decades an active part of families' food routines.

Research (Coon et al., 2001) states *"that families who turn the television off during meals are separating the act of eating from the world contained inside the television set, and to that extent there is a boundary between private family food culture and the food culture promoted on television. In contrast, a television that is on in the presence of family members while they are eating is implicitly part of the family's commensal unit, and the boundary between private family food culture and the food culture promoted on television is reduced."*

The results of the above study suggest that either the presence nor the absence of the television may work in a series of behaviours that links television viewing to children's food consumption patterns.

Children's food intake was also evaluated during research in 2004 (Halford et al.) in order to evaluate the difference between normal and overweight/obese children in regards to their ability to recognize food advertisements and also to evaluate the impact of this exposure on total intake of food and choice among certain food products.

42 children (9-12 years old) participated in the study and were divided into 3 groups (NW, OW, OB) according to their BMI. Three videos were used that contained a cartoon, non-food advertisements or food related advertisements.

Children were instructed that they could select foods to eat from the following types of pre-weighted packed food: “Ryvita wholegrain crackers” (low fat savoury), “Haribo jelly sweets” (low fat sweet), “Chocolate” (high fat sweet) and “Butter puffs” (high fat savoury).

According to the results, OB and OW children recognised significantly more food advertisements than did the NW children.

All groups (on average each) recognised similar numbers of non-food advertisements. As far as food intake is concerned OW and OB children ate significantly more than the NW group, both with food advertisements and with non-food advertisements.

The consumption of each type of food (with the exception of low-fat savoury) was significantly greater in the food advertisements condition than with non-food advertisements across the group as a whole.

Finally, across the group as a whole, a greater ability to recognise the food advertisements was significantly correlated with higher food intake following exposure to these advertisements.

The above results raised the following important question if the energy intake consumed during television viewing represent at the end of the day a significant part of children’s daily energy intake.

Research (Bolton, 1983) supported that children’s exposure to television food advertisements impacts their diets specifically on four parameters. Firstly, exposure to television food advertisements will increase children’s food snacking, secondly, this exposure will directly increase children’s caloric intake and thirdly, this increase will be proportionately larger than any likely increase in nutrient intake.

Taking into consideration that a more healthy and balanced diet has more nutrients in proportion to calories than a less healthy and balanced diet, television food advertisements exposure is able to decrease nutrient efficiency.

On the other hand, the effects on nutrient balance are less clear so far.

Furthermore, research (Bolton) hypothesized that since advertised foods doesn’t represent a healthy and balanced diet, television food advertisements exposure would decrease nutrient balance.

According to this a child’s caloric intake will probably increase with snacking and decreased with missed meals. Assuming that the most advertised snacks provide proportionately more calories to total caloric intake than nutrients to total caloric intake, then meals must provide proportionately more nutrients to total nutrient intake than calories to total caloric intake.

As snacks consumption increase, caloric intake increase, nutrient intake and nutrient efficiency falls, as missed meals increase, nutrient intake decreases more than caloric intake and nutrient efficiency falls.

Further research (Matheson et al., 2004) was conducted in order to evaluate what proportion of children's daily energy intake was consumed during television viewing. This study enrolled two age groups one of 8 years old children and the other of 10 years old children. Three 24-h dietary recalls including 2 weekdays and 1 weekend day were examined.

According to study's results (Matheson et al., 2004) it was shown that more food was consumed during television viewing than while participating in other activities.

The average energy intake during television viewing was similar in both samples and was higher during weekend days than on weekdays.

Based on these results we can say that children consume a substantial proportion of their daily energy while watching television and that food consumption during television viewing differs between weekdays and weekends.

An important finding was that more than one-third of children's dinners were consumed in front of the television. In both samples, television viewing during breakfast and lunch was significantly higher on weekend days than on weekdays.

There were no significant differences between the fat percentage and energy density of foods consumed with the television on and those of foods consumed with the television off.

Furthermore, snacks were consumed more frequently during television viewing than were any of the meals. A probable explanation for that is that children may have more autonomy or choice in their snacks than in their meals.

Accordingly, children may not choose vegetables for snacks during television viewing and results like these provide additional information about the influence of food advertising on children's food choices and food intake.

Since this field was of great importance and interest in 2006, further research (Wiecha et al.) also investigated whether increased television viewing was associated with increased total energy intake and whether increased television viewing was associated with increased consumption of foods commonly advertised on television. In this prospective observational study 548 children (11 years old) were evaluated.

Dietary intake, physical activity and television viewing was measured with the use of a survey, a food frequency questionnaire was answered in order to evaluate the FACT (foods commonly advertised on television).

Six FACT groups were created (sugar beverages, salty snacks, fried potatoes, sweet baked snacks, candy and fast food restaurants) in order to represent information based on television food advertising.

A series of models that included baseline television viewing, change in viewing, baseline BMI, TEI, gender, age and baseline physical activity were developed using estimated associations of change in television viewing adjusted with change in total energy intake (TEI)

In adjusted analyses, baseline viewing and change in television viewing predicted change in daily TEI (total energy intake). With no foods in the model each hour of increase in television viewing was associated with 167kcal increased intake.

Baseline television viewing predicted a change in calorie intake when no foods were in the model.

Furthermore, increased television viewing time was also associated with increased intake of FCAT, also, change in television viewing was significantly associated with change in consumption of each food group.

This study (Wiecha et al., 2006) showed that among children, increases in television viewing predicts increases in TEI, and that increasing intakes of FCAT mediate this relationship.

Finally, this study supports a relationship between television viewing and these unhealthy dietary changes, suggesting that television food advertising has a powerful influence on children's diets.

Also, as research states, *"although children and youth are encouraged to watch what they eat, many seem to eat what they watch, and in the process increase their risk for increasing their energy intake"*.

Bolton in 1983 also combined TV diaries completed by parents to create a measure of children's exposure to television food advertisements and results showed that exposure to television food advertisements was positively associated with snacking and the consumption of food products low in nutritional value and high- in calories.

Research (Jago et al.) in 2005 supports that *"while the relationship between television viewing and obesity can partly be explained by a change in energy balance both due to the displacement of active behaviour and sedative effect of TV viewing on children, the impact of TV viewing on children's behaviour, food preferences and on diet are critical. Eating in front of the TV is associated with an increase in caloric intake and also the intake of unhealthy foods and requests for advertised foods, demonstrating how feeding behaviour, branding and TV viewing are intimately linked"*.

Furthermore, an experimental study evaluating the side effects of television food advertisements on concurrent non-advertised sweet snack food intake in children aged 8-12 was published in 2009 (Anschutz, Engels & Van Strien).

120 children watched a 20minute movie with 2 advertising breaks that contained either food or non-food advertisements. During viewing, children could freely eat pleasantly tasting food. Afterwards children filled questionnaires, were weighted and measured.

It was important to identify whether children directly eat more snack food available at the moment, regardless of the brand promoted. This could possibly be explained that when children are exposed to food advertisements anywhere, they are encouraged to eat any snack food that is available at the moment.

We already seen in previous research that television food advertisements have an impact on children's food preferences, their purchasing requests as well as their food intake.

In addition, by examining the food intake while watching television might work as a measure of the direct effect that advertisements have rather than offering food choices or assessing food intake after exposure to advertisements.

It is a usual phenomenon for people to eat in front of the television, and while people associate a specific activity with a specific behaviour, this becomes habitual and automatic.

For this experiment a pre-weighted bowl with chocolate-coated peanuts (sweet and high fat snacks are known to be highly rewarding especially in young children) was placed in front of the television set. Children were instructed that he/she could eat whatever he/she liked from the available snack food.

Since food intake can also be affected by the state of hunger researchers (Anschutz, Engels & Van Strien, 2009) controlled for individual differences in hunger. This was controlled through the use of a visual analog scale that measured the extent to which each child felt hungry or not before the test.

The results showed that both hunger and liking of test food had a main effect on the food intake of the children. A significant main effect was found for gender. For the boy's the snack food intake parameter was higher when they watched the food advertisements than when they watched the non-food advertisements. For the girl's the snack food intake was slightly lower when they watched the food advertisements than when they watched the non-food advertisements.

A possible explanation given by researchers for the previous result was that boys may have a higher tendency to eat in response to food stimuli in relation to girls.

According to the results, boys were found to be more vulnerable to exposure to external cues (the sight of food) in food advertisements and therefore ate more when they were exposed to these types of advertisements than when exposed to non-food advertisements.

Apart from that boys were often found to have less self-control than do girls. Low self-control has been found to be related to a higher food intake.

On the other hand, girls were more likely to inhibit the likelihood to eat in response to food cues. Adding to these, another explanation given by researchers for the gender difference was *"that young girls experience more sociocultural pressure, eating disturbances and/or body dissatisfaction than do their male peers. Boys may actually have shown a normal response to food commercials, whereas girls may have suppressed their natural response to food commercials and therefore did not eat more when they viewed these commercials than when they viewed the neutral commercials"*.

Summarizing we can say that children's exposure to television food advertisements leads to increased intake of snack food mainly by boys.

Research (Folta et al., 2006, Harrison, Marske, 2005, Harris, J. L., Bargh & Brownell, 2009) states that *"advertising for food and beverages communicate potentially powerful food consumption cues, including images of attractive models eating, snacking at non-meal times and positive emotions linked to food consumption"*.

These advertising messages are designed in such a way and have the power to lead to corresponding eating behaviours.

Research (Harris, J. L., Bargh & Brownell, 2009)) examined the children's exposure to food advertising viewing and snacking of available food that was provided. 118 children (7-11 years old) were randomly grouped to watch a 14minute cartoon that included either food or non-food

advertisements. Children were given a snack (cheddar cheese crackers) while watching the cartoon.

Results showed that children who viewed food related advertisements ate more during the 14minute they watched the cartoon.

According to research (Harris, J. L., Bargh & Brownell, 2009) snacking and watching television with food advertisements for only 30 minutes per day would lead to the additional consumption of 94kcal and according to this scenario this will lead to a weight gain of almost 10 pounds per year, if not compensated by reducing consumption of other foods or increased physical activity.

Further research was made (Boyland, E. J., Harrold, Kirkham, Corker et al.) in 2011 by evaluating 218 children (6-13 years old). Researchers objective was to determine if levels of television viewing affects preference for energy dense foods.

That study was designed with two conditions: Condition 1: control (non-food advertisements) and Condition 2: experiment (food advertisements).

There was a planned 2-week interval between the two conditions in order to minimize the likelihood that children would recall their responses from the first condition that took place. For the control condition children viewed a DVD with 10 non-food advertisements inserted followed by the cartoon, and for the experiment condition children viewed the same DVD with 10 food advertisements followed by the same cartoon.

After children from both conditions viewed the cartoon, were given 3 food preference measures and an advertisement recognition measure to complete.

Children completed the Leeds Food Preference Measure (LFPM) which is a checklist of 32 non-branded foods (they were instructed to mark next to an item if he/she would like to eat it at the moment), the Adapted Food Preference Measure (AFPM), which was a checklist of only branded items requiring the child to mark next to an item if he/she would like to eat it at that moment, and finally the Leeds Forced-Choice Test (LFCT) which was a photographic food preference tool with 30 pairs of photographs.

Each photograph displayed a single non-branded food item to choose from what he/she would like to eat. Also, a television viewing questionnaire was also answered.

Analysis showed that as far as the non-branded items, all children selected more non-branded items from the LFPM after the exposure to food advertisements compared to non-food advertisements exposure.

A significant main effect of the exposure to food advertisements was found for the selection of branded items. All children selected more branded items from the AFPM after the exposure to food advertisements compared to non-food advertisements exposure.

Further analyses showed that BMIsd score was significantly higher in the high television viewing group than in the low television viewing group.

High television viewers selected significantly more branded items and significantly more non-branded items (high fat and high-carbohydrate foods) than low television viewers overall.



Further research (Boyland, E. J., Harrold, Kirkham, Corker et al., 2011) provided findings that television food advertising does not just alter brand choice in favour of the advertised brand products but also affects more generic food selection patterns, particularly in energy-dense, poor nutrient foods.

This outcome suggests that the impact of television food advertising of branded food products goes beyond the brand effect and to a whole category of food types.

Research showed that television food advertisements increased high television viewers' preferences for all foods but preferentially increased the proportion of branded foods that were selected, compared to low television viewers.

Furthermore, all children recognized more food advertisements than non-food advertisements. This outcome suggests that children not only enjoy but also engage with television food advertisements.

Also, according to the study's results children do engage more with food-related than non-food-related stimuli.

Previously we reviewed the effects of television viewing on food intake but the effect of playing advergames wasn't explored.

Research (Folkvord, F. et al.) in 2013 examined the effects of advergames that promote energy-dense snacks or fruit on children's snack and fruit intake.

270 children (8-10 years old) were involved in that study who played an advergame that promoted energy-dense snacks, fruit or non-food products or were in the control condition.

Previous studies as we have seen, have shown that exposure to food advertising significantly influences children's consumption of energy-dense food. According to cue theory food cues that signal food intake may begin to act as conditioned stimuli that trigger cue responses like cravings and actual eating behaviour.

The food-marketing scenery is changing quickly and is adopting new digital and online media technologies and use them as marketing tools and one of them are advergames.

Advergames are online games that combine advertising messages, brand logos and trade characters. Food marketers use advergames to promote their products especially HFSS foods.

In order to evaluate the effects of advergames on children's food intake, children were randomly assigned to 1 of 4 conditions which involved playing 1: -the energy-dense snacks advergame, playing 2: -the fruit advergame, playing 3: -the non-food advergame, playing 4:- no game at all. The advergame involved a memory game with 16 cards, by which the brands (candy, fruit, toys) appeared on the front of the cards. The brand logos were clearly displayed on the products.

4 bowls that contained 4 different food snacks were presented to children directly after they played the advergame.

Two bowls contained energy-dense food snacks (jelly candy, milk chocolate candy shells) and two bowls contained sliced fruit snacks (bananas, apples). Two bowls of test food (jelly candy and banana) were identical to one of the food products shown in the advergame.

Other popular products (milk chocolate candy shells and apples) were used to test any possible spill over effect.

According to the results children who played an advergame that promoted food (energy-dense snacks or fruit) ate significantly more than did the children who played an advergame that promoted non-food products.

The children who played an advergame that promoted energy-dense food (energy-dense snacks or fruit) also ate significantly more than did the children in the control condition. It was also found that children who reported being hungry had a higher caloric intake.

Adding to these it was found that children who played an advergame promoting energy-dense snacks ate significantly more energy-dense snacks than did the children who played the advergame promoting non-food products.

Children who played an advergame promoting energy-dense snacks or fruit ate more energy-dense snacks than did the children in the control group.

Results for the energy-dense food were based on both the effect of the advertised brand and the consumption of the energy-dense snack from a different brand. Similar result was found for children who played the advergame promoting fruit, thus the effects were not product type or brand specific but transferred to other energy-dense snacks that were available.

This spill over effect of food commercials on different products other than the advertised product and brand had also been found with the television advertisements.

Furthermore, results showed that children who played an advergame with fruit ate more energy-dense food than fruit. An important finding was that advergames that promote fruit do not necessarily stimulate fruit intake.

The cues that the advergames presented signalled food intake, which led to a higher caloric intake than did the conditions that did not signal food intake. The presence of sensory inputs has been associated with cravings and actual food intake meaning that exposure to food cues in advergames influences the direct food intake of children.

In conclusion we can say that when children played advergames that contained food messages related to either energy-dense snacks or fruit, that resulted in greater energy-dense caloric intake.

As a result, we can say that food-branded advergames can contribute to increased consumption of energy-dense food snacks among children of age 8-10 and this increased consumption can lead to obesity over time.

The effect of advergames and especially the role of impulsivity was examined again in 2014 (Folkvord, F. et al.). By impulsivity researchers mean *“a multifactorial contrast that involves a tendency to act on a whim displaying behaviour characterized by little or no forethought, reflection or consideration of the consequences”*.

Food consumption can be activated by salient environmental cues in a way that is not only automatic but is also difficult to control. The sight, smell the thought of tasty food induces appetite and when there isn't sufficient inhibitory control this leads to inhibition failure which

has as a result the food intake increase. Impulsivity might make it more difficult for children to resist the temptation of energy-dense food.

Further research evaluated 261 children (7-10 years old) when played an advergame that promoted either energy-dense snacks or non-food products. The study used as an extra manipulation, half of the children in each condition to be rewarded for refraining from eating, the other half not. Children were instructed that could eat freely while playing the game.

Analyses showed that children who played an advergame promoting energy-dense snacks ate significantly more than children who played an advergame promoting non-food products. Children who played the advergame promoting energy-dense snacks with the inhibition task ate significantly more than the children who played the non-food advergame with the inhibition task. Children who played the advergame promoting the energy-dense snacks with the inhibition task had a lower caloric intake compared with children who played the advergame promoting energy-dense snacks without the inhibition task. Children who played the advergame promoting non-food products with the inhibition task ate less than children who played the non-food advergame without the inhibition task.

Furthermore, study's results showed that impulsive children who played the advergame promoting non-food products with the inhibition task had a significantly lower caloric intake than those without the inhibition task.

Low impulsive children who played the advergame promoting energy-dense snacks with the inhibition task had a significantly lower caloric intake than those children without the inhibition task. Finally, low impulsive children who played the advergame promoting non-food products with the inhibition task had a lower caloric intake than the children who did not have this inhibition task.

Food cues in advertisements trigger eating behaviour and when children are rewarded to refrain from eating, this decreases the caloric intake in both types of advergames.

Impulsive children didn't eat more food than less impulsive children and when children are rewarded to refrain from eating had less influence on high impulsive children than on low impulsive children.

It is hard for the impulsive children to self-regulate their caloric intake during television food advertisements when they are rewarded to refrain from eating, but not when they are facing a non-food advertisement. Children with less impulsivity showed a lower caloric intake when they were rewarded to refrain from eating in both type of advergames.

Research (Folkvord, F. et al., 2014) also stated that according to cue reactivity theory, cues that are related to food work as determined stimuli that trigger responses, like craving and real eating behaviour. Increased impulsivity might make it more difficult for children to refrain from the lure of energy-dense food when craving for food is obtained by television food advertisements.

An important finding in that study was that children with low impulsivity that played the energy-dense advergame ate more food than children with high impulsivity that played the same game when they were not asked to refrain from eating. During the impulsivity task when reward sensitivity was controlled a decrease in self-control could had occurred among children with the low impulsivity.

In general, we can say that according to a systematic review (Boyland, Emma J. et al., 2016) children's acute exposure to food advertising leads to an increase in food intake.

Apart from the advergames and the effects on children's food intake the effect of celebrity endorsement in television food advertising was also explored.

Apart from television food advertisement and its effects on children's food preferences, the topic of licenced cartoon characters appearing on food packaging on television food advertising is of great interest as well.

Research (Roberto et al.) in 2010 tried to explore a possible relationship between licenced characters appearing on food packaging and children's taste and snack preferences. 40 children (4-6 years old) tasted 3 pairs of identical foods (graham crackers, gummy fruit snacks and carrots). The food products were presented in packages either with or without a popular cartoon character.

Children tasted both food items in each pair and indicated whether the 2 foods taste the same or one taste better and afterwards children selected which of the food items they would prefer to eat for a snack at that moment.

Since television remains the most popular medium for food advertisers, character licencing is a marketing strategy through which food companies and advertisers place the image of a popular movie or television character on product packaging in order to promote that specific food product to children.

Nickelodeon (a popular television channel) had announced in 2005 that it would licence famous characters to food product companies in order to encourage healthier nutrition habits for children. "SpongeBob", "Dora the Explorer", which were very famous and appealing characters to children, began to appear on packaging for spinach, carrots and fruits.

However, it is largely unknown the level of impact these characters had on the consumption of healthier foods.

Research (Roberto et al., 2010) also suggests that spokes and licenced characters appear to work in a better way in generating favourable brand attitudes in relation to verbal cues or any other form of information presented on a food package.

Since young children don't have the capability to process and understand the persuasive intent behind advertisements, food companies use licenced characters to promote foods to children.

The familiarity aspect with spokes characters is an important parameter that is used to increase liking for the characters, the brands and the products they promote.

The more established and recognizable the spokes and/or licenced character is the more effective and efficient it is in promoting and increase the sales for the related food products.

As research (Story, French, 2004) states *"today's children live in a media-saturated environment. In spite of the growing popularity of the Internet and computer games, the largest single source of media messages about food to children, especially young is television, and television viewing starts early between the ages of 2 and 4"*.

Research (Roberto et al., 2010) supports that by the age 2 or 3 years, children are able to recognise and also to enjoy and develop liking for familiar characters. Most of the children of this age group are able to identify food products in supermarkets and also requests them by their brand name.

Research showed that children rated popular, brand-name products as tasting better than store-brand equivalents (Gregori et al., 2017, Marty et al., 2018).

Research (Boyland, E. J. et al., 2013) evaluated 181 children (8-11 years old) in order to determine whether exposure to celebrity endorsement (a famous person who uses public recognition or co-present with a product in an advertisement) in television food advertising and a non-food context would have an effect on the intake of the endorsed product and a perceived alternative brand.

We already saw that advertising exerts a powerful influence over the foods that children select for purchase and consumption. Celebrities, and “hero figures” have shown a greater influence than other adult models in persuading children to buy and eat these food products. Because of this, the use of celebrity endorsers is a very popular marketing strategy, most of the times used in the form of television advertisements that promotes HFSS foods.

In that study all children viewed a 45second television advertisements embedded within the same 20minute cartoon and were grouped into 4 conditions, Condition 1: an advertisement for branded potato chips Walker’s Ready Salted Crisps featuring an endorsement by former international soccer player, Condition 2: a general savoury food advertisement, Condition 3: television footage of the same endorsement figure outside of a food context-presenting a soccer highlights program with no branding for the food product in this footage, Condition 4: a control, non-food advertisements.

Children watched a video and afterwards presented with 2 bowls of potato chips. Each bowl contained 100gr of Walker’s Ready Salted Crisps, 1 bowl was labelled “Walkers” and the other bowl was falsely labelled “supermarket brand” using only text without any logos.

Children were told that they could eat as much or as little as they liked, and that more of each item was available.

The study’s results showed that the experimental exposure to television advertisements for potato chips featuring a celebrity endorser commercial significantly increased children’s caloric intake of the endorsed brand of chips compared to advertisements for an alternative snack food and a non-food item.

Viewing the same celebrity endorser in a different, non-food context (condition 3) also significantly increased intake of the endorsed brand of chips relative to exposure to a different snack food or non-food commercials.

Further analysis showed that children did consume more of the branded chips than the non-branded chips in the other 3 conditions. This result demonstrates that the exposure to an advertisement -even for a different product- can significantly enhance the intake of branded food relative to an unbranded equivalent. This is known as the beyond-brand effect.

Research (Halford et al., 2004, Halford, Boyland, Hughes et al., 2008, Halford et al., 2007) furthered analysed this beyond-brand effect.

Research (Boyland, E. J. et al., 2013) states that *“celebrity endorsers influence extends beyond the celebrity’s involvement in commercials and does not affect intake of non-endorsed brands of the same item speak to the strength of the associations that children develop between celebrity and branded products”*.

Considering that children did not reduce their intake of the non-endorsed brand to compensate for their increased consumption of the endorsed brand, this celebrity endorser effect could contribute to overconsumption.

Adding to these, research (Bolton, 1983) supports that *“if children’s food preferences are changed by television food advertising, the composition of their diets may also be changed. In the long term, a change in children’s diets should affect their nutritional status and thus, possibly their physical development”*.

#### The impact of television food advertising on children’s weight status, BMI.

In 1985, research (Dietz, Gortmaker) collected data during cycles II and III of the National Health Examination Survey. Cycle II examined 6,965 children aged 6-11 studied in 1963-63, cycle III 6,671 aged 12-17 studied in 1966-70 and cycle III 2,153 children previously stated during cycle II in order to identify associations between television viewing and obesity.

According to research (Dietz, Gortmaker, 1985, Ashton, 2004) exposure to television food advertising could contribute to childhood obesity since watching television is a sedentary activity which requires no energy in excess of resting metabolic rates, and it may reduce the time spent in more energy-expenditure activities.

Children who watch increased amounts of television, are more likely to consume the foods that are most heavily advertised on and according to research these foods are calorically dense. Stars of prime-time television are characterised by low frequency of obesity.

This phenomenon may indirectly pass the message to children that by consuming all types of high caloric foods and beverages that are heavily advertised on television will have little consequence with regard to weight.

Analysis of the results showed that children aged 6-11 years who watched more television (more than 2 hours per day) showed a greater prevalence of obesity in relation to children who watch less television.

Indications for a dose-response relationship between obesity and time spent for television viewing were found in samples from both cycle II and III. Each additional hour of television viewing per day, increased the prevalence of obesity from 1.2 to 2.9%.

Even when the study controlled for prior obesity, results showed a prospective association of television viewing with excess weight and obesity.

As we saw in research television viewing by children may affect both energy intake and expenditure. Energy expenditure may be reduced because less energy is required to watch television than is required for more energy intensive activities.

However, television is influencing children and also this sedentary activity is time consuming and children may not be able to restore the balance between energy intake and expenditure.

As it was previously reported children who watch television for more than 2h per day ate twice as likely to be overweight as children who spend less than an hour watching television.

In the following study the analyses were performed using data from the Longitudinal Study of Child Development in Quebec (1998-2002) with a sample of 2.103 children born in 1998.

A nutritional assessment was conducted on 1.549 children aged 4.5 years and included a 24h dietary recall, an eating behaviour, a television viewing questionnaire, and a measurement of children's weight and height.

Furthermore, the examination of the relationship between food consumption during television viewing and how these were associated with BMI was conducted (Dubois, Farmer et al.) in 2007.

According to the study's results, the total number of hours of television viewing was associated with eating meals and snacks while watching television, especially during breakfast and dinner. Adding to these, almost one-third of children who ate while watching television watched more than 3 hours television per day.

Overall, about 30% of children watched television while eating once daily, while 25% did so at least twice daily. A greater proportion of girls ate while watching television less than once daily, whereas a greater proportion of boys ate while watching television once daily.

Also, higher frequency of eating while watching television was associated with children watching television for 3 or more hours per day.

Children who ate snacks while watching television every day or some times during the week consumed more CHO and less energy from proteins compared to children who never ate snacks in front of the television.

Eating during television viewing once daily or more was also associated with lower consumption of proteins in general. Adding to these, eating dinner or snacks every day while watching television was associated with lower consumption of fruits and vegetables.

A higher frequency of eating while watching television (three or four times daily) and of total television viewing per day (3h or more daily) was also associated with a lower daily consumption of fruits and vegetables.

On the other hand, children who never ate during television viewing, the probability of drinking soft drink every day more than doubled for children who ate snacks while watching television some times weekly and more than tripled for children who ate snacks while watching television every day.

Overall, there was no significant difference between the mean BMI of children who watched television for less than 3h daily versus those who watched more than 3h daily.

However, children who ate while watching television once daily or more had significantly higher mean BMI in comparison to children who ate while watching television less than once daily.

More specifically, there was a significant difference between the mean BMI of children who ate snacks or dinner once daily or more in front of the television in comparison to children who ate snacks or dinner less than once daily.

This relationship wasn't obvious for children who ate breakfast or lunch in front of the television. Adding to these, there was no significant association between BMI and energy consumption for children who never ate snacks while watching television and for those who did so less than once weekly or some times during the week.

When children ate snacks in front of the television every day, mean BMI increased significantly because the energy intake was increased, which indicates a strong relationship between BMI and energy consumption.

Finally, we can say that these findings support previous studies which also showed that eating while watching television may be a potential mechanism that links television viewing to obesity among children.

So, if television has such an impact on children's dietary-caloric intake, what the effects would be of the reduction of television on changes in weight status, physical activity and dietary intake?

A randomized, controlled, school-based trial (Robinson, 1999) where 192 children (mean age 9 years old) participated was conducted. Two schools were assigned to this study. One school was assigned to reduce television viewing in order to assess the effects of reducing television on changes in weight status, physical activity and dietary intake and the other school was assigned to be the control.

According to research (Robinson, 1999) television viewing and especially television viewing embedded with food advertisements was considered to be one of the most easily modifiable causes of obesity among children.

Research confirms that American children spend more time watching television and sleep more than any other activity. Research (Robinson, 1999, Dietz, Gortmaker, 1985) suggested that *"there are two primary mechanisms by which television viewing contributes to obesity, the first is that television viewing reduces the energy expenditure from displacement of physical activity and the other is that television viewing leads to the increase of dietary energy intake, either during viewing or as a result of food advertising"*.

In order to test the role of television in the increase of weight status and BMI, an intervention was designed that decreased media use alone without specifically promoting any other active behaviours as a replacement. That objective was achieved by limiting the television access and also by the use of budgeting method.

The budgeting method was a device that locks onto the power plug of the television set, monitors and budgets viewing time for each member of the household through the use of personal identification codes. Assessments were performed at baseline and after the completion of the intervention 7 months later.

Furthermore, BMI was measured, and food frequency recall was completed. The intervention had shown effects across the entire distribution of baseline adiposity. The greater intervention vs control differences were evident among the middle and higher strata of body fatness.



Both groups were well adjusted at baseline, although children from the intervention group reported eating significantly more meals while watching television. Parents that participated in the intervention group reported significantly less overall television use at home and that their children spent significantly more time in other sedentary behaviours at baseline.

Children that participated in the intervention group also reported significantly greater reductions in television viewing compared to control group. The frequency of children eating meals in a room with the television turned on was significantly reduced in the intervention group.

Children of the intervention group also reported relative reductions in servings of high-fat foods compared to control group, although these differences were not statistically significant. Furthermore, there were no significant effects on children's physical activity levels.

The intervention did generate statistically significant decreases in reported television viewing, compared to control group.

Finally, this intervention that targeted not only television viewing but also video games and videotape use produced statistically significant and clinically significant relative changes in BMI over a period of 7 months.

These changes occurred over the overall sample, and the entire distribution of adiposity was shifted downward. Results of this study suggests that by reducing television, videotape and video game use could be a promising population-based approach to help the prevention of childhood obesity.

Further evaluation of the effects of television viewing and its associations with overweight was conducted in 2002 (Lowry et al.). That study analysed data from the 1999 national Youth Risk Behaviour Survey with a representative sample of 15,349 high school children.

Data from 15,349 questionnaires were analysed and the results showed that 42.8% among all high school students watched television more than 2 hours on an average weekday. 10.8% of the students was overweight, 30.5% had a sedentary lifestyle (did not participate in moderate or vigorous physical activity at recommended levels), and 76.1% of students ate fewer than 5 servings/day of fruits and vegetables.

Among the total student population, television viewing for more than 2h/day was associated with being overweight.

Finally, research (Lowry et al., 2002) suggests that the reduction of the amount of time spent watching television creates opportunities for other activities and this may shift dietary intake away from high-calorie, high-fat foods that are frequently advertised on television.

Research (Crespo et al., 2001) also, analysed cross sectional surveys from 1988-1994 and results showed that higher levels of television viewing in early childhood, later childhood and adolescence have been associated with higher body mass index.

As we already saw, television viewing may increase BMI through displacing physical activity or through unhealthy food choices related to eating while watching either television or food advertising.

Research (Viner, Cole, 2005) in 2005 examined the effects of duration, timing and type of television viewing at age of 5 years old on BMI in adult life. They used data from the 1970 British cohort study, followed at 5,10,30 years of age. Results showed that there was an association between television viewing at 5 years and later BMI.

Higher duration of television viewing during weekdays and at weekends (more than 4 hours) were both significantly associated with higher BMI at 30 years.

Also, higher frequency of viewing during weekdays and weekends (more than 4 hours) at age of 5 years old both predicted higher frequency of viewing at age of 10 years old.

Furthermore, another important result was that each additional hour of television viewing on weekdays at age of 5 years old increased risk of obesity by 12% and each additional hour at weekends increased risk of obesity by 10%.

This large population-based sample found that weekend but not weekday television viewing in early childhood independently predicted adult BMI. Each hour of weekend television viewing at the age of 5 years old was associated with additional 7% increase in risk of adult obesity.

However, the observational nature of this study does not allow us to conclude that television viewing in early childhood directly causes the observed increase in BMI. Further work is needed to establish the potential mechanisms.

Research findings suggest that more frequent television viewing at the age of 5 years predicted more frequent television viewing at the age of 10 years. This result can be possibly explained saying that early high levels of television viewing creates viewing habits through childhood and into adult life.

Consequently, this is able to influence later BMI through long-term eating behaviour, displacement of physical activity or other associated lifestyle factors.

Furthermore research (Jago et al.) in 2005 investigated whether, diet, physical activity, sedentary behaviour or television viewing predicted BMI among children of age 3-7 years old. This cohort study was followed from 1986-1989.

It is well known that obesity results from an energy imbalance whereby caloric consumption exceeds energy expenditure. Dietary factors including total caloric intake and percent calories consumed from fat have been associated with increased adiposity among children.

Lack of physical activity and sedentary behaviour have also been associated with increased weight status.

In this study data were collected as part of the Texas site of the Studies of Child Activity and Nutrition (SCAN) between 1986-1989. Sedentary behaviour and television viewing were recorded by observers. Dietary consumption was also recorded.

The results presented indicate that the interactions between study year and both television viewing and physical activity were the only variables other than the main effects for television viewing, physical activity and BMI from the beginning of the study that predicted BMI among 3-7year-old children across the 3 study years.

The relationship between television viewing and BMI was a strong positive association in year 3 of the study.

The analyses, suggests that television viewing was associated with increased adiposity among children 6-7 years old especially after taking into consideration other contributing factors such as baseline BMI, physical activity and diet.

Consequently, reducing television viewing among children at an early age it is possible to help prevent the development of obesity. Also, the young age of the participants limited the ability to detect an association between dietary fat intake and BMI.

Further analyses showed that television viewing was positively associated with sedentary behaviour and negatively associated with physical activity in years 2 and 3. This suggests that by reducing the time spent watching television might possibly result in increased physical activity.

We have already seen that high amounts of television viewing have been associated with impact on children's food preferences, eating behaviour, purchase requests and weight status. We haven't seen the relationship between the presence of a television set in the child's bedroom and its relation to children's weight status.

Research (Adachi-Mejia et al., 2007) examined in a cross sectional study (school and telephone survey between 2000-2004) 2,343 children (9-12 years old) in order to evaluate if having a television set in the child's bedroom is considered to be a risk factor for child's weight status and overweight. BMI, physical activity was measured. Television access in the bedroom, was measured as well.

Results showed that almost half of all children (48.2%) had a television set in their bedroom. Compared to children without a television set in their bedroom, children with a television set in their bedroom and were more likely to have three or more television sets in their house.

Children with a television set in their bedroom were more likely to have the highest number of television or movie viewing sessions per day, and were more likely to not have internet at home, more likely to watch television or movies together with their families every night, and were less likely to be physically active or even to participate in team sports.

Children with a television set in their bedroom were more likely to be overweight compared to those without having a television set in their bedroom. Among children who reported zero television or movie viewing sessions there was no significant differences in average zBMI.

Among children who self-reported watching at least one television or movie viewing session every day, there was a positive association between frequency of television or movie viewing sessions and zBMI. The zBMI increased approximately 0.1U for each additional viewing session reported.

That study demonstrated that having a television set in the bedroom is a significant predictor of child overweight. Research (Adachi-Mejia et al., 2007) found that even after controlling for the expected risk factors for overweight such as frequency of television viewing sessions, physical activity, children with a television set in their bedroom were still 1.3 times more likely to be overweight than children without a television set in their bedroom. It is important to note

that a television set in the bedroom was associated with a higher risk of overweight only among children who reported at least one session of television viewing daily.

These results suggest that having a television set in the bedroom is not simply a proxy for other individual or family characteristics. Watching television in the bedroom is likely an indicator of several process, such as increased sedentary activity or snacking, that increase children's risk for overweight.

Even at that young age, almost half of children in that sample had a television set in their bedroom. Results showed that children that had a television set in their bedroom didn't participate in any type of physical activity or team sports often.

On the other hand, research (Adachi-Mejia et al., 2007) did not result that children who regularly participated in a physical activity or in a team sports for 4 or more times per week were significantly less likely to be overweight.

In 2007 a randomized controlled trial (Epstein et al.) evaluated the effects of reducing television viewing and computer use on children's BMI. 70 children (4-7 years old) whose BMI was at above then 75<sup>th</sup> BMI percentile for age and gender participated in the study.

In that study children were randomized grouped into two conditions. First condition was the intervention group where the main objective was to reduce their television viewing and computer use by 50%.

The other condition was a control group that did not reduce television viewing or computer use. Age and gender standardized BMI, television viewing energy intake and physical activity were monitored every 6 months during the 2 years of the study.

According to research (Epstein et al., 2008) *"by reducing the sedentary behaviour of television viewing could affect body weight by modifying energy intake or energy expenditure in several other ways, since the sedentary behaviour of television viewing specifically was related to the intake of HFSS food products that are heavily advertised on television"*.

As we have already seen, viewing television children's programming embedded with food advertisements can increase the preferences of the advertised item and television advertisements may prompt eat.

As research states (Epstein et al., 2008) *"television viewing or related sedentary behaviour may prompt eat by the association of these behaviours with eating, and television viewing and related behaviour may impair the development of satiety by interfering with habituation to gustatory and olfactory cues"*.

In that study a television allowance was attached to each television and computer in children's homes. The television allowance was an automated device that controlled and monitored the use of televisions or computer monitors. That device was plugged into the television allowance, the plug was locked in, and the device was plugged into the wall.

Each family member used an individually selected 4-digit code in order to turn on the television or computer monitor. In order to determine the use of that device, the television allowance sums the minutes of use for each code.

Time budget were reduced by 10% of their baseline amount per month for children in the intervention group until the budget was reduced 50% and when the budget was reached, the television could not be turned on for the rest of the week.

Children that participated in the intervention group earned \$0.25 for each half hour under budget, up to \$2.00 per week. The intervention group received other ideas to sedentary behaviour.

Also, a monthly newsletter that provided several parenting tips how to reduce sedentary behaviour for children and the whole family was provided to the parents.

According to the results in the control group, the mean number of hours of television viewing and computer games declined -5.2 hours per week at 24 months.

On the other hand, the mean number of hours of television viewing and computer games in the intervention group declined by -17.5 hours per week at 6 months and remained about the same through the 24 months.

Statistically significant between-group differences were observed at 6 through 24 months. A statistical interaction of the group x month was observed for zBMI as zBMI decreased a mean of -0.24 at 24 months for the intervention group, while the control group demonstrated a mean zBMI increase of 0.05 at 6 months, a return to baseline at 12 months, and a gradual mean zBMI decrease of -0.13 at 24 months after baseline. Statistically significant between-group differences were observed from baseline to 6 months and 12 months.

The intervention group showed a greater energy intake reduction than the control group, with statistically significant between-group differences from baseline to 18 months and 24 months. No statistically significant between-group changes over time were observed for changes in physical activity.

That study showed a statistically significant and sustained reduction in television viewing and computer use that was associated with decreases in zBMI for children whose BMI was at or above the 75<sup>th</sup> percentile for age and gender. zBMI changes were mediated by targeted sedentary behaviour changes.

Research findings show that “both television viewing and computer use can be modified in young children by the use of “behavioural engineering technology” that provides parental control over a child’s screen time budget while giving the child the opportunity to choose how to spend this budget”.

Results showed that the trend for zBMI of children participated in the intervention group was a gradual reduction during the 2 years of observation.

On the other hand, children that participated in the control group demonstrated an increase followed by gradual decreases. Differential changes from baseline to 6 and 12 months were statistically significant. Changes in energy intake, but not changes in physical activity, were differentially related to changes in the targeted sedentary behaviour.

Furthermore, the reduction of television viewing could have an impact on energy intake by minimizing cues to eat and by decreasing the exposure to television food advertising.

Changes in the home environment as results showed, may be important targets for reducing BMI in children and that the home environment as arranged by parents may contribute to the risk of childhood obesity.

Further research was conducted (Veerman et al., 2009) to estimate how much limit in television food advertising would reduce childhood obesity. In that study data from published literature was used in a mathematical simulation model of the relationship between exposure to television food advertising and the prevalence of childhood overweight and obesity. That study explored the total ban on television food advertising on children of age 6-12 in the USA.

That model compared two populations, a control group and an intervention group in which changes in exposure to food advertising were translated into corresponding changes in food intake, BMI, and the prevalence of obesity.

That study used an intervention to lower exposure to food commercials. The intervention was the exposure to be reduced to zero.

Although this was not a realistic scenario, it indicated the theoretical maximum effect of measures that aimed to limit children's exposure. That change in exposure would lower the total daily energy intake, and lower energy intake leads to a lower average body weight.

According to the study's results *"the base case model predicts that by reducing the exposure to television food advertising of US children from 80.5 min/week to zero would decrease the total energy intake by 4.5%. If every 10% reduction in consumption corresponds to a 4.5% lower body weight, children would weight about 2.1% less than in the current situation, on average"*.

A complete ban of television food advertising as this study shows is possible to reduce the prevalence of obesity among US children by about 2.5%.

In other words, given a baseline prevalence of about 17%, possibly as many as one in seven- or even one in three –obese children would not have been obese in the absence of food advertising on TV.

In 2009, research (Manios et al.) investigated whether television viewing time was independently associated with the prevalence of overweight among Greek pre-schoolers even after controlling for total energy intake and physical activity (the GENESIS study).

2,518 children of age 1-5 were recruited in the study from a representative sample of randomly selected public and private nurseries as well as day- care centres within municipalities in five counties of Greece.

Children's viewing time and physical activity was assessed by parental report. Children's weight and height were recorded and BMI was also calculated.

Dietary intake data were obtained for two consecutive weekdays and one weekend day using a 24-h food dietary recall.

Results showed that the overall mean of children's television viewing time was 1.32h/day. The vast majority of children spent less than 2h/day watching television (74%).

It was observed that children who watched television for more than 2h/day were older and were more likely to have low physical activity, higher total energy intake, and to have low-educated mothers compared to children who spent less than 2h/day in front of the television.

It was also detected that the prevalence of obesity was significantly higher among children that spent more than 2h/day in front of the television set compared to those that watched television for less than 2h/day.

Stratified analysis by gender revealed that the prevalence of overweight and obesity was significantly higher in girls watching television for more than 2h/day.

It was also revealed that television viewing time was significantly associated with the likelihood of being obese only among children aged 3-5 years.

In particular, it was found that children watching television for more than 2h/day were almost 30% more likely to be obese compared to those watching television for less than 2h/day.

It was observed that one additional hour per day of television viewing was associated with 12% higher probability of being obese. Children's television viewing time remained significantly associated with the likelihood of being obese even after controlling for potential confounders, such as children's gender, parental BMI status, parental television viewing etc. it was found that no factor modified the relationship between television viewing time and the prevalence of obesity.

After adjusting for physical activity status, results showed that television viewing time remained significantly related to the likelihood of being obese.

Further adjusting for both children's physical activity status and their total energy intake showed that despite the fact that television viewing time did not remain significantly associated with the probability of being obese, physical activity status did.

Furthermore, it was detected that television viewing time was not significantly associated with the likelihood of being obese for children consuming total energy intake lower and higher than the median, respectively.

On the other hand, physical activity status was significantly related to the probability of being obese for children consuming total energy intake lower and higher than the median, respectively. Television viewing time less than 3h/day was significantly correlated with the likelihood of being obese only among children with light to vigorous physical activity (L-VPA).

Finally, that study's results indicated that both television viewing and physical activity status were significantly related to the prevalence of being obese after controlling for potential confounders among children aged 3-5 years.

As (Lobstein, Dobb, 2005) supported in 2005 there is a positive relationship between television viewing and overweight, there is a positive association between time spent watching television and an increase in the prevalence of childhood overweight and obesity.

As (Crespo et al., 2001) supported in 2001, there are two primary mechanisms by which television viewing contributes to weight gain in children: reduced physical activity or increased energy intake or a combination of both.

Research supported (Chamberlain, Wang & Robinson, 2006, Crespo et al., 2001) that the exposure to television food advertising significantly influences children's food preferences, food choices, purchase requests and food intake.

As we have seen television is the main channel used by food marketers to reach children. On television most advertisements are featured during children's time-slots: Saturday and Sunday morning television and the mid-week, after school 'children's hour'.

According to the analyses these time-slots showed to be heavily used by food marketers to promote unhealthy HFSS foods to children.

Television food advertisements were found to be dominated by a 'Big Four' of food items: breakfast cereals, confectionary, savoury snacks, and soft drinks.

The advertising of fast-food restaurants turned the 'Big Four' into 'Big Five'. The advertised nutritional proposal contrast strongly with that recommended by the public health community since it is higher in fat, sugar and salt, and healthier food items like fruits and vegetables are significantly under-represented.

The whole advertising scenery is driving children to energy-dense diets. Also, themes of fun, happy times, fantasy, or taste, rather than health and nutrition are used to be promoted to children.

Furthermore, the use of animation techniques in television food advertisements was particularly strongly associated with children's food advertisements. Marketers prioritize children as consumers, using products that are appealing to them, trying to promote a fast-food culture.

Marketers recognize the growing importance of children as purchase influencers. A wide range of promotional techniques are used to market food to children, like create themes of fun, excitement and animation, sports sponsorship and celebrity endorsements, collectable toys and child-oriented distribution strategies.

Television is the biggest channel for marketing food to children. For children, food products are associated with fun and excitement, typically with the use of cartoons.

Brand loyalty is also encouraged through children's clubs combined with competitions and discount promotions.

Children are widely and effectively targeted by energy-dense food promotion and this has an impact on children's nutritional knowledge, food preferences, food purchasing and purchase related behaviour and also food intake.

According to research television food advertising may have little influence on children's general perception of what constitutes a healthy diet, but that it can have an effect on more specific types of nutritional knowledge.

Adding to these, research showed that food promotion does influences children's food purchase-related behaviour. Research showed the effect was in the direction of increasing purchase requests for foods high in fat, sugar or salt.



Research also showed that children have extensively recall ability of food advertising and this food promotion seems to influence their communication and shopping behaviour.

Food preferences are also influenced and food advertising encourages children to requests their parents to purchase foods they have seen advertised.

Plenty of data from the United States of America and European countries were available for research, unfortunately there were not data from Cyprus Radio Television Authority.

Data like these are more than necessary in order to estimate exactly the total number of advertisements airing during children's programming, total number of food advertising airing during children's programming, the number of repetition and the duration of food advertisements, the content and the promotional techniques that are being used in Cyprus.

One of the objectives of this project is to collect and document for the first-time data like these. These data will be able to help us along with the original questionnaire and the focus group tests to understand and evaluate the level of impact that television food advertising has on children in Cyprus and be able to compare data for the first time with other countries.



## **Chapter III**

### **Methodology.**

#### **Chapter's content:**

3.1 Overview of the experiment/design.

3.2 Nature of the study.

3.2.1 Research Questions.

3.2.2 Research methods and Validation of questionnaire.

3.3 Population, Research Sample and Data Sources.

3.4 Materials and Tests.

3.5 Data Collection Method-Procedures-Protocols.

3.5.1 Data Collection Protocol 1- Distribution and Collection of Questionnaires.

3.5.2 Data Collection Protocol 2- Collection and Documentation of Television Advertisements.

3.5.3 Data Collection Protocol 3- Preparation of Tests.

3.5.4 Data Collection Protocol 4- Steps followed before the beginning of the tests session.

3.5.5 Data Collection Protocol 5- Steps followed during the test's session.

3.6 Validation and Focus Group Tests.

3.6.1 Test 1- Product Recognition Test.

3.6.2 Test 2- Brand Logo Recall-Recognition measurement test.

3.6.3 Test 3- Food Preference test.

3.6.4 Test 4- Food Preference using Branded and Unbranded food products test.

3.6.5 Test 5 -Food Knowledge (relatively healthy/relatively unhealthy) test.

3.7 Data Analysis and Synthesis-Statistical Treatment.

3.8 Originality of Research.

3.9 Limitations of Methodology and Ethical Considerations.

3.9.1 Limitations of methodology.

3.9.2 Ethical considerations.

### **3.1 Overview of the experiment/design.**

The literature review in Chapter 2 (The impact of television food advertising on children's eating behaviour, food preferences and weight status in studies conducted in Europe and USA) indicated the importance of conducting a study and combining several fields for exploration in Cyprus.

It is the field related to the content of television food advertising and the field of perceptions and opinions and finally the field of preferences which provide the underline principles of the research methodology of this thesis.

The purpose of this chapter is to present the research strategy and also the empirical techniques applied. It provides information concerning the method that was used in undertaking this research as well as a justification for the use of each method. Furthermore, this chapter describes detailed approaches and procedures regarding the description of the research design, the various stages of the research, which includes the selection of the participants, sources of data and data collection process, research instruments, steps taken before and during the tests, data analysis techniques.

This chapter describes with a brief discussion the scope and the limitations of research design and methodology as well any problems encountered during research.

This will be followed by a discussion regarding the ability to produce valid results, and meeting the aims and objectives set by this project.

This project aims to outline the content nature of the television channels that broadcast in Cyprus (the south-non-occupied part of the island). Also, to provide some important insights into the complexity of the relation between television food advertising and eating behaviour and also to assess, children's eating behaviour, food preferences and weight status and finally to suggest strategies and directions to all stakeholders involved.

This research aims to identify any associations between TV viewing and advertising and eating behaviors in children of age group 6-12 in Cyprus by using a quantitative method. Furthermore, a qualitative method was used as well in a specific part of the study in order to evaluate the responses of children using interview techniques. For the latter part of the study a focus group was developed.

Finally, in order for this study to provide a content analysis of television food advertisements and identify any of the previous associations a complete evaluation was needed therefore, 365 days of school-age children's television programming (family zone) was recorded and analysed.

### **3.2 Nature of the study.**

This part of the chapter presents detailed approaches regarding the nature of the study.

The philosophical assumptions underlining this project come from already existing research. The research strategy adopted was to identify any associations between TV viewing and advertising and eating behaviors, food preferences, perceptions and impact on children of age group 6-12 in Cyprus by using a quantitative method.

According to (Hulley, 2001) a research methodology is determined by the nature of the research questions and the subject of being investigated. As a result, the research format used in this project should be seen as a tool to answer the research questions.

This project was guided by the following research questions:

#### **3.2.1 Research Questions.**

According to (Hulley, 2001) research question is the objective of the study, the uncertainty that the investigator wants to resolve.

According to this statement the following research questions were developed as follow:

Research Question 1: What is the composition of the television food advertising scenery in Cyprus?

Research Question 2: What are the responses of parents and children (age 6-12) towards television food advertising, children's eating habits and preferences in Cyprus?

Research Question 3: What are the responses of children (age 6-12) towards television food advertising regarding brand logo recognition and brand logo recall ability?

Research Question 4: What are the responses-preferences of children (age 6-12) towards unbranded food products and branded vs unbranded food products?

Research Question 5: What is the level of food knowledge of children (age 6-12) towards relatively healthy and relatively unhealthy food products?

### **3.2.2 Research methods and Validation of questionnaire.**

This research has chosen to use a quantitative method. A qualitative method was used in a specific part of the study in order to evaluate the responses of children using interview techniques. For this part of the study a focus group was developed.

Part of the fieldwork aimed to provide and evaluate a content analysis of television food advertisements during 365 days of school-age children's television programming (family zone).

The main data collection techniques used on this research study were original questionnaire, television advertising documentation, focus groups, structured tests, interviews and documentation analysis.

According to research (Campbell, Machin, 1999) *"a questionnaire survey is suitable when a large amount of data needs to be collected, to investigate responder's views and experiences on a particular phenomenon"*.

A quantitative approach was chosen for the analysis of the questionnaires and for the content of television food advertisements. Furthermore, a quantitative research type was selected since we have an observational study with dependent and independent variables and the above data will be mathematically and statistically analysed using the SPSS24 statistical analysis program.

Since we are using structured research instrument (original questionnaire) and the results are based on large samples that are representative of the population, a quantitative approach was chosen for the analysis of the questionnaires and for the content of television food advertisements.

The data of the quantitative approach was analysed using statistical tools (SPSS24). Descriptive and inferential statistics were used to analyse the data collected from the questionnaires and from the advertisement's documentation. SPSS24 was chosen as a tool to analyse quantitative data since is a comprehensive system for analysing data and is able to assist data interpretation more easily. Charts, plots of distributions and trends will be generated to present significance and similarity among data evaluated.

Finally, the quantitative method will provide help to underline links between factors, differences between groups in the study, and the situation at a current point in time.

On the other hand, a qualitative approach was selected in order to evaluate the responses of children during the interviews-tests stage of the study (focus groups).

This method was selected since we want to explore children's perceptions, opinions, and attitudes. Also, it involves the observation and explanation of children's behaviour by uncovering any related motives. This naturalistic element that defines qualitative research will unfold situations that will be assessed by the researcher.

The data from the focus groups (one to one tests and interviews) was organised and transcribed for analysis. All data were coded and treated as quantitative data using SPSS24 for their analysis.

Both techniques were used as useful tools to answer the research questions.

Quantitative method was selected to analyse the television advertisements as well since all the data were categorised and statistically analysed using the SPSS24 as well.

An original questionnaire was designed in order to fulfil all the areas of interest regarding this topic. Also, the questionnaire was designed in order for the parents to complete it easily and within the time given in the consent letter-information orientation letter. For the development of the questionnaire three basic types of questions open-ended and close-ended and also Likert-scale questions were used.

According to research (Hulley, 2001) *“much of the data in clinical research is gathered using questionnaires and the validity of the results depends on the quality of this”*.

As (Hulley, 2001) research reports the use of open-ended questions are of great value especially when it is important to *“hear what respondents have to say in their own words”*. The basis for the most standardise measures were developed with the use of close-ended questions. In the questionnaire responders were asked to choose either by circle or tick one or more preselected answers.

Since there were multiple items to assess in the questionnaire a Likert-scale concept was used in order to increase the range of possible responses. According to research (Campbell, Machin & Walters, 2007) *“Likert scales are used to identify attitudes, behaviours and domains in health-related aspects of the subject”*.

These scales provide responders and, in this case, (parents) with a list of statements or even questions and asks them to select which statement best represents them. Each statement was assigned a number of points.

According to research (Campbell, Machin, 1999) *“it is not always obvious what questionnaires are measuring and so we needed to consider whether they are trustworthy. Reliability is concerned with whether the instrument will produce the same result when administered repeatedly to an individual”*.

Research (Campbell, Machin & Walters, 2007) supports that *“assessment of reliability consists of determining that the process used for measurement yields reproducible and consistent results. This is sometimes known as the test-retest reliability”*.

All items of the questionnaire, open-ended questions, close-ended questions, scale questions should have internal reliability and therefore be consistent in the sense that they should all measure the same thing.

Research (Campbell, Machin, 1999) supports that *“validity is concerned with whether the instrument is actually measuring what it purports to be measuring”*.

According to research (Hulley, 2001) *“the assessment of validity (how well the measurement represents the phenomenon of interest) has three main aspects: (a): Content validity which refers to a subjective judgement about whether a measurement makes sense (face validity), and whether the measurement incorporates all or most of the aspects of the phenomenon under study (sampling validity), (b): Construct validity which refers to how well a measurement conforms to theoretical concepts concerning the entity under study, (c): Criterion-related validity is the degree to which the measurement correlates with an external criterion of the phenomenon under investigation”*.

Research (Campbell, Machin, 1999, Campbell, Machin & Walters, 2007) supports that *“internal validity of the questions is needed in order to confirm that are all positively correlated with each other and a lack of correlation of two items would indicate that the least one of them was not measuring the concept in question”*.

Furthermore, a measure of internal consistency is known as Cronbach’s alpha. It is a form of correlation coefficient: a value of 0 would indicate that there was no correlation coefficient between the items that make up a scale, and a value of 1 would indicate perfect correlation.

As research (Bland, Altman, 1997) states that, for comparing groups, a Cronbach’s values of 0,7-0,8 are regarded as satisfactory. For the reliability and the validation of the questionnaire a pilot study was performed using a sample of 40 children of a private school in Nicosia.

Specifically, the validity was done with the input of expert health professionals in nutrition/dietetics who evaluated both the questionnaire and the tests. With the permission of the experts their names are presented here (Dr Eleni Andreou, Prof. Demetris Papandreou, Dr Christiana Philippou). An internal validity test (Cronbach’s Alpha) was applied through the use of SPSS24 for the results of the pilot study. After assessing the questionnaire’s validation final changes were made and the final form of it was ready.

The interval scale questionnaire statements, underwent Exploratory Factor Analysis to examine the underlying relationships between the variables. Initially by examining the correlation matrix, there are a lot of variables with correlation higher than 0.30 and none higher than 0.90. (Table 2)

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .889 and the Bartlett’s test of sphericity p-value suggested to reject the null hypothesis (of the correlation matrix being an identity matrix) at a significance level  $\alpha=.01$ .

Therefore, both tests suggest that a factor analysis could be useful for the study’s data. The principal component analysis for factor extraction, suggested the presence of seven factors with eigenvalues greater than 1. Together, they accounted for 60.81% (>50%) of the variance on the original variables (14.65%, 9.65%, 7.94%, 7.78%, 7.64%, 7.04%, and 6.12% respectively).

For better interpretation of the factors, the original (unrotated) factor matrix, was rotated using the Varimax orthogonal rotation.

The following table (Table 1) shows the loadings of the statements on the resulting factors, after orthogonal (Varimax) rotation of the extracted factors.

The initial analysis was performed with 56 statements. Out of those, 5, which suggested the formation of 3 additional factors (2 statements in 2 factors and 1 statement in 1 factor), were removed due to how loading. A credibility test was followed, with a further 19 statements removed. The final formulation of factors identifies 32 statements. 2 statements (statement 31 and 36) identify similar loading factors, but are considered to fall under the loading, which is above the .40 threshold.

**Table 1**

**Factor loading of the statements of the seven factors which were extracted using orthogonal (Varimax) rotation.**

#*	Statements	Factors							
		I	II	III	IV	V	VI	VII	h <sup>2</sup>
49.	“Advertisements that enrol children “distract” my child’s attention.”	.84	.03	.10	.04	.09	.02	.05	.72
47.	“Advertisements that enrol “cartoon heroes” “distract” my child’s attention.”	.83	.10	.09	.04	.07	.01	.06	.72
46.	“Advertisements with music, colours and movement “distract” my child’s attention.”	.83	.06	.08	.08	.07	.02	.07	.71
50.	“Even if your child is not watching TV at that moment will the above ads “distract” its attention?”	.74	.08	.16	.10	.07	.05	.14	.61
39.	“Advertisements in general distract my child’s attention.”	.64	.02	.12	.40	.03	.06	.16	.61
48.	“Advertisements that enrol famous actors, football players etc. “distract” my child’s attention.”	.64	-.03	.22	.07	.08	.04	-.02	.47
41.	“My child sings advertisement jingles.”	.57	.05	.07	.31	.05	.03	.10	.44



37.	“My child enjoys advertisements.”	<b>.56</b>	-.03	.04	.35	-.06	.13	.20	.50
72.	“My child refuses to try novel foods.”	.05	<b>.83</b>	.10	.00	.00	-.03	-.03	.70
76.	“My child suggests that doesn’t like food even before they try it.”	.06	<b>.83</b>	.06	.03	.09	-.02	.07	.71
73.	“My child enjoys to try novel foods.”	-.06	<b>-.79</b>	-.03	.04	.01	.13	.13	.67
74.	“My child eats a variety of foods.”	.05	<b>-.72</b>	-.06	-.02	.10	.18	-.04	.57
75.	“My child is not easily satisfied with the type of food that is served.”	.09	<b>.63</b>	.08	.07	.16	-.05	.16	.46
60.	“To what level an advertisement affects your buying habits?”	.18	.11	<b>.74</b>	.20	.06	.05	.13	.65
59.	“Did you proceed to food purchase after your exposure to its advertisement?”	.25	.08	<b>.70</b>	.17	.06	.06	.12	.61
61.	“Although according to your knowledge a certain food product is considered unsuitable, would you buy it just because you were attracted by the ad?”	.12	-.02	<b>.61</b>	.03	.07	.00	.23	.44

34.	“The type of food/snack my child requests is an advertised product”.	.10	.07	.17	<b>.68</b>	.02	-.02	.20	.55
38.	“My child asks persistently for advertised products.”	.28	.06	.08	<b>.58</b>	.12	.11	.43	.64
25.	“To what extent to you believe that your child is affected by the “standards-role models” men/women promoted through television food advertising?”	.20	-.08	.10	<b>.58</b>	.03	-.06	-.09	.40
40.	“To what extent do you believe that advertisements affect your child’s eating habits?”	.40	.02	.24	<b>.57</b>	.18	.03	.10	.58
31.	“To what extent do you believe your purchase habits are affected by advertisements?”	.14	.02	.54	<b>.54</b>	.04	-.00	-.07	.61
83.	“If I leave my child unsupervised will always have food in his/her mouth.”	.07	.03	.02	.13	<b>.83</b>	.14	.06	.74
84.	“If I don’t intervene my child will overeat.”	.01	-.08	.06	.11	<b>.78</b>	.22	-.00	.67

81.	“My child overeats when has nothing else to do”	.04	.05	.21	-.00	<b>.69</b>	.15	.01	.55
82.	“Even when my child feels full always finds room for its favourite snack/sweet”.	.22	.12	-.04	.00	<b>.63</b>	.08	.08	.47
78.	“My child enjoys to eat”	.08	.20	-.01	-.01	.21	<b>.84</b>	-.06	.81
77.	“My child always seeks for food”.	.13	-.04	.03	-.01	.17	<b>.84</b>	.03	.76
79.	“My child is looking forward for the next meal”.	.01	-.17	.05	.02	.22	<b>.80</b>	.02	.71
65.	“The encouragement for new purchase of a new brand product happens at home after the commercial.”	.20	.06	.51	.05	.06	-.05	<b>.64</b>	.72
63.	“Your child encourages you to purchase a new brand product that has seen on TV.”	.13	-.02	.20	.08	.02	.02	<b>.64</b>	.48
64.	“The encouragement for purchase of a new brand product happens at home during the airing of the commercial.”	.22	.06	.50	.11	.08	-.06	<b>.63</b>	.72
36.	“The type of food product that your child asks for is	.07	.09	-.08	.46	.07	.00	<b>.48</b>	.47

new to your  
already purchase  
habits.”

Eigenvalues/ characteristic roots.	4.69	3.10	2.54	2.49	2.44	2.25	1.96
% of explained Variance.	14.65	9.65	7.94	7.78	7.64	7.04	6.12
% of cumulative Explained variance	14.65	24.30	32.23	40.01	47.64	54.69	60.81

**Table 1: Factor loading of the statements of the seven factors which were extracted using orthogonal (Varimax) rotation.**

*Notes:*

\* *The order of the statements in the questionnaire*

**\*\* Factor I:** Child’s distraction in relation to television food advertising, **Factor II:** Child’s eating behaviour in regards to new food products, **Factor III:** Effect of advertising on shopping habits, **Factor IV:** Effect of advertising on children’s purchasing requests, **Factor V:** Children’s eating behaviour in relation to food consumption, **Factor VI:** Children’s eating behaviour in relation to impatience for food, **Factor VII:** Purchasing behaviour in relation to advertisements.

From the above table, the first factor, which accounts for 14.65% of the variance, includes eight statements regarding “Child’s distraction in relation to television food advertising”. The second factor includes five statements about “Child’s eating behaviour in regards to new food products” and explains 9.65% of the explainable variance. The third factor includes 3 statements, which explain 7.94% of the variability and relate to the “Effect of advertising on shopping habits”. The fourth factor, which accounts for 7.78% of the variance, includes 5 statements about the “Effect of advertising on children’s purchasing requests”. The fifth factor includes 4 statements regarding the “Children’s eating behaviour in relation to food consumption” and explains 7.64% of the explainable variance. The sixth factor includes 3 statements, which explain 7.04% of the variability, and had to do with Children’s eating behaviour in relation to impatience for food. The seventh factor, which accounts for 6.12% of the variance, includes 4 statements regarding the “Purchasing behaviour in relation to advertisements”.

Subsequent internal consistency testing showed that the first, second and sixth factors had excellent internal reliability (Cronbach’s alpha= .89, .83 and .84 respectively). In addition, the third, fourth, fifth and seventh factors had marginally acceptable internal reliability (Cronbach’s alpha= .72, .73, .74 and .71 respectively).

Table 2 presents the means, standard deviations and alpha of the seven factors.

**Table 2****Means, standard deviations and Cronbach' alpha of the seven factors.**

<b>Factors</b>	<b>Statements*, **</b>	<b><math>\bar{x}</math></b>	<b>SD</b>	<b>alpha</b>
<b>Child's distraction in relation to television food advertising</b>	49, 47, 46, 50, 39, 48, 41, 37	2.66	.77	.89
<b>Child's eating behavior in regards to new food products</b>	72, 76, 73, 74, 75	2.93	.81	.83
<b>Effect of advertising on shopping habits.</b>	60, 59, 61	1.84	.61	.72
<b>Effect of advertising on children's purchasing requests.</b>	34, 38, 25, 40, 31	2.06	.63	.73
<b>Children's eating behavior in relation to food consumption.</b>	83, 84, 81, 82	2.39	.82	.76
<b>Children's eating behavior in relation to impatience for food.</b>	78, 77, 79	3.25	.88	.84
<b>Purchasing behavior in relation to advertisements.</b>	65, 63, 64, 36	1.87	.55	.71

**Table 2: Means, standard deviations and Cronbach' alpha of the seven factors.***Notes:*

\* The order of the statements in the questionnaire.

\*\* The order of statements 73 and 74 has been reversed.

Based on the above, the solution proposed is considered as good, meeting the basic criteria. Initially, the total percentage of explainable variation exceeds the required 50% and reaches 60.81%. Also, the percentage of explainable variation for each variable is higher than the required 33% with a minimum value of 44% being found in only 2 variables.

As for the 7 factor loadings, on one hand there is high loading on 1 factor and low on the others, but on the one hand, all loadings are above .4 (with the exception of statements 31 and 36). In addition, each factor has at least 3 statements.

Finally, Cronbach's alpha tests showed that the statements of the first, second and sixth factor had high internal reliability, and of the fourth, fifth and seventh factors had marginally acceptable internal reliability.

### **3.3 Population, Research Sample and Data Sources.**

As stated, the purpose of this research is to create better understanding of the impact of television food advertising on children's eating behaviour, food preferences and weight status. This entails a detailed study with both wider and more specific context factors. The research sample and the population from which the sample was drawn was divided into three categories.

Secondary data sources mainly covered several publications which provided valuable insights and useful input for the preparation of the questionnaire and the tests.

The first sample category was the primary data provided by the Cyprus Ratio-Television Authority (Cy-RTA). These data included original and unprocessed copy of aired television programmes for 365 days starting from November 2016- October 2017. This part of the research will be reported as (Study-Part2)

The second sample category was the collection of a representative sample of schoolchildren ages 6-12 from public schools all over Cyprus (the south-non occupied part of the island). This population was used as a target in order to provide answers through a questionnaire. This was identified as the target population using a multistage cluster sampling. The sample was defined at 1050 children from public schools. The number was defined in order to have less than 3% statistical error. The sample clustering is shown in the table below.

**Table 3**

**Sample Distribution.**

<div> <div>Sample: 1,050</div> <div>Statistical error:&lt;3</div> </div>										
	NICOSIA		FAMACUSTA		LARNACA		LIMASSOL		PAPHOS	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
<b>Total</b>	<b>198</b>	<b>190</b>	<b>35</b>	<b>31</b>	<b>96</b>	<b>93</b>	<b>148</b>	<b>144</b>	<b>60</b>	<b>54</b>
	28	27	5	4	14	13	21	19	9	8
	26	27	5	4	12	13	20	20	8	8
	28	26	4	4	13	12	20	20	8	8
	26	26	5	4	13	13	20	20	8	7
	30	28	6	5	14	14	23	21	9	9
	30	29	5	5	15	14	23	22	9	7
	29	28	6	5	14	14	21	23	9	8

**Table 3: Sample Distribution.**

The researcher having in mind the total number of answered questionnaires needed in order for the sample to be significant, started to plan the number of schools needed to participate. At that point the sample size was more than doubled because we expected to collect a percentage of invalid questionnaires.

Public schools from each town were randomly selected (Nicosia, Famacusta, Larnaca, Limassol, Paphos). In total it was achieved to deliver 2327 questionnaires to 9 schools and the number of completed questionnaires received was 1088. This number was consisted of 541 boys and 547 girls. This part of the research will be reported as (Study-Part 2)

The third sample category was an interview-test-focus group (n=71 children). This group of children was drawn from part of the original sample (n=1,088).

Tests and one-to-one interviews were planned to take place in a school during school hours, and for this part of the study consent letters were distributed to only one school in Nicosia for the researcher's convenience.

The test groups were the last step of the project in order to complete the collection of data. The focus groups consisted of children from school of Nicosia for convenient reasons. This part of the study will be reported as (Study-Part 3).

### **3.4 Materials and Tests**

All the tests were designed in such a way that would not expose any child to any physical or emotional danger.

All tests were designed in such a way that children of that specific age range (6-12) were able to understand and participate.

The tests are listed below with the same order that took place since the order of some of the tests was critical and might have an effect on the results (positive or negative).

Also, all the tools used are listed below. All tools and tests were approved by the main supervisor Dr. Eleni Andreou.

During the study the following tools were used:

- Questionnaire and consent letters (A), (B) (Tool 1)
- Product recognition test (Tool 2)
- Brand logo recall-recognition measurement test (Tool 3)
- Food preference test (Tool 4)
- Food preference using branded and unbranded food products test (Tool 5)
- Food knowledge, relatively healthy/ relatively unhealthy test (Tool 4)
- Stadiometer CHARTER HM200P (Tool 6)
- Scale-portable CHARTER MBF-6000/MBF-6010 (Tool 7)
- Hunger scale (Tool 8)
- SPSS 24 (Tool 9).
- Data from Cyprus Radio-Television Authority (Tool 10)

### **3.5. Data Collection Method-Procedures-Protocols.**

The first step was to obtain a written consent from the Bioethics Committee of Cyprus and the Ministry of Education in order to proceed with the study. After applying using all the necessary documentation a written approval was given from Bioethics Committee of Cyprus (file number: EEBK EP 2017.01.64) and from the Ministry of Education (file number: 7.19.46.10/12) giving the main researcher the permission to proceed with the school enrolment. At the same time all the necessary documentations were used in order to obtain a written approval for the General Data Protection Regulation (GDPR), (file number 3.28.509).

An original questionnaire was designed in order to fulfil all the areas of interest regarding this topic. Also, the questionnaire was designed in order for the parents to complete it easily and within the time given in the consent letter.

After receiving the approval from the Ministry of Education an email to several directors of several public schools of Cyprus was sent by the main researcher in order to inform them regarding the purpose of the study, the significance and the possible outcomes and to ask for their interest to include their school in this project. Some school directors rejected our request to include their school in the study. They justified this action since as they claimed those schools had a disappointing history regarding responding to questionnaires.

After that the final list of the primary schools that accepted the invitation to be part of this study was finalized and presented in table 4.

**Table 4**

#### **Elementary schools participated in the study.**

City	Name of School	Number of Children
Nicosia	Z' Agiou Panteleimona School	338
Nicosia	Agiau Vasiliou School	374
Nicosia	A' Makedonitissas School	205
Nicosia	Grammar School	225
Nicosia	Penera School	311
Famacusta	Paralimniou C' School	238
Larnaca	A' Agiou Lazarou School	154
Limassol	A' Limassol School	112
Paphos	I' Paphos School	370
Total=		2,327

**Table 4: Elementary schools participated in the study.**



### **3.5.1 Data collection- Protocol 1, Distribution and collection of questionnaires.**

The following steps were followed for the distribution and collection of questionnaires.

- The number of schools needed to participate was defined. Schools from all towns were selected (Nicosia, Famacusta, Larnaca, Limassol, Paphos). In total it was achieved to deliver 2,327 questionnaires to 9 schools and the number of completed questionnaires received was 1088. This number was consisted of 541 boys and 547 girls.
- The procedure required travelling to each destination (firstly to meet with the school director, secondly to provide educational seminar to teachers and provide them with the questionnaires, thirdly to collect the questionnaires).
- The final and approved form of questionnaire was printed and coded and along with the consent letter was enclosed in an envelope size A4.
- In order not to lose track of the questionnaires, these were separated and organized by the number of children in each class and labelled accordingly, for example Class A'1 (first grade elementary school, section 1, 6 years old) = 19 children. This procedure was followed for each class and for each school separately.
- This procedure apart from time consuming was very helpful in order to be able to help the teachers as well by giving each and every one of them the 'ready to distribute' package in their class.
- During the pre-planned appointments with the school directors a detailed discussion was taking place in order to inform them regarding the research, the purpose, and how valuable their cooperation is.
- All the tools and methods were presented to the directors in order for them to fully comprehend all the stages of the research, even if their school would not participate in all the stages of the study.
- After receiving a written or verbal approval of each director saying that approves all tools and procedures of the study a small presentation was arranged for all the teachers of each school (at a time and day that the director approved) during school hours.
- Following the appointments with the schools' directors a scheduled educational seminar was provided to all the teachers of each school by the main researcher. The purpose of the educational seminar was for the teachers to fully understand the purpose of the study, the expected outcomes and also to understand that in order to achieve a high (answered-valid questionnaires) number of questionnaires they had to keep reminding the children to bring the questionnaire back to school.
- At that point the First Consent Letter (A) and the questionnaire (Tool 1) was given to the teachers (all instructions were given at the educational seminar).
- The teachers had to explain to children that the closed envelop needs to be delivered to their parents/guardians, and that their parents/guardians were instructed to give their approval and complete it only if they wanted to.
- Children were informed that they should return the envelop with the questionnaire back to school even if their parents/guardians decided not to answer it.
- Inclusion criteria for the participation in the study were children aged between 6 and 12 years at the time of recruitment.
- Exclusion criteria were set only for the test group and that was children with unsigned consent form.

- As it was referred earlier a code number was given for each questionnaire and the anonymity of the participants remained throughout and after the end of the study.
- The Consent Letter with the Information-Orientation Letter (A) introduced the purpose and the significance of the study in details, and asked if they would allow their child to participate or not (active informed consent).
- At the Consent Letter with the Information-Orientation Letter (A), was made clear the following:
  - that the participation in the study was voluntarily and that all participants had the right to withdraw from the study if they choose to at any time point throughout the data collection and analysis process.
  - that the participation in the research required the consensus from the minor in respective from the approval provided by the parents/guardians.
  - that all the collected data would be used only for the purposes of the particular research-study and all the necessary measures would be taken in order to protect and secure the data collected.
  - that the questionnaires would be anonymous and an identification number would be given to each questionnaire. This number would be noted on the consent form which would include some personal information of the participants (name of the child and the parent and contact number). That would be done in order to allow for the matching of the questionnaire with the participant in case of withdrawal or follow up. The consent forms with the personal information would be kept separately from the questionnaires and only the researcher would have access to them for confidentiality reasons.
  - the required time necessary to complete the questionnaire. A straightforward questionnaire was developed in such a way so that all parents would know what to do and to answer easily. The questionnaire would provide important information regarding the children's nutritional eating habits, eating preferences, buying behaviour, physical activity.
  - contact details with the main researcher were given in case there were any questions or further information needed.
  - contact details with an assigned person at the University of Nicosia were given in case there were any complaints regarding the research.
  - children would be directed by their teachers to return the envelop (that includes the questionnaire and the consent letter) back to school. Parents/guardians were encouraged to keep the Information-Orientation Letter.
- Each school was given about 15 working days in order for all the children to return the questionnaires back to school. During this period reminder calls were made by the main researcher to the school directors or school secretary in order for the teachers to have in mind the project and collect the questionnaires.
- All questionnaires were collected by each teacher of each class separately and the researcher was responsible to collect and file them in a plastic box, sealed and labelled with the name of the school.
- The questionnaires were opened by no one except from the main researcher in order to secure confidentiality and safety of all data. Only the signed consent letters and answered questionnaires were treated as valid.

- The questionnaires would be safeguard in a secure place in the university for 5 years and then will be discarded.
- After the collection of the questionnaires from all schools', statistical analysis using SPSS 24 was used to statistically analyse the data.
- These data were collected and documented in an excel file and then were transferred for statistical analysis to the SPSS 24 program that was already installed in main researcher's laptop.
- This procedure started in October 2017 and was completed in December 2017.



### **3.5.2 Data collection: Protocol 2, Collection and documentation of television advertisements.**

The following steps were followed for the collection and documentation of television advertisements.

- Along with the questionnaires an appointment with the director of the Cyprus Radio-Television Authority, Mr. Neophytos Epamenondas, was arranged. The purpose of the meeting was to inform the director regarding the purpose, the tools of the study and the expected outcomes and ask for their valuable cooperation.
- The main request was for the main researcher to be able to have all the material needed in order to complete this part of the study. More specifically the main researcher was asking for the original and unprocessed aired television programs for 365 days for all 9 television channels broadcast in Cyprus.
- After the written approval of the director of the Cyprus Radio-Television Authority (Cy-RTA) (file number: 1.12.01), an appointment with the person responsible for the information technology (IT) was arranged.
- The information technology assistant provided the main researcher every month with a copy of all aired television programs. These data included original and unprocessed copy of aired television programmes for 365 days starting from November 2016-October 2017. These data covered a full year, 365 days, 12 months of aired television programs of each channel.
- These data included original and unprocessed copy of aired television programmes of 9 television channels that broadcast in Cyprus. These data were copied each time in an external drive in order to be processed and documented.
- The information technology assistant of CyRTA installed a specific computer program on main's researcher's laptop that helped to watch, stop, fast forward and rewind the full unprocessed aired programme.
- These data were documented at first in an excel file and then were copied to the SPSS24 program in order to be statistical analysed.
- This detailed documentation provided data regarding the type of advertisements aired during family zone (07.00am- 21.30pm), the repeatability of the advertisement, the content of these advertisements, the seasonality of advertisements, nutrition information, marketing techniques, themes used and any disclosures involved.
- This was a very time-consuming procedure and in order to be completed 2 years were needed.
- Since CyRTA provided the whole 24h program, the researcher had to fast forward the video in order to start viewing from 07.00am. The researcher used a specific fast forward speed to view the whole daily program. The speed used helped the researcher to overtake the programs showed and to be able to stop or pause when the advertising breaks started. During each break the researcher documented the time of break the duration of each advertisement and all the characteristics of it mentioned earlier. When it was needed the researcher rewind the video to document any details that might have been missed. So that was a fast forward, rewind and pause procedure in order for the viewing and documentation to be completed. A minimum of 45 minutes was needed in order to complete the viewing and documentation of 1 day (family zone 07.00am-21.30pm).

- Since there is no legislation in Cyprus that defines a specific kids zone during weekdays or during weekends, in order to be specific and for the documentation to be representative and complete the main researcher decided to document and analyse the family zone that was defined for weekdays and weekends that start from 07.00am until 21.30pm. During this time period advertising companies are allowed to promote any type of food product except alcohol, which is allowed to be advertised after 21.30.
- The lack of a predefined kids-zone made the procedure more time consuming since the hours that had to be documented and analysed were 14,5 for each day for every channel leaving the researcher with a total of 47,632,5 hours of viewing in order to achieve a complete documentation.



### **3.5.3 Data collection: Protocol 3, Steps followed for the preparation of the tests.**

The following steps listed below were followed for the preparation of the tests.

- The third sample category was a test-focus group (n= 71 children). This group of children was drawn from part of the original sample (n=1,088).
- The test groups were the last step of the project in order to complete the collection of data. The focus groups consisted of children from school of Nicosia for convenient reasons.
- For this part of the study only one school was randomly selected from the previous sample of schools that participated. This school was Z' Agiou Panteleimona in Nicosia.
- For this part of the study a focus/interview/test group was needed to be formed with children age 6-12. At this stage another planned appointment with the particular director of school was arranged in order to provide all the information needed for that stage of the study.
- Before the distribution of the Consent letter (B) another educational seminar was planned for the school teachers during school hours, in order to inform them in details for the purpose of this part of the study and also to explain them the possible outcomes. Furthermore, it was explained that it was important for the teachers to explain the children that they had to give the close envelop to their parents/guardians to sign if they wanted to and then to bring the envelop back to school.
- At the Consent Letter with the Information-Orientation Letter (B), was made clear the following:
  - that the participation in the study was voluntarily and that all participants had the right to withdraw from the study if they choose to at any time point throughout the data collection and analysis process.
  - that the participation in the research required the consensus from the minor in respective from the approval provided by the parents/guardians.
  - that all the collected data would be used only for the purposes of the particular research-study and all the necessary measures would be taken in order to protect and secure the data collected.
  - that during the tests a teacher or a school staff member will be present in the library.
  - that the test answers' sheet of each child would be coded and anonymity will be secured.
  - that the main researcher or teacher or school staff member would help children if needed during weight and height measurement.
  - contact details with the main researcher were given in case there were any questions or further information needed.
  - contact details with an assigned person at the University of Nicosia were given in case there were any complaints regarding the research.
  - children would be directed by their teachers to return the envelop (that includes the consent letter-B) back to school. Parents/guardians were encouraged to keep the Information-Orientation Letter.
- It was made clear to the teachers that the participation of children in this part of the study was also voluntary.

- For this part of the study a group of children to apply a series of tests was needed (these tests are being explained below, 3.6, 3.6.1, 3.6.2, 3.6.3, 3.6.4, 3.6.5)
- The consent letter was enclosed in an envelope size A4.
- The consent letter (B) was given through the teacher to the child in order to get the parental approval for their children to participate in the test-groups.
- Only the children who had returned a signed by their parents'/guardian's consent letter were able to participate in the tests.
- In order not to lose track of the consent letters, these were separated and organized by the number of children in each class and labelled accordingly, for example Class A1(first grade elementary school, section 1, 6 years old) = 18 children. This procedure was followed for each class separately.
- Two weeks after the day of delivery and distribution the main researcher collected all the consent letters from the school.
- A total number of 121 consent letters were distributed as follow: A1=18, B1=25, C1=19, D1=20, E1=19, F1=20.
- At this stage 71 child were identified as the focus/interview/test-group (A1=14, B1=13, C1=12, D1=10, E1=14, F1=8).
- After having the final list with the number and names of the children eligible to participate, a meeting with the school director was planned in order to explain how the study would have to proceed.
- The main researcher asked for the director's approval to use the library during all the days that the tests would apply at the children. Furthermore, a specific day was set in order for the tests to start.
- The day that was agreed the main researcher set all the necessary equipment in the school's library.
- The equipment was consisting of the Stadiometer CHARTER HM200P (Tool 6), Scale-portable CHARTER MBF-6000/MBF-6010 (Tool 7) and also the lists with the names of children and the test file that included all the tests.
- After coordinating with the school's secretary, the lists with the names of the children were ready. There were six lists one for each class, A1, B1, C1, D1, E1, F1.
- In each list the names of all the children that were eligible to participate were written. Only the children that had a signed consent letter were eligible to participate in this part of the study.
- Teachers were informed in advance that the tests would begin in a certain day. During the educational meeting it was agreed that the tests will begin with the older children and then proceed with the youngest.
- So, the teacher of F1 class was informed that children from her class would start the test-process first. The list with the names was given to her as well and she was keeping track which child was escorted from the class to the library (accompanied with a school staff member) and who was next in line.
- Next group was from class E1, then D1, C1, B1 and the tests were completed with the children of class A1.
- The main researcher started the tests at 7.45am and finished at 13.05pm every day for 6 working days in order to complete all the tests to all the children in the test/focus group.

- Children were accompanied by a school member staff to the library. The teacher or the school staff member was present in the library during the whole time needed to complete the tests. When the tests were finished, the child was accompanied by a school member staff or a teacher back to the classroom and the next child took place for the tests.
- All the teachers were fully informed about the procedure and were very helpful during all those days.
- All the children were informed that they had the right to withdraw from the tests at any given stage.
- This procedure started in April 2018 and was completed the same month.





### **3.5.4 Data collection: Protocol 4, Steps followed at the beginning of the test session.**

The following steps were followed at the beginning of the test session for every child separately.

- The main researcher welcomed each child that entered the library and introduced herself. The researcher explained to every child all the steps that would be followed in order to complete the tests.
- A teacher or a school staff member was present during the tests.
- Each child was informed that they had the right to withdraw from the tests at any given stage and go back to their classroom.
- After getting the child's agreement to proceed the researcher took the child's name and write it on the answer sheet. Each child had its own answer sheet which was also coded. Along with the name the age and class were completed.
- Followed by this the child was asked to proceed to the stadiometer (Tool 6) and to remove the shoes to measure its height and after that to step on the scale (Tool 7) to measure the weight.
- The researcher, the teacher or the school staff member helped any child that needed some additional help to remove the shoes and to step on the scale and also to step down from the scale and to put the shoes back on.
- After all the measurements were taken, the child was instructed to sit on the chair that was set in front of the researcher and sit as comfortable as possible. The chair and the desk were already set in the library.
- Before starting the tests, the first step was to measure the level of hunger of each child with the use of a hunger scale (Tool 8) that was numbered from 1-5.

In order to control for individual differences in hunger the hunger scale was presented to children with a visual analog scale (VAS) to measure the extent to which children feel hungry before the tests. The hunger was assessed before the tests in order to avoid the influence of preference, recall characteristics and to approach a daily life situation as much as possible. (Bennett, Blissett, 2014)

Each stage was explained in a simple language in order for the children to understand. Special emphasis was given to the meaning of hunger and satiety.

- The hunger scale is demonstrated and explained below:



**Figure 1: Hunger scale.**

The hunger scale was consisted of 5 faces each one of them represented the specific level/stage of hunger.

The face with number 1 was representing the 'very hungry level/stage'.

The face with number 2 was representing the 'hungry level/stage'.

The face with number 3 was representing the 'I'm not feeling hungry, I'm not feeling full; I'm feeling neutral level/stage'.

The face with number 4 was representing the 'I'm not feeling hungry; I'm feeling satisfy level/stage'

The face with number 5 was representing the 'I'm not feeling hungry at all, I'm feeling very satisfied, I'm feeling very full level/stage'.

- The hunger scale was presented in front of each child and each number/face was explained. Then the researcher asked each child to point with the finger the number/face that represented its level/stage of hunger at the specific time.
- The number/face was noted in the child's answer sheet.
- After that the researcher asked each child the following questions.
- Question 1: "Can you please tell me what time did you last ate?".
- Question 2: "Do you eat breakfast?" Answers were given using a Likert scale like, "Never", "Sometimes", "Always".
- Question 3: "Do you have a television set in your bedroom?"
- Question 4: "Can you please tell me where do you eat your lunch?".
- After completing this part, the researcher explained the first test that was following.
- All data and answers were documented on each child's answer sheet by the researcher.

All children were happy and excited to complete the tests. Even though all children were informed that they had the right to withdraw from the tests at any given stage and go back to their classroom, none of the children left the library before the completion of all the tests. Adding to these there were some children that asked if they could take the tests all over again since they had such a good time.

### **3.5.5 Data collection: Protocol 5, Steps followed during the test sessions.**

The following steps listed below were followed during the test session for every child separately.

- This test took place in the library of the school in the presence of a teacher or a school member staff. The test was applied on one child at a time. The test was applied during school hours. When the child finished the test was accompanied back to its class by a teacher or a school staff member, and the next child was invited. The children were asked not to talk about the experiment with their classmates.
- In order for the researcher to apply this test the following procedure was followed for each child.
- The researcher was sitting on a chair and in front there was a desk in the library.
- After the steps taken in Protocol 4, the researcher explained the process of this test by saying “I’m going to show you some photos of several food and drink products and I would like you to tell me the brand name of each product. It is fine if you don’t know some of the products, it is fine if you don’t know any products. If you change your mind, we can stop this test and you can go back to your classroom. You can leave the library whenever you want.”
- After each child completed each test the researcher asked if they agree to proceed to the next test. Again, the researcher reminded the children that if they changed their mind they could stop at that point and they could go back to their classroom. At that point no child left the library and all the children agreed to proceed to the next test.
- All answers were documented on each child’s answer sheet.
- After all the tests were completed the main researcher thanked each child for the cooperation and for the valuable contribution to the research. A school staff member guided each child back to the classroom.
- The main researcher arranged a final meeting with the school director in order to provide all the details regarding the completion of the tests and also to explain how valuable the school’s cooperation was for the research.
- The researcher thanked all the teachers that were involved at this stage of the project and the school staff as well.

### **3.6 Validation and Focus Group Tests**

The following tests were originated from different sources of bibliography which are cited in the literature review chapter (Kopelman, Roberts & Adab, 2007, Pine, Nash, 2003, Dixon et al., 2007, Halford, Boyland, Cooper et al., 2008, Robinson et al., 2007, Roberto et al., 2010, Galst, White, 1976, Aktas Arnas, 2006). However, for the purposes of the study new tools were developed which were modified and adjusted to the Cypriot consumer culture and use.

Specifically, the validity was done with the input of expert health professionals in nutrition/dietetics who evaluated every test separately. With the permission of the experts their names are presented here (Dr Eleni Andreou, Prof. Demetris Papandreou, Dr Christiana Philippou). The validation was done through the pilot study. The sample of the pilot study (n=40) for the usage of both questionnaires and tests were included in the total participants sample (n=1088). The researcher considered minimal changes needed to be done for the tests.

Validity of Test 1: Product Recognition Test was done with the input of expert health professionals in nutrition/dietetics (Dr Eleni Andreou, Prof. Demetris Papandreou, Dr Christiana Philippou), where they approved the developed tool and the modifications that were made in order to be adjusted to the Cypriot culture and use. This tool was also approved since the professionals ensured that it was designed in such a way that will not expose children to any physical or emotional danger and that is suitable for their age to understand and be able to participate.

Validity of Test 2: Brand logo recall-recognition measurement Test was done with the input of expert health professionals in nutrition/dietetics (Dr Eleni Andreou, Prof. Demetris Papandreou, Dr Christiana Philippou), where they approved the developed tool and the modifications that were made in order to be adjusted to the Cypriot culture and use. This tool was also approved since the professionals ensured that it was designed in such a way that will not expose children to any physical or emotional danger and that is suitable for their age to understand and be able to participate.

Validity of Test 3: Food preference Test was done with the input of expert health professionals in nutrition/dietetics (Dr Eleni Andreou, Prof. Demetris Papandreou, Dr Christiana Philippou), where they approved the developed tool and the modifications that were made in order to be adjusted to the Cypriot culture and use. This tool was also approved since the professionals ensured that it was designed in such a way that will not expose children to any physical or emotional danger and that is suitable for their age to understand and be able to participate.

Validity of Test 4: Food preference using branded and unbranded products Test was done with the input of expert health professionals in nutrition/dietetics (Dr Eleni Andreou, Prof. Demetris Papandreou, Dr Christiana Philippou), where they approved the developed tool and the modifications that were made in order to be adjusted to the Cypriot culture and use. This tool was also approved since the professionals ensured that it was designed in such a way that will not expose children to any physical or emotional danger and that is suitable for their age to understand and be able to participate.

Validity of Test 5: Food knowledge (relatively healthy/ relatively unhealthy) Test was done with the input of expert health professionals in nutrition/dietetics (Dr Eleni Andreou, Prof. Demetris Papandreou, Dr Christiana Philippou), where they approved the developed tool and the modifications that were made in order to be adjusted to the Cypriot culture and use. This

tool was also approved since the professionals ensured that it was designed in such a way that will not expose children to any physical or emotional danger and that is suitable for their age to understand and be able to participate.

### **3.6.1 Test 1: Product recognition test (Tool 2)**

This recognition ability was assessed by a short quiz. All children in the test group took this test. Even though all children were informed that they had the right to withdraw from the tests at any given stage and go back to their classroom, none of the children left the library before the completion of all the tests.

The quiz was consistent of 22 flashcards (Tool 2) each displaying a coloured photo of a frequently advertised brand of food or drink (e.g. chips, fast food chain, cereal etc.). The flashcards were bind together to form a flashcard book. Each page had a single product. The food and drink products included in the quiz were selected based on the review of commonly advertised food products aired during children and family zone (07.00am-21.30pm during weekdays and weekends), according to the results of Study Part 2 (Analysis of advertisements). Some examples of food products commonly advertised during family zone are Lays Chips, Pizza Hut, Oreo biscuits, Gregoriou kids cold-cuts, Keanita kids sugary fruit drink, Kit Kat chocolate, Mc Donald's, Junior Kids sugary yogurt beverage etc.

The logos of the food products were processed using professional Photoshop technique so that the pictures were exactly the same as the original product apart from the logo that was missing. All colours, and graphics of the products remained unattached. The Photoshop technique was applied by a professional photographer so that the result would be as professional and realistic as possible.

The food and drink products that were selected for this test are presented below:

**Table 5**

#### **Food and drink products selected for Test 1.**

<i>Lays</i>	<i>Pizza Hut</i>	<i>Oreo Biscuits</i>	<i>Gregoriou kids</i>	<i>Keanita juice drink</i>
<i>Pringles</i>	<i>Kit Kat</i>	<i>Mc Donald's</i>	<i>Junior kids' yogurt</i>	<i>Skips</i>
<i>Coco pops</i>	<i>Morning coffee</i>	<i>Snack a Jacks</i>	<i>Caprice</i>	<b>KOKO</b>
<i>Nesquik</i>	<i>Haribo</i>	<i>Quaker</i>	<i>Coca Cola</i>	<b>KFC</b>
<i>7-Days</i>	<i>Galataki</i>			

**Table 5: Food and drink products selected for Test 1.**

The type of each food that was included in the test is explain below:

**Table 6**

**Type of each food product for Test 1.**

<b>Brand Name</b>	<b>Type of food</b>
Lays, Pringles, Snack a Jack, Skips	Salted chips
Coco Pops	Sugary cereal
Nesquik	Dairy sugary drink powder
Pizza Hut, KFC, Mc Donald's	Fast food chains
Kit Kat	Chocolate
7-Days, Caprice, Oreo, Morning coffee	Sugary cookies
Galataki	Dairy sugary milk beverage
Junior kids' yogurt	Dairy sugary yogurt dessert
Keanita juice	Sugary fruit drink
Gregoriou kids	Processed meat for kids
Haribo	Sugary products
Coca cola	Soft drink
KOKO	Non-dairy milk
Quaker	Cereal high fibre

**Table 6: Type of each food product for Test 1.**

The photos were shown one by one with a steady speed. Children had each photo in front of them and gave their answers verbally. Children were instructed that if they didn't know the name of any product, we would move to the next one. The researcher wasn't providing any guidance to the children regarding the answers. The researcher only documented the answers.

The purpose of this test was to evaluate the children's ability to identify the food products with their brand names even if the brand logo was missing. Furthermore, this test was designed to identify any relations between gender, age, BMI and knowledge of food products with their brand names.

The number of the correctly identified food and drink products were marked on each child's answer sheet. As it was mentioned earlier, each child had its own answer sheet where all the measurements were taken and all the answers were written by the main researcher. The number of correctly identified food and drink products were documented at the same time. For this test each child had a maximum score of 22.

At the end of this test every child was asked the same question "After you saw all these food products, can you please tell me what is the first place that comes to your mind regarding where you see them more often?". Three choices were given, 1= "supermarket", 2= "home", 3= "television".

### **3.6.2 Test 2: Brand logo recall-recognition measurement test (Tool 3)**

This recall ability was assessed by a short quiz. All the children in the test group took this test.

The recall measurement test was consisted of viewing the same 22 flashcards (Tool 2) each displaying a coloured image of a frequently advertised brand of food or drink (e.g. chips, fast food chain, cereal etc.).

The flashcards were bind together to form a flashcard book. Each page had a single product. The food products included in the quiz were selected based on the review of commonly advertised food products aired during children and family zone (07.00am-21.30pm during weekdays and weekends) according to the results of Study Part 2 (Analysis of Advertisements).

Some examples of food products commonly advertised during family zone are Lays Chips, Pizza Hut, Oreo biscuits, Gregoriou kids cold-cuts, Keanita kids sugary fruit drink, Kit Kat chocolate, Mc Donald's, Junior Kids sugary yogurt beverage etc.

The food and drink products that were selected for this test are presented below:

**Table 7**

**Food and drink products selected Test 2.**

<i>Lays</i>	<i>Pizza Hut</i>	<i>Oreo Biscuits</i>	<i>Gregoriou kids</i>	<i>Keanita juice</i>
<i>Pringles</i>	<i>Kit Kat</i>	<i>Mc Donald's</i>	<i>Junior kids' yogurt</i>	<i>Skips</i>
<i>Coco pops</i>	<i>Morning coffee</i>	<i>Snack a Jacks</i>	<i>Caprice</i>	<b>KOKO</b>
<b>Nesquik</b>	<b>Haribo</b>	<b>Quaker</b>	<b>Coca Cola</b>	<b>KFC</b>
<b>7-Days</b>	<b>Galataki</b>			

**Table 7: Food and drink products selected Test 2.**

The differentiation between this test and the previous (Test 1) is that in this test all the photos of all the food and drink products were not processed so that the pictures were exactly the same as the original product.

The researcher explained the process of this test by saying "I'm going to show you some photos of several food and drink products. I will show you the photos one after another and I will stop only when I will show you all the photos. During this time, I want you to look at each photo and try to remember as much photos as possible. When I will show you all the photos of the food and drink products, I will move them away from you and then you can tell me as many food and drink products as you remember. It is fine if you don't remember some of the photos of the food products, it is fine if you don't remember any products. If you change your mind, we can stop this test and you can go back to your classroom. You can leave the library whenever you want."

The photos were shown one by one with a steady speed. Children were instructed that they could start recalling all the photos they remember when the process was finished and all the

photos were shown and were removed from the desk. The recall was verbal and children didn't have to write down any kind of information, or to keep any notes during the test.

The purpose of this test was to evaluate the children's ability to recall the food and drink products only with their brand name. Furthermore, this test was designed to identify any relations between gender, age, BMI and recall of branded food products.

After the researcher showed all the photos and the children gave their response, all the answers were documented on each child's answer sheet.

At the end of this test every child was asked the same question "After you saw all these food and drink products, can you please tell me what would you choose for yourself to eat or drink right this moment, you can choose as many food and drink products as you can."

All answers were documented on each child's answer sheet.





### **3.6.3 Test 3: Food preference test (Tool 4)**

This preference test was assessed by a short quiz. All the children in the test group took this test. For this test children were tested on one condition.

This condition involved a series of 10 matched pairs of food types, (Tool 4) printed on flashcards. The flashcards were bind together to form a flashcard book.

All the photos were realistic without any process on their colour or shape. All the photos of the food and drink products of both categories had no brand logos and were presented in the photos out of their packages, in a clear glass, plain plate or bowl. The pairs are listed below:

**Table 8**

**Pairs of food products used in Test 3.**

1. Orange fruit.	Fruit uice in a glass.
2. Glass of water.	Glass of coca cola.
3. Strawberry fruit.	Fruity strawberry flavoured lollipop.
4. Whole grain breakfast cereal in bowl.	Sugary breakfast cereal in bowl.
5. Cereal bar.	Milk chocolate bar.
6. Jacket potato in a plate.	French fries in a plate.
7. Ham, cheese, tomato sandwich in a plate.	Ham, cheese and tomato pizza in a plate.
8. Roast chicken in a plate.	Chicken nuggets in a plate.
9. Yogurt with strawberries in a bowl.	Strawberry flavoured yogurt in a bowl.
10. Pasta napolitana in a plate.	Pasta carbonara in a plate.

**Table 8: Pairs of food/drink products used in Test 3.**

The researcher showed each pair of food products one set at a time with a steady speed.

For this preference test, children were asked “I want you to see each pair of food and drink products and point with your finger which food or drink do you prefer best, even for you to eat right now or later, you can choose only one food product from each pair. I would like you to give me your choice after you see each pair and then I will move to the next pair of food and drink products. We can stop this test and you can go back to your classroom if you don’t want to continue. You can leave the library whenever you want.

The purpose of this test was to access the children’s food and drink preferences and also to identify any relations between gender, age, BMI and preferences of food and drink products.

### **3.6.4 Test 4: Food preference using branded and unbranded products test (Tool 5).**

This preference test was assessed by a short quiz. All the children in the test group took this test. For this test children were tested on one condition.

This condition involved a series of 10 matched pairs of food types, (Tool 5) printed on flashcards one being originally branded and the other one unbranded or even fake-branded. The flashcards were bind together to form a flashcard book. All the photos of the originally branded food and drink products were realistic in their original package without any process on their brand name, logos or colours. All the photos of the unbranded food and drink products were realistic in the same size and shape packages without any process. All branded and unbranded food and drink products were presented in the same neutral background in the same size and shape packaging.

For this test three fake products were developed in two pairs, branded and unbranded. All the photos of the fake-branded products were realistic using the original packages but with fake product inside. In order for these photos (of fake products) to match with all the others the help of a professional photographer was taken.

For example, the ‘fake-presented as original branded product- ‘Mc Donald’s Baby Carrots’ a plain clear plastic packaging was used and a Mc Donald’s logo was attached to the packaging.

For the ‘fake-presented as original unbranded product Baby Carrots’ a plain clear plastic packaging was used with no logo or label attached to the packaging. The quantity of both products was the same.

So, for this test these pairs of branded products consisted of a fake product (doesn’t exist in the market) with original package and logo and for the unbranded product the same packaging was used without any logo and branded characteristics.

This was actually a fake product since in Cyprus this branded fast food restaurant doesn’t serve a product like this.

For the fake-presented as original branded product ‘JUNIOR yogurt with FRESH FRUIT ON TOP’ the original brand “Junior” package of fruit yogurt was used and on top instead of small chocolate biscuits that the original packaging has, these were replaced with fresh chopped strawberries. The final packaging was to perfection and couldn’t realise any differences with the original one.

For the ‘fake product-presented as original-Yogurt with FRESH FRUIT ON TOP’ the original Junior package of fruit yogurt was used and the label was removed completely. No logos and other identification characteristics remained on the packaging. The packaging left as a completely plain plastic yogurt dessert cup. On top the same procedure as the fake product was followed and instead of small chocolate biscuits that the original packaging has, these were replaced with fresh chopped strawberries.

So, for this test this pair of branded products consisted of a fake product (doesn’t exist in the market) with original package and logo and for the unbranded product the same packaging was used without any logo and branded characteristics.

That was actually two fake products since in reality this yogurt beverage comes only with small chocolate biscuits on top and no fresh fruit.

For the last fake-presented as original product ‘Mc Donald’s Fresh Apple slices’ a plain clear plastic packaging was used and a Mc Donald’s logo was attached to the packaging.

For the ‘fake product Apple slices’ a plain clear plastic packaging was used with no logo or label attached to the packaging. The quantity of both products was the same.

So, for this test this pair of branded products consisted of a fake product with original package and logo and for the unbranded product the same packaging was used without any logo and branded characteristics.

That was actually a fake product since in reality in Cyprus this brand fast food restaurant doesn’t serve a product like this.

Finally, for this test the researcher created 3 pairs of fake products branded and unbranded.

All the pairs of branded and unbranded food and drink products are listed below:

**Table 9**

**Pairs of branded and unbranded food and drink products used in Test 4.**

<b>Branded</b>	<b>Unbranded</b>
McDonalds French Fries-original	Regular French fries
Lays Chips-original	Regular Chips
Mc Donald’s baby carrots (FAKE-presented as original branded PRODUCT)	Regular baby carrots
Oreo biscuits- original	Oreo looking unbranded biscuits
JUNIOR yogurt with FRESH FRUIT ON TOP (FAKE-presented as original branded PRODUCT)	Regular yogurt with fresh fruit on top
Gregoriou kids-original ★	Regular cold cuts
Pizza Hut-original	Regular pizza
Mc Donald’s fresh apple slices (FAKE-presented as original branded PRODUCT)	Regular fresh apple slices
Caprice-original ★ ★	Caprice looking unbranded chocolate

**Table 9: Pairs of branded and unbranded food and drink products used in Test 4.**

★ Processed meat for kids

★ ★ Chocolate

For this test children were asked “For this test I want you to see each pair of food products at a time and I would like you to point using your finger to the product of each pair that you would prefer. You can only choose one food product from each pair. When you point the food product that you choose, I will move to the next pair of food products. We can stop this test and you can go back to your classroom if you don’t want to continue. You can leave the library whenever you want.”

Children saw each pair of food product at a time, pointed their choice from each pair and every card that was finished was taken away from the children.

The purpose of this test was to evaluate the power of the brand and the food preferences of each child and also to identify any relations between gender, age, BMI and preferences of food products guided by the brand name.



### **3.6.5 Test 5: Food knowledge (relatively healthy/relatively unhealthy) test (Tool 4).**

This knowledge test was assessed by a short quiz. All children in the test group took this test. For this test children were tested on one condition.

For this test the exact same photos as Test 3 were used. The same photos were used but the objective of this test was different.

Children were asked “For this test I want you to see each pair of food products at a time and I would like you to point using your finger to the product of each pair that you believe is the healthiest. You can only choose one food product from each pair. When you point the food product that you choose, I will move to the next pair of food products. We can stop this test and you can go back to your classroom if you don’t want to continue. You can leave the library whenever you want.”

Children saw each pair of food product at a time, pointed their choice and every card that was finished was taken away from the children.

The purpose of this test was to assess the children’s knowledge in regards to “relatively healthy/relatively unhealthy” food products.

Knowledge of “relatively healthy/ relatively unhealthy” food and drink products were assessed by summing up the total number of correctly identified “relatively healthy” food types out of the 10 food pairs, to form a knowledge score out of 10.

Sum of “relatively healthy” food preferences, sum of healthy food knowledge, sum of “relatively unhealthy food” preferences and sum of unhealthy food knowledge would be calculated.

This was a two-step experimental procedure using the same pairs of photos that included a preference test and a knowledge test.

The preference test was chosen to take place as first test and the knowledge as second test, because taking the preference test first will reduce framing effects.

**Table 10****Pairs of food/drink products used in Test 5.**

1. Orange fruit	Orange juice in a glass
2. Glass of water.	Glass of coca cola.
3. Strawberry fruit.	Fruity strawberry flavoured lollipop.
4. Whole grain breakfast cereal in bowl.	Sugary breakfast cereal in bowl.
5. Cereal bar.	Milk chocolate bar.
6. Jacket potato in a plate.	French fries in a plate.
7. Ham, cheese, tomato sandwich in a plate.	Ham, cheese and tomato pizza in a plate.
8. Roast chicken in a plate.	Chicken nuggets in a plate.
9. Yogurt with strawberries in a bowl.	Strawberry flavoured yogurt in a bowl.
10. Pasta napolitana in a plate.	Pasta carbonara in a plate.

**Table 10: Pairs of food/drink products used in Test 5.**

After the completion of all the tests each child was asked the following questions:

1. “Let’s think of the school canteen as a small supermarket, what food/drink products would you like to have for sell, you can name any food and/or drink product you want.”
2. “If you were at the supermarket at this moment, what would you have, you can choose any food and/or drink product you want, imagine that everything is for free.”
3. “What do you usually choose for yourself when you visit the supermarket?”

At that point all the tests were completed and all answers were documented.

The main researcher thanked each child for the cooperation and for the valuable contribution to the research. A school staff member guided each child back to the classroom.

Finally, after 6 working days 71 children that were eligible to participate at the tests completed all the procedures.

The main researcher arranged a final meeting with the school director in order to provide all the details regarding the completion of the tests and also to explain how valuable the school’s cooperation was for the research. The researcher thanked all the teachers that were involved at this stage of the project and the school staff as well.

### **3.7 Data Analysis and Synthesis-Statistical Treatment.**

The data analysis started initially after collecting the data. The documentation of data was carried out using an analytical framework in SPSS24. During the process of data analysis, the following analytical procedures were undertaken like organizing data, identifying patterns.

Adding to these another data analysis and synthesis objective is to interlink the three parts of the study together (analysis of advertisements- Study Part 1, questionnaires results- Study Part 2, focus group tests-Study Part 3).

### **3.8 Originality of Research.**

Although this project aims to do some innovation study in Cyprus it was proven by the literature review that such study was never done not only in Cyprus but international wise.

The differentiation from the other studies that may examined the television food advertising field in relation to children's behaviour related to food preferences, knowledge and food choices is that this will be the first study in Cyprus and worldwide that will interlink three major objectives, to collect and analyse data from the Cyprus Radio-Television Authority for 365 days, to collect and interrelate responses of parents related to the field of television food advertisements and finally to collect and interrelate responses of children through knowledge tests. This study will provide for the first-time data regarding the content of television advertising during family zone for a whole year, the type of advertisements (food/ toy/services), the duration of them and the repeatability of them, the seasonality of the advertising. Finally, an important proposal to the Cyprus Radio-Television Authority will be suggested for evaluation and implementation, to approve a crawl that will appear on the bottom of any advertised product high in sugar, salt or fat (HFSS).

The proposal of the crawl to the Cyprus-Radio-Television Authority will be independent from the outcome of the data collected.

Furthermore, Cyprus Dietetic Association and Cyprus Radio-Television Authority will be able to have for the first time complete and analysed data regarding television food advertising in Cyprus. These data can be used in the future as baseline data and also as a platform in order to compare Cyprus' data with data from other countries.

Adding to these, tests like brand-logo recognition, branded-non-branded food preferences, food knowledge, will provide results for the first-time regarding children of age 6-12, and especially for such big and representative sample in Cyprus.

This study is based on original research of 1088 children ages 6-12 and it produces new knowledge rather than summarize what is already known in a new form.

It was a new process for observation and the newly developed tools (test1-5) were used for the first time in Cyprus but also in the international professional community.

Although worldwide research was developed regarding television food advertising, that covered only a few days, or a few weekdays, or a few months, but a 365 days documentation covering all country's television channels during family zone (07.30-21.30) was a worldwide innovation.

Adding to these, knowledge tests (Test 1-5) were applied in the past in other countries, although tests in this study were modified and adjusted to the Cypriot culture and use.

Therefore, these tools and observational process can be used by other educators and dietitians/nutritionists to assist the nutritional behaviour of children.

Finally, this is the first study that combined and interlink the results of the television food advertising results (365 hours of television food advertising of all television channels during family time (07.30-21.30) (Study Part 2) with the responses of parents through the original questionnaire for 1088 children of age 6-12 (Study Part 1) and also the responses of children through the focus group and knowledge tests (Study Part 3).

All these aspects Study Part 1, Study Part 2, Study Part 3 were designed to work together and for the first time worldwide to have results and correlations separately and between the previous areas of investigation.

### **3.9 Limitations of Methodology and Ethical Considerations.**

#### **3.9.1 Limitations of methodology.**

Limitations do exist in every study. For this project the sample size in Study Part-3 (Test-focus group) that was 71 can be considered as a limitation. A larger number of participants would allow to generate even more results or more precise results. Only 71 children were allowed to participate since they were the only children with a signed consent form by their parents.

Further intervention at the Study Part-3 (Test-focus group) like prompt eating and taste preferences could generate valuable outcomes but were not included in the study design since further permissions were needed including food safety, food manufacturers permission, parent's partition, declaration of allergies.

The scope of the study would be different if the focus group sample and the intervention part was included and however this is considered to be done in a Post Doc level.

All data will be held by the researcher and by the responsible institution (University of Nicosia) for the period of 5 years. Questionnaires will be stored within a locked filing cabinet in a locked office within the University of Nicosia.

Paper documents (questionnaires and consent forms) will be stored within locked filing cabinet at the University of Nicosia. Questionnaires and consent forms will be stored at different locations to ensure that anonymity will be retained. Electronic files will be password protected and the password will only be known to the researcher and the main supervisor. Electronic files will be deleted from computer hard-drives and servers, and electronic "rubbish bins" emptied and paper documents will be securely shredded. All files (electronic and paper based) will be destroyed minimum 5 years following the publication of reports or articles resulting from data generation.



### **3.9.2 Ethical limitations.**

The study in order to ensure research integrity followed honest and verifiable methods, rules, regulations and guidelines in research. These methods were following commonly accepted professional codes.

The following research involve human participants. The data will be collected through the use of a straightforward anonymous questionnaires and focus groups.

Since the questionnaires will be anonymous, an identification number will be given to each questionnaire. This number will be noted on the consent form which will include some personal information of the participants (name of the child and the parent and contact number). This will be done in order to allow for the matching of the questionnaire with the participant in case of withdrawal or follow up. The consent forms with the personal information will be kept separately from the questionnaires and only the researcher will have access to them.

Since complete anonymity cannot be retained within the focus groups, only the researcher will have access to the names and personal data of the participants. At the start of the process of the focus groups each participant will be given an identification number and this number will be used in any written or oral communication between the members of the research team.

All participants will have the right to withdraw from the study if they choose to at any time point thorough the data collection and analysis process. In order for a questionnaire to be considered for analysis a consent form must be signed.

The children that will participate in the focus groups will do so only with the signed approval of the parents.

All interventions through the focus groups will be designed in such a way to ensure no physical or emotional harm will be done to the children.

Furthermore, all data will be anonymous in the final report so nothing can be attributed back to the individual participant.

Adding to these, participants have the right to know who has access to their data and what is being done with it.

This study was unbiased in any level. No fund was received by any private or public organization or food company.

The sampling (number of participants in Study Part-1), the methods and tools used were approved by the Cyprus Bioethics Committee, Ministry of Education, GDPR Committee.

These letters of approval are presented in Appendices.

Directors of elementary schools and parents/guardians provided their verbal/written consent for approval and participation in the study.

Furthermore, the provision of information to the participants was given with the “Information-Orientation Letter”.

## **Chapter IV**

### **Analysis and Research Findings**

#### **Chapter Contents**

4.1 Introduction.

4.2 Methods of data analysis and tests used.

4.3 Research Findings.

4.4 Study Part 1: Questionnaire results.

4.4.1 Section A: Demographics.

4.4.2 Section B: Parent's /Child perceptions regarding body weight.

4.4.3 Section C: Child's eating behaviour/habits.

4.4.4 Section D: Family's eating habits.

4.4.5 Section E: Family's knowledge/perceptions regarding eating habits.

4.4.6 Section F: Child's television viewing habits and TV impact.

4.4.7 Section G: Family's buying/ shopping habits.

4.4.8 Section H: Child's physical activity.

4.5 Study Part 2: Analysis of advertisements.

4.5.1 Frequency of Advertisements per Television Channel.

4.5.2 Number of Advertisements aired per Trimester.

4.5.3 Total number of advertisements per trimester that aired during weekdays and weekends.

4.5.4 Total number of all aired advertisements (single product and supermarket advertisements).

4.5.5 Mean Duration (seconds) for food product advertisements.

4.5.6 Frequency of food product advertisements per television channel.

4.5.7 Television's Channel's most promoted food product (single product advertisement).

4.5.8 Frequency of advertised food products per day.

4.5.9 Relationship between television advertised products and time slots.

4.5.10 Frequency of food product advertisements (single product advertisements)

4.6 Supermarket advertisements.

- 4.6.1 Frequency of supermarket advertisements per television channel.
- 4.6.2 Frequency of supermarket advertisements per hour (single product advertisements).
- 4.6.3 Frequency of supermarket food products advertisements.
- 4.7. Frequency of food advertisements (single product and supermarket advertisements) per month.
- 4.8 Frequency of food advertisements (single product and supermarket advertisements) per trimester.
- 4.9 Study 3: Focus Group.
  - 4.9.1 Focus Group Demographics.
  - 4.9.2 Hunger Scale results.
    - 4.9.2.1 Focus Group Eating Habits- (Breakfast habits).
    - 4.9.2.2 Focus Group Eating Habits- (Lunch habits).
  - 4.9.3 Test 1: Product Recognition Test.
    - 4.9.3.1 First place that children can recall the test products.
  - 4.9.4 Test 2: Brand Logo Recall-recognition measurement test.
    - 4.9.4.1 Instant food preferences.
  - 4.9.5 Test 3: Food Preferences Test.
  - 4.9.6 Test 4: Food Preference using Branded and Unbranded food products.
  - 4.9.7 Test 5: Food Knowledge (Relatively Healthy/Relatively Unhealthy) Test.
    - 4.9.7.1 Children's shopping behaviour and purchase requests.
      - 4.9.7.1.(a) Frequency of children's shopping requests at "ideal school canteen".
      - 4.9.7.1.(b) Frequency of shopping intention at the supermarket.
      - 4.9.7.1.(c) Frequency of food requests from parents at the supermarket.
- 4.10 Correlations between test results and advertised products.
  - 4.10.1 Correlations between advertised products and product recognition test.
  - 4.10.2 Correlations between test results and supermarket requests.
  - 4.10.3 Correlations between advertised products and products consumed at school (bring from home).
  - 4.10.4 Correlations between advertised products and buying preferences at school canteen.

4.10.5 Correlations between advertised products and children's drink product preferences.

4.10.6 Correlations between advertised products and children's food product preferences between meals.

4.10.7 Correlations between advertised products and children's food product preferences for breakfast.

4.10.8 Correlations between advertised products and children's most popular commercial jingle.

4.10.9 Correlations between advertised products and children's preferences for branded and unbranded products according to gender.

4.10.10 Correlations between advertised products and children's preferences for branded and unbranded products according to BMI.



#### **4.1 Introduction.**

As stated, the key objective of this study is to investigate the impact of television food advertising on children's eating behaviour, food preferences, purchasing requests.

The purpose of this chapter is to provide an overview, detailed results, the methods used during data analysis and also the research findings. The questionnaire used in this study was carefully analysed to ensure that the data gathered are presented clearly with the aid of tables and figures where possible. This analysis was conducted to capture the data needed to answer the research questions.

The questionnaire comprised 8 sections with a total of 86 questions that were developed to ensure rigour and objectivity of data.

The sections are presented below:

Section A: Demographics.

Section B: Parent's /Child perceptions regarding body weight.

Section C: Child's eating behaviour/habits.

Section D: Family eating habits.

Section E: Family knowledge/perceptions regarding eating habits.

Section F: Child's television viewing habits and TV impact.

Section G: Family buying/ shopping habits.

Section H: Child's physical activity.

## **4.2 Methods of data analysis and tests used.**

This study evaluated all data using both logical and analytical reasoning in order to examine each parameter of the selected data collected.

Since the data collected were quantitative, a quantitative method was used, which allows the generalization of the results obtained from the sample to the population of interest.

The qualitative part of the study (study part 3- open questions-interviews) were coded and treated as quantitative data as well.

Apart from the descriptive statistics that were used to describe the basic features of the data in the study, inferential statistics were used as well.

Inferential statistics were used to compare the differences between groups. Inferential statistics were used in order to provide measurements from the sample of subjects in the experiment to compare the groups and make generalizations about the larger population of subjects.

The following tests were used in the study:

- Two-tailed t-test: in order to examine both sides of a specific data range as designated by the probability distribution involved.
- Chi-square test: in order to determine whether there is an association between categorical variables (whether the variables are independent or related).
- Two-way analysis of variance ANOVA: in order to determine the effect of two nominal predictor variables on a continuous outcome variable. This analysis tests the effect of two independent variables on a dependent variable.
- One-way analysis of variance ANOVA: in order to compare the means of two or more independent groups in order to determine whether there is statistical evidence that the associated population means are significantly different.
- Post-Hoc test: in order to uncover specific differences between three or more group means when an analysis of variance test ANOVA is significant.

## **4.3 Research Findings.**

For the first part of the research a representative sample of schoolchildren ages 6-12 from public schools all over Cyprus was needed. This was identified as the target population using a multistage cluster sampling.

The sample was defined at 1050 children from public schools. The number was defined in order to have less than 3% statistical error.

In total it was achieved to deliver 2327 questionnaires to 9 schools and the number of completed questionnaires received was 1088.

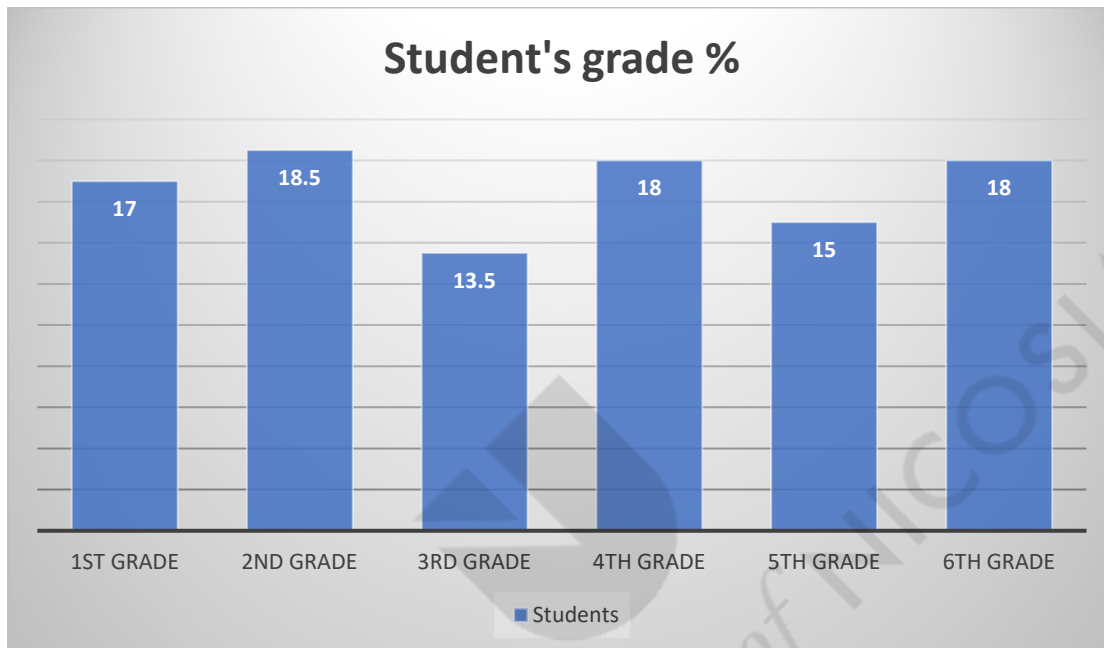
## **4.4 Study Part 1: Questionnaire's results.**

### **4.4.1 Section A: Demographics.**

#### **4.4.1.1 Student's grade.**

This sample was consisted of 541 boys (49.7%) and 547 girls (50.3%).

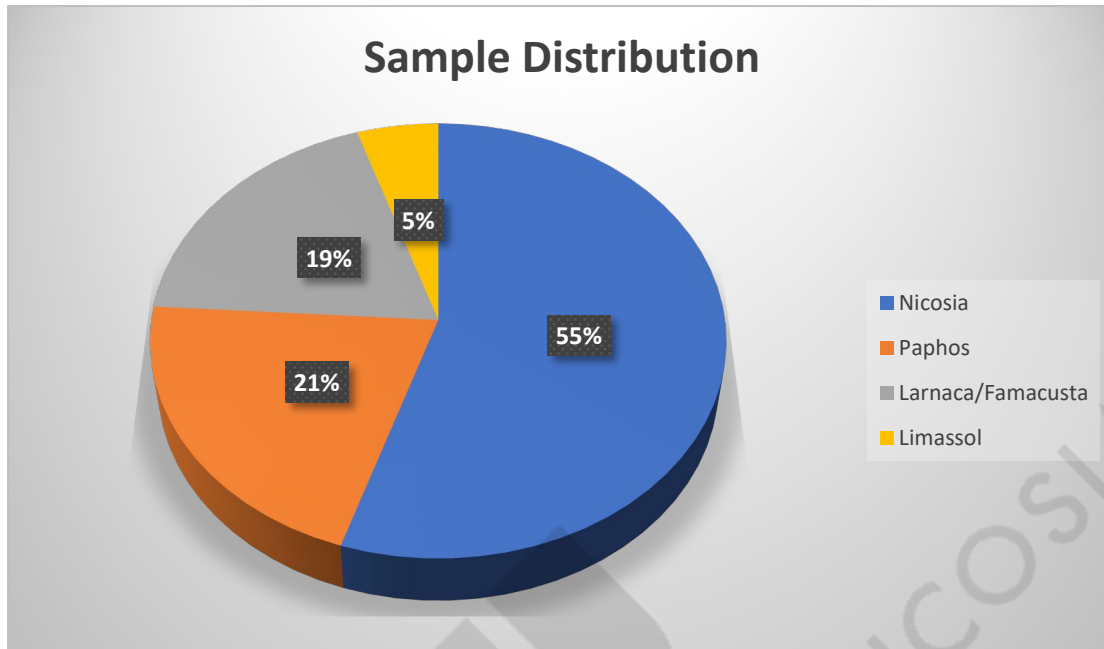
17% was 1<sup>st</sup> grade students (6-7 years old), 18.5% was 2<sup>nd</sup> grade students (7-8 years old), 13.5% was 3<sup>rd</sup> grade students (8-9 years old), 18% was 4<sup>th</sup> grade students (9-10 years old), 15% was 5<sup>th</sup> grade students (10-11 years old) and finally 18% was 6<sup>th</sup> grade students (11-12 years old).



**Figure 2: Student's grade.**

#### **4.4.1.2 Sample distribution.**

Subjects of the research were from 4 cities of Cyprus. More specifically 55% of the sample was from the city of Nicosia, 21% of the city of Paphos, 19% was from the city of Larnaca/Famacusta and finally 5% (which was not representative) was from the city of Limassol.



**Figure 3: Sample distribution.**



#### **4.4.1.3 Mother's age.**

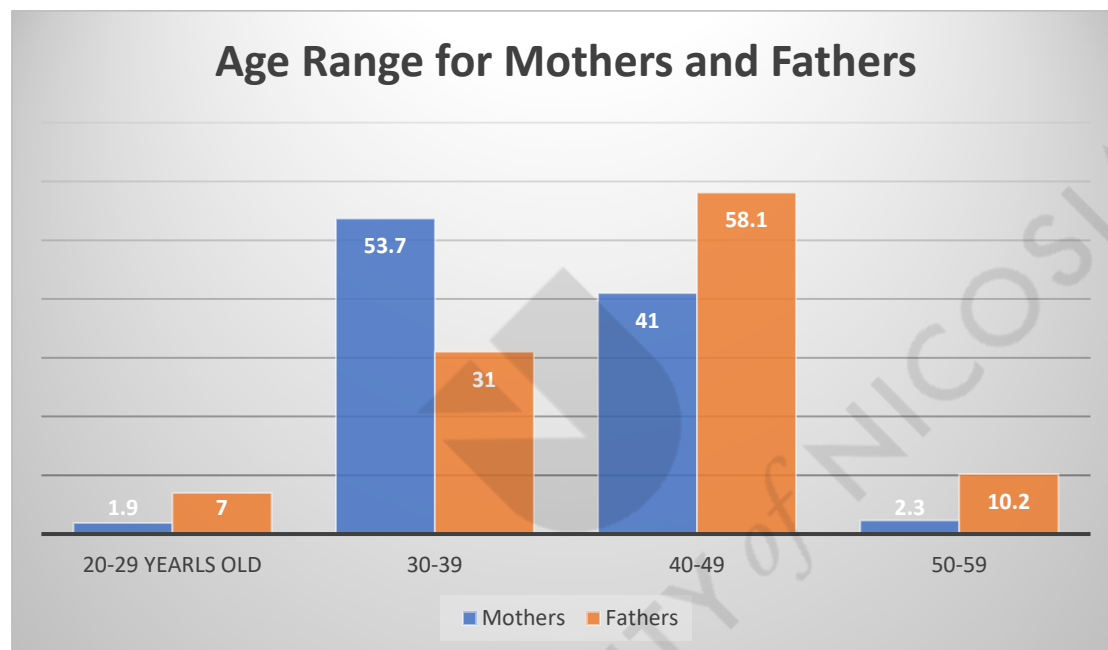
Mother's age was grouped in the following ranges (20-29), (30-39), (40-49), (50-59).

According to the results the children's mother age (n=1081) was as follow: 1.9% was between 20-29 age group, 53.7% was between 30-39 age group, 41% was between 40-49 age group and 2.3% was between 50-59 age group.

#### **4.4.1.4 Father's age.**

Father's age was grouped in the following ranges (20-29), (30-39), (40-49), (50-59).

According to the results the children's father age (n=1073) was as follow: 7% was between 20-29 age group, 31% was between 30-39 age group, 58.1% was between 40-49 age group and 10.2% was between 50-59 age group.



**Figure 4: Age range for mothers and fathers.**

#### **4.4.1.5 Mother's level of education.**

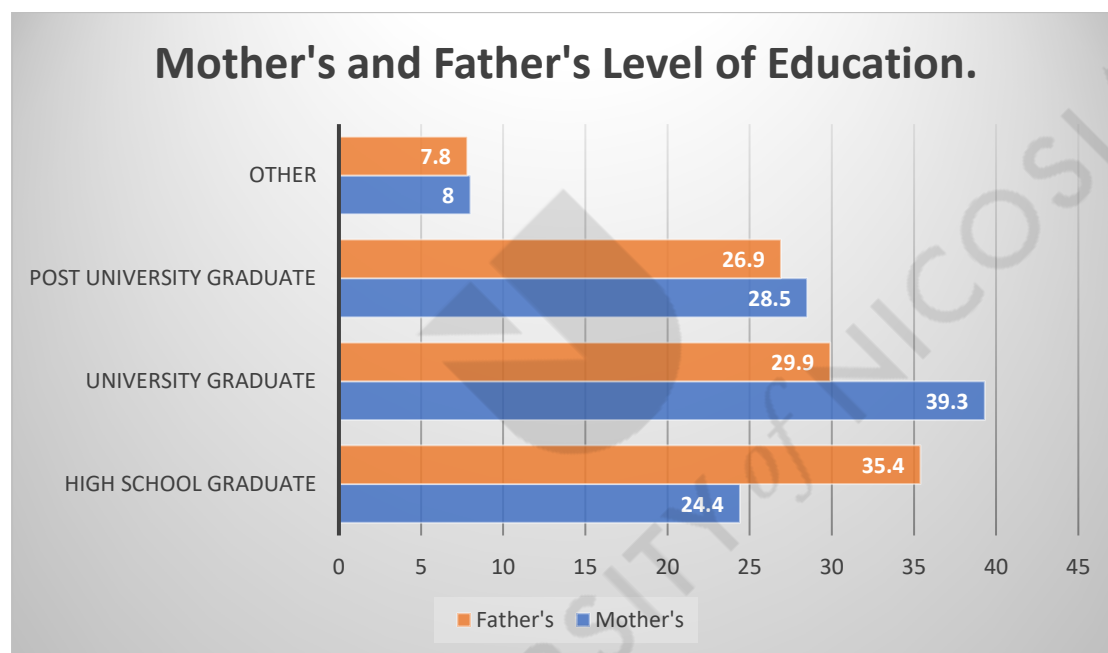
Mother's level of education question was grouped defined (High school graduate), (University graduate), (Post university graduate), (Other).

According to the results mother's educational level (n=1070) was as follow: 24.2% were high school graduates, 39.3% were university graduates, 28.5% were post university graduates and 8% was other.

#### **4.4.1.6 Father's level of education.**

Father's level of education question was grouped defined (High school graduate), (University graduate), (Post university graduate), (Other).

According to the results father's educational level (n=1068) was as follow: 35.4% were high school graduates, 29.9% were university graduates, 26.9% were post university graduates and 7.8% was other.

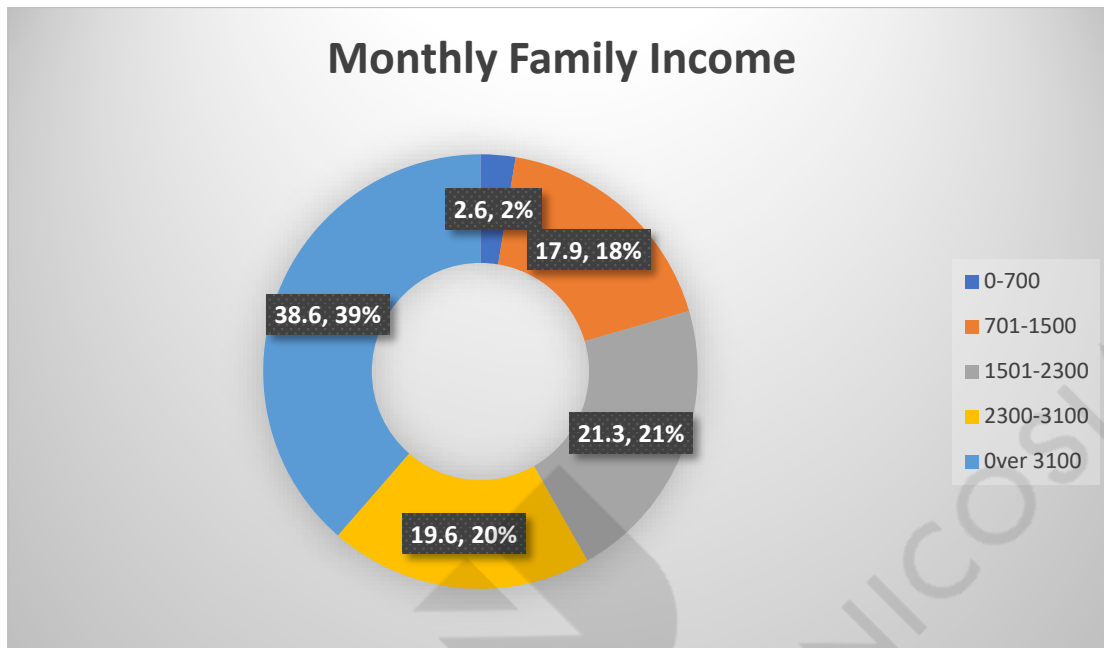


**Figure 5: Mother's and father's level of education.**

#### **4.4.1.7 Monthly family income.**

Family's monthly income question was grouped in the following ranges (0-700€), (701-1500€), (1501-2300€), (2301-3100€), (over 3100€).

According to the results the family's monthly income was as follow: 2.6% was (0-700€), 17.9% was (701-1500€), 21.3% was (1501-2300€), 19.6% was (2300-3100€) and 38.6% was (over 3100€).



**Figure 6: Monthly family income.**

#### **4.4.1.8 Overweight/Obese mother and/or father.**

That question was as follow: “Is one of the two parents’ overweight/obese”? In order for the parents to answer correctly this question a step by step example of how to calculate their BMI was given at the end of the questionnaire. That was a close question and it was asking from the parents to tick (✓) next to the correct answer that was grouped as follow “*Underweight*”, “*Healthy weight*” “*Overweight/Obese*”.

According to the results 14% of the fathers and 8% of the mothers after their BMI calculation answered that were overweight or obese. Adding to these 6% reported that both parents were overweight or obese.

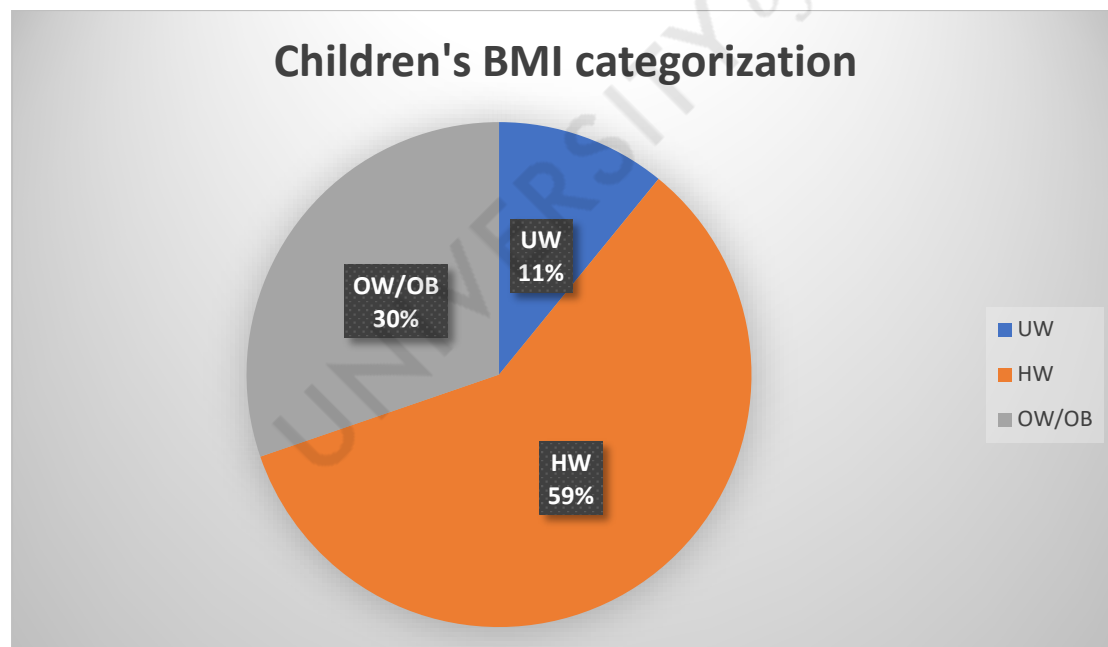
#### **4.4.1.9 Children’s BMI.**

Body Mass Index was calculated for each child and results are presented in the following table (Table 11). The BMI was calculated according to International Obesity Task Force (IOTF) cut-offs in children.

#### **Frequencies by children’s BMI categorization.**

<b><u>Children’s BMI</u></b>	<b><u>Frequency (Percent)</u></b>
Underweight (UW)	118 (10.9%)
Healthy weight (HW)	640 (58.9%)
Overweight/ Obese (OW/OB)	329 (30.3%)

**Table 11: Frequencies by children’s BMI categorization.**



**Figure 7: Children’s BMI categorization.**

The data-descriptive statistics showed a higher mean BMI for boys ( $\bar{x} = 17.73$ ,  $SD = 3.44$ ) than girls ( $\bar{x} = 17.58$ ,  $SD = 3.59$ ). However, the use of two-tailed t- test for independent samples has shown that this difference was not significant at a level of  $\alpha = .05$  ( $t = -.68$ ,  $df = 1086$ ,  $p = .5$ ).

The use of Chi-square test suggests that there is an association between overweight/obese parents and overweight/obese children ( $\chi^2_{(8, 1087)} = 33.02$ ,  $p < .001$ ).

Specifically, of the children with an overweight/obese father, 9.8% are underweight, 51% have a normal weight and 39.2% are overweight/obese.

Also, of the children with an overweight/obese mother, 8.9% are underweight, 49.4% have a normal weight and 41.8% are overweight/obese.

Of the children with both parents' overweight/obese, 6.2% are underweight, 48.4% have a normal weight and 45.3% are overweight/obese.

Last, of the children who's neither the father nor the mother is overweight/obese, 11.6% are underweight, 63.1% have a normal weight and 25.4% are overweight/obese.

Further analysis examined the association between the children's grade (age-wise) and whether they are overweight/obese ( $\chi^2_{(10, 1062)} = 35.56$ ,  $p < .001$ ).

Specifically, among underweight children, 33.9% go to 1<sup>st</sup> grade; 21.7% go to 2<sup>nd</sup> grade; 13.9% go to 3<sup>rd</sup> grade; 11.3% go to 4<sup>th</sup> grade; 7% go to 5<sup>th</sup> grade and 12.2% go to 6<sup>th</sup> grade.

Also, among children with a normal weight, 15.6% go to 1<sup>st</sup> grade; 18.3% go to 2<sup>nd</sup> grade; 12.2% go to 3<sup>rd</sup> grade; 19.1% go to 4<sup>th</sup> grade; 16.7% go to 5<sup>th</sup> grade and 18.1% go to 6<sup>th</sup> grade.

Last, among overweight/obese children, 14.5% go to 1<sup>st</sup> grade; 17.6% go to 2<sup>nd</sup> grade; 16% go to 3<sup>rd</sup> grade; 17.9% go to 4<sup>th</sup> grade; 15.4% go to 5<sup>th</sup> grade and 18.6% go to 6<sup>th</sup> grade.

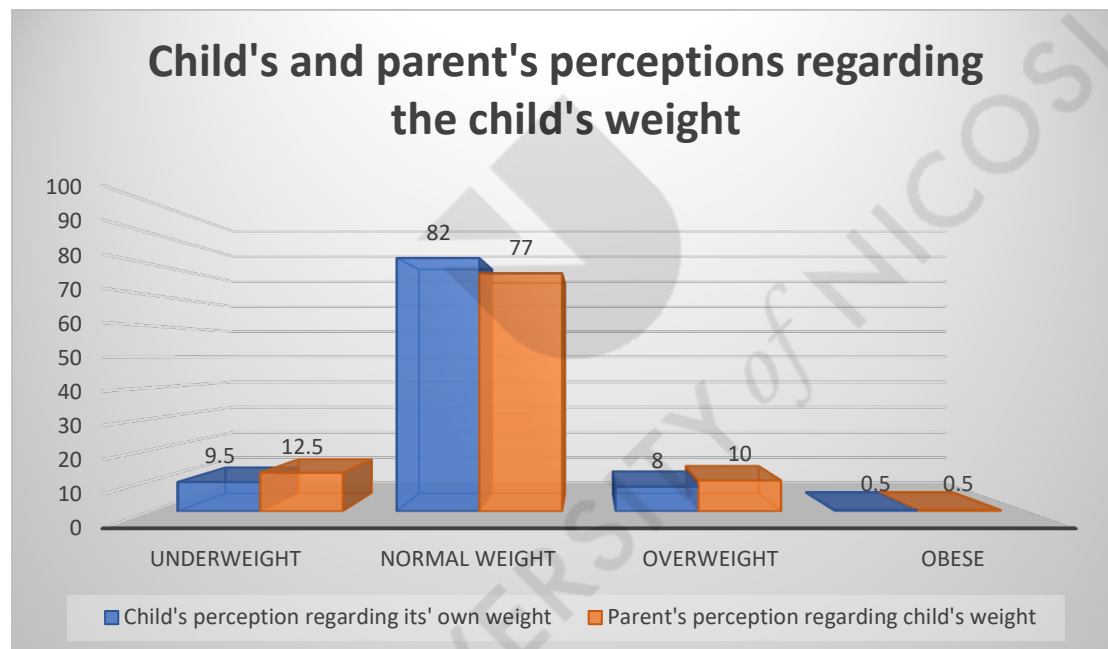
#### **4.4.2 Section B: Parent's /Child perceptions regarding body weight.**

##### **4.4.2.1 Child's and parent's perceptions regarding the child's weight.**

Figure 8 presents the child's, as well as the parent's perception regarding the child's weight (n=1089, n=1079) respectively. Parents were asked to choose the correct answer regarding what they believed when it comes to their child's weight by choosing one of the following weight status categories: "Underweight", "Normal weight", "Overweight", "Obese".

Furthermore, parents were asked to choose (after discussing with their child) the correct answer regarding what their child believed when it comes to his/her own weight by choosing one of the following weight status categories: "Underweight", "Normal weight", "Overweight", "Obese". Along general lines, it appears that the two views converge to a similar pattern.

More specifically, the answer "Normal" corresponds to the highest percentage (82% and 77% respectively), followed by "Underweight", and "Overweight". The smallest percentage corresponds to "Obese" child (0.5%).



**Figure 8: Child's and parent's perceptions regarding the child's weight.**

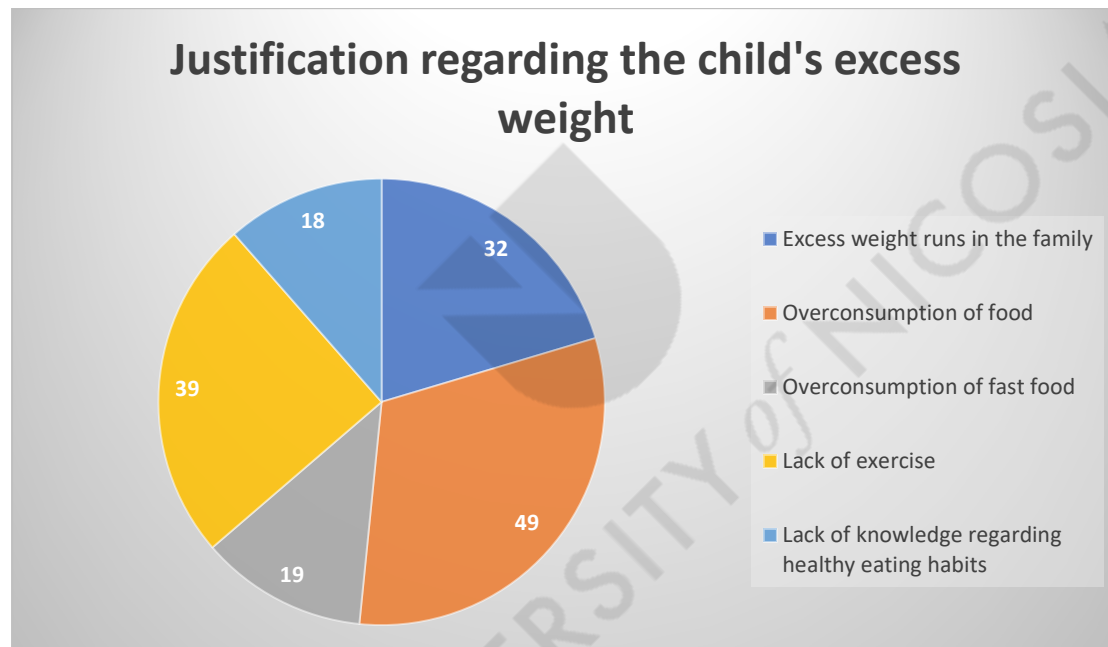
#### **4.4.2.2 Justification regarding the child's excess weight.**

As to the justification regarding the child's excess weight, 200 parents provided answers.

Most of them reported "*Overconsumption of food*" by the child (49 answers, 24.5%). This is followed, with a similar frequency, by "*Lack of Exercise*" (39 answers, 19.5%), "*Excess weight runs in the family*" (32 answers, 16%) and finally "*Overconsumption of fast food*" and "*Lack of awareness about healthy eating habits*" [19 answers (9.5%) and 18 answers (9%) respectively].

Combined answers include as many as 43 answers (21.5%) though without pointing to a single combination with high frequency. More specifically, for overweight/obese children (N=329), the following excuses are provided: "*Overconsumption of food*" (46 answers), "*Lack of exercise*" (26 answers), "*Excess weight runs in the family*" (22 answers), "*Overconsumption of fast food*" (14 answers) and "*Lack of awareness about healthy eating habits*" (10 answers).

- **Justification regarding the child's excess weight.**



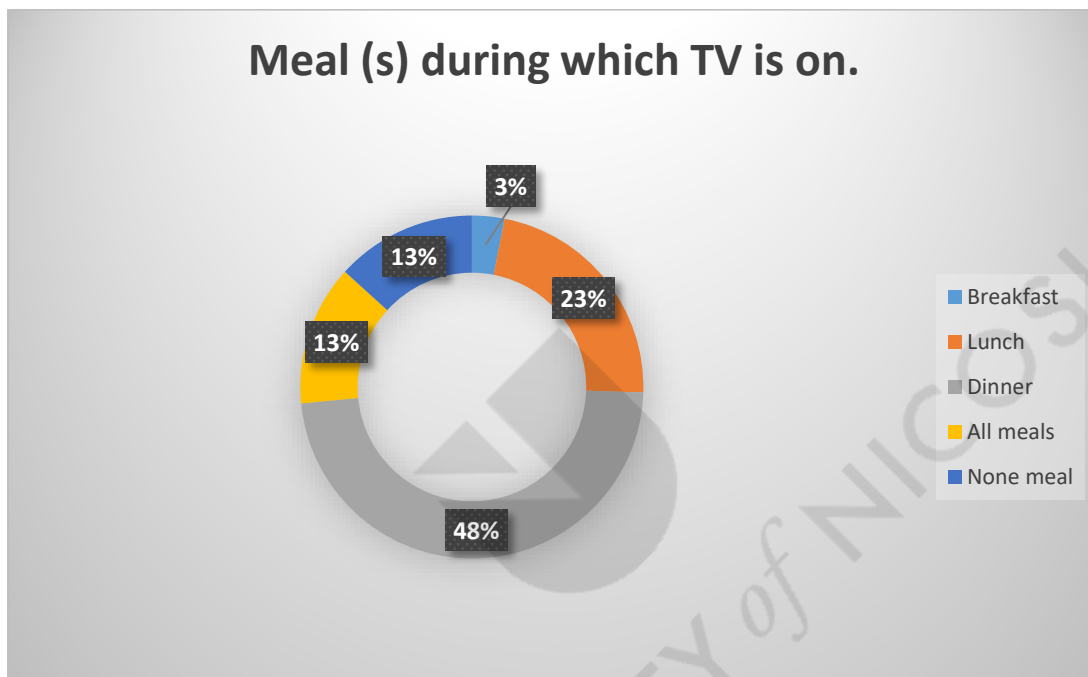
**Figure 9: Justification regarding the child's excess weight.**

#### **4.4.3 Section C: Child's eating behaviour/habits.**

##### **4.4.3.1 Meals during which television set is on.**

Parents were asked to provide answers as to the meal(s) during which the TV is on (n=1088). The questionnaire provided five answers to choose from, “*Breakfast*”, “*Lunch*”, “*Dinner*”, “*All meals*”, “*None meals*”. The largest percentage corresponds to “*Dinner*” (47%) and the smallest to “*Breakfast*” (3%).

As for combined answers (2%), 16 parents report that the TV is on during “*Breakfast*” and “*Dinner*”, while 6 parents report “*Breakfast*” and “*Lunch*”.



**Figure 10: Meal(s) during which TV is on.**



#### **4.4.3.2 Number of hours spend watching TV during weekdays and weekends.**

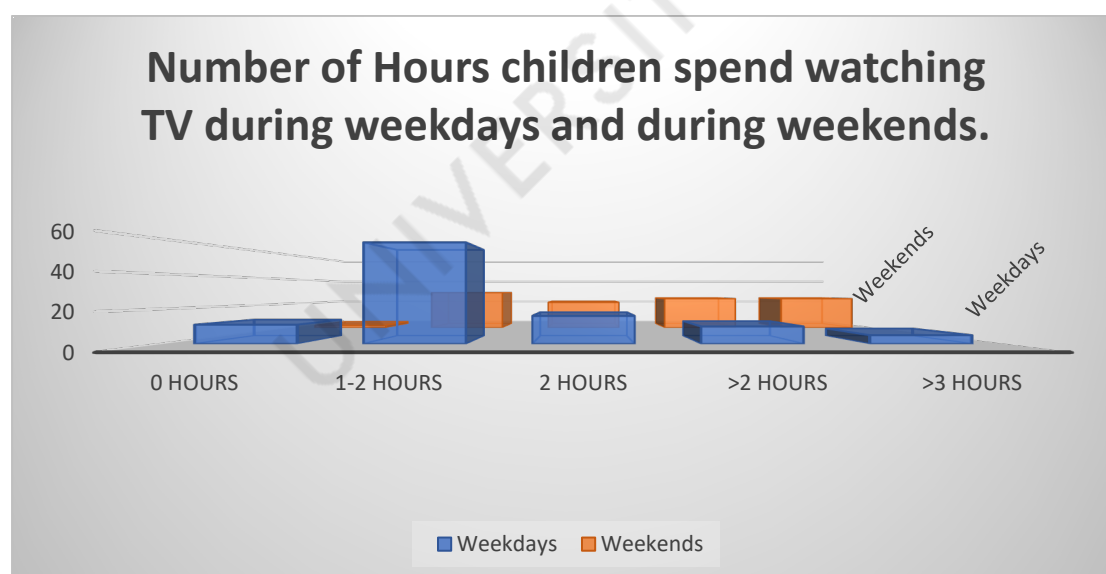
Parents were asked to provide answers regarding the number of hours their child spend watching television both during weekdays and weekends. The following table (Table 12) presents the number of hours' children spend watching TV during weekdays and during weekends. It is worth mentioning that in both cases (n=1088), the largest percentage of children watch TV 1-2 hours (58% and 29% respectively).

Furthermore, during weekdays, 11% of parents report that children do not watch TV at all, while for weekends this percentage drops to 2%. As far as weekdays are concerned, the smallest percentage corresponds to watching TV for more than three hours (5%) while for weekends the percentage for the equivalent time of watching TV is 24%.

#### **Number of hours children spend watching TV during weekdays and weekends.**

	Watching TV during weekdays		Watching TV during weekends
<b>0 hours</b>	115 (11%)	<b>0 hours</b>	24 (2%)
<b>1-2 hours</b>	636 (58%)	<b>1-2 hours</b>	315 (29%)
<b>2 hours</b>	171 (16%)	<b>2 hours</b>	232 (21%)
<b>More than 2h</b>	107 (10%)	<b>More than 2h</b>	261 (24%)
<b>More than 3h</b>	60 (5%)	<b>More than 3h</b>	257 (24%)

**Table 12: Number of hours children spend watching TV during weekdays and weekends.**



**Figure 11: Number of hours children spend watching TV during weekdays and weekends.**

In order to investigate the relationship between hours of television viewing during weekdays, weekends and BMI (both categorical variables), chi-square test was used. Test suggested that there is a significant association only between hours of television viewing during weekdays and BMI ( $\chi^2_{(12,1087)}=23.245$ ,  $p<.05$ ). Also, the association between gender and hours of viewing was not significant.

More specifically, of the obese children 8% don't watch television during weekdays, 66.6% watch 1-2 or 2 hours, 14.8% watch more than 2 hours and 10.5% watch more than 3 hours.

Of the "overweight" children, 7.8% don't watch television during weekdays, 73.1% watch 1-2 or 2 hours, 12% more than 2 hours and 7.2% more than 3 hours.

Of the "healthy weight" children, 11.6% don't watch television during weekdays, 76% watch 1-2 or 2 hours, 8.3% watch more than 2 hours and 4.2% more than 3 hours.

Of the "underweight" children, 11.9% don't watch television during weekdays, 76.3% watch 1-2 or 2 hours, 8.5% more than 2 hours and 3.4% more than 3 hours.

Of the children that don't watch television during weekdays 12.3% were "Underweight", 64.9% were "Healthy weight", 11.4% were "Overweight" and 11.4% were "Obese".

Of the children that watch television 1-2 hours 10.4% were "Underweight", 60.5% were "Healthy weight", 14.8% were "Overweight" and 13.8% were "Obese".

Of the children that watch television 2 hours 12.4% were "Underweight", 59.4% were "Healthy weight", 6.5% were "Overweight" and 11.8% were "Obese".

Of the children that watch television more than 2 hours 9.3% were "Underweight", 49.5% were "Healthy weight", 8.7% were "Overweight" and 22.4% were "Obese".

Of the children that watch television more than 3 hours 6.7% were "Underweight", 45% were "Healthy weight", 20% were "Overweight" and 28.3% were "Obese".

As seen from these results we can say that every additional hour of viewing, rates of children that belong in the "Underweight" and in the "Healthy weight" category fall and rates of children that belong in the OW/OB category rise.

#### **4.4.3.3 What children usually eat for breakfast at home.**

Parents were asked to provide answers regarding what their child usually eat for breakfast at home. Parents provided the correct answers from a list of choices given to them in the questionnaire. As to what the child usually eats for breakfast, parents gave different answers (n=1088).

As indicated in Table 3, “*Milk*” is the children’s preferred breakfast (13%). “*Milk*” is followed by “*Wholegrain cereals*” (10.5%), “*Toast-ham and cheese*” (8%) and “*Sugary breakfast cereal*” (7%). The rest of the food items do not indicate high percentages of preference. It is worth mentioning that a large percentage of answers is provided by way of “*Food combinations*” (48.5%). Finally, the wholegrain cereals/toast/milk combination appears to be the most preferred at 5.5%.

- **Breakfast choices according to children’s preferences.**

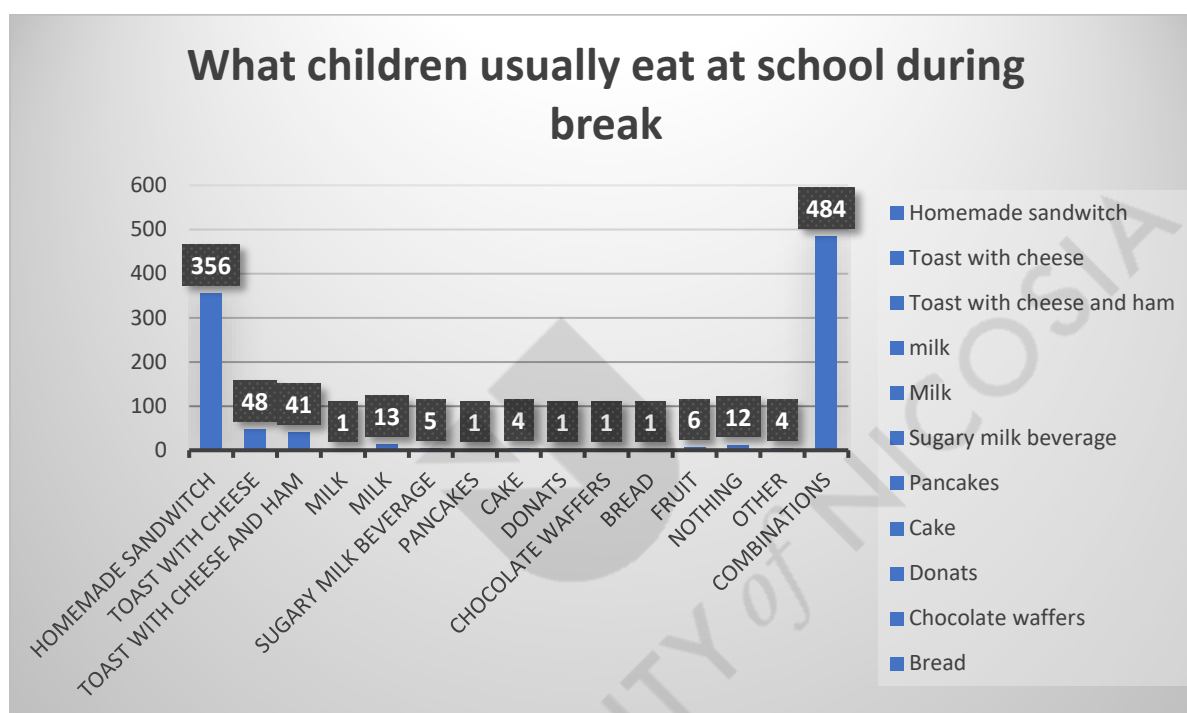
<b>Food product</b>	<b>Frequency (Percentage)</b>	<b>Food product</b>	<b>Frequency (Percentage)</b>
<b>1. Whole wheat breakfast cereal</b>	10.5%	<b>7. Cake</b>	0.5%
<b>2. Sugary breakfast cereal</b>	7%	<b>8. Fruit</b>	0.5%
<b>3. Cheese Toast</b>	8%	<b>9. Nothing</b>	4.5%
<b>4. Milk</b>	13%	<b>Combined answers (1.3.4)</b>	5.5%
<b>5. Bakery products</b>	0.5%	<b>Other combined answers</b>	48.5%
<b>6. Sugary milk beverage</b>	1.5%		

**Table 13: Breakfast choices according to children’s preferences.**

#### 4.4.3.4 What children usually eat at school during break.

Parents were asked to provide answers regarding what their child usually eat at school during break. Parents provided the correct answers from a list of choices given to them in the questionnaire. As for the food item children usually consume at school during the break (n=1088), a quite high percentage of 32.5% reports “homemade Sandwich- (cheese, ham, processed meat)”. Results are presented in Figure 12.

“Toast with cheese” and “Toast with cheese/ham” follow with a similar frequency (4.5% and 4% respectively). “Bakery products” are preferred by a very small percentage (1.5%) while less than 10 children took the remaining options. Further, 44.5% of the answers corresponds to a Food combination, though without frequent repetition of any of them.



**Figure 12: What children usually eat at school during break.**

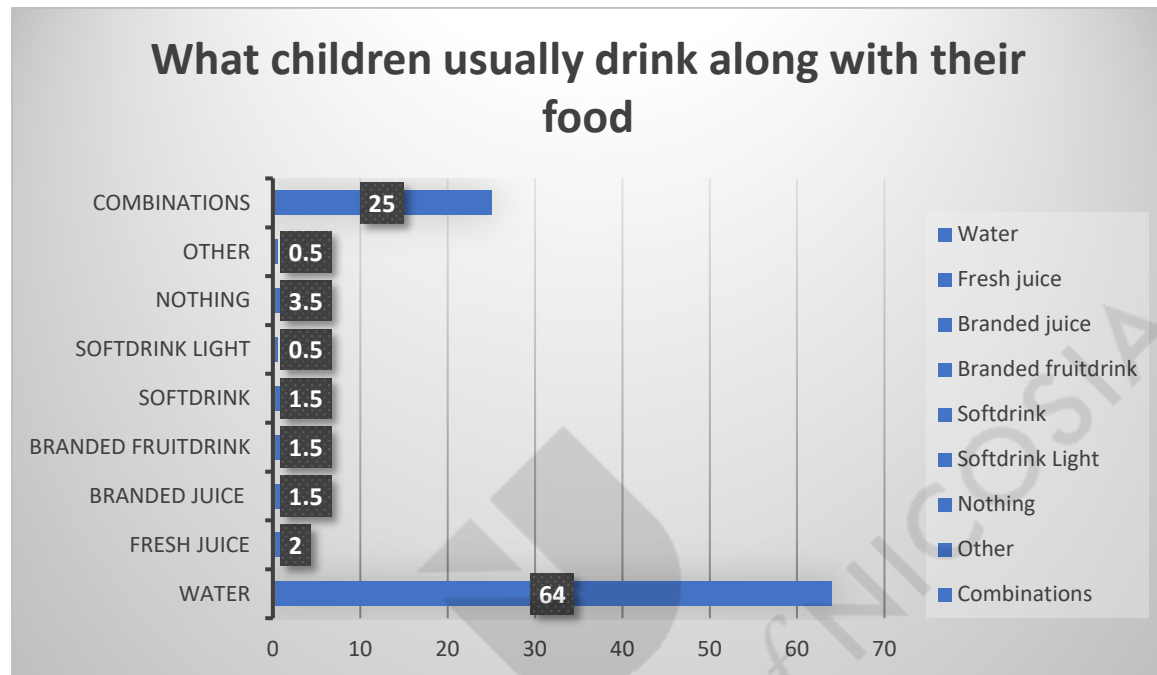
As to what children buy from their school canteen, “Pop-corn” is preferred by 8% of children. “Pop-corn” is followed by “Bakeries” by 7% and Milk by 6%. “Water” by 4% comes next, whereas “Pizza”, “Sandwich” and “Wafers” occur at a similar frequency by 3% each. Less often options but at more or less the same frequency are: “Ice cream” by 2%, “Juice” by 2% and “Chips” by 2% as well. The remaining options regarding food items are taken by less than 15 persons and are therefore not reported here.

Further, according to the parents’ answers, there is not one single combination specifically preferred by the children.

#### **4.4.3.5 What children usually drink along with their food.**

Parents were asked to provide answers regarding what their child usually drink along with their food. Parents provided the correct answers from a list of choices given to them in the questionnaire. As to what children usually drink along with their food (n=1088), the largest percentage of answers corresponds to “*Water*” (64%). Results are presented in Figure 13.

The percentages of occurrence of the remaining options for beverages do not exceed 5%. Finally, combined answers take up a quite high percentage (25%).



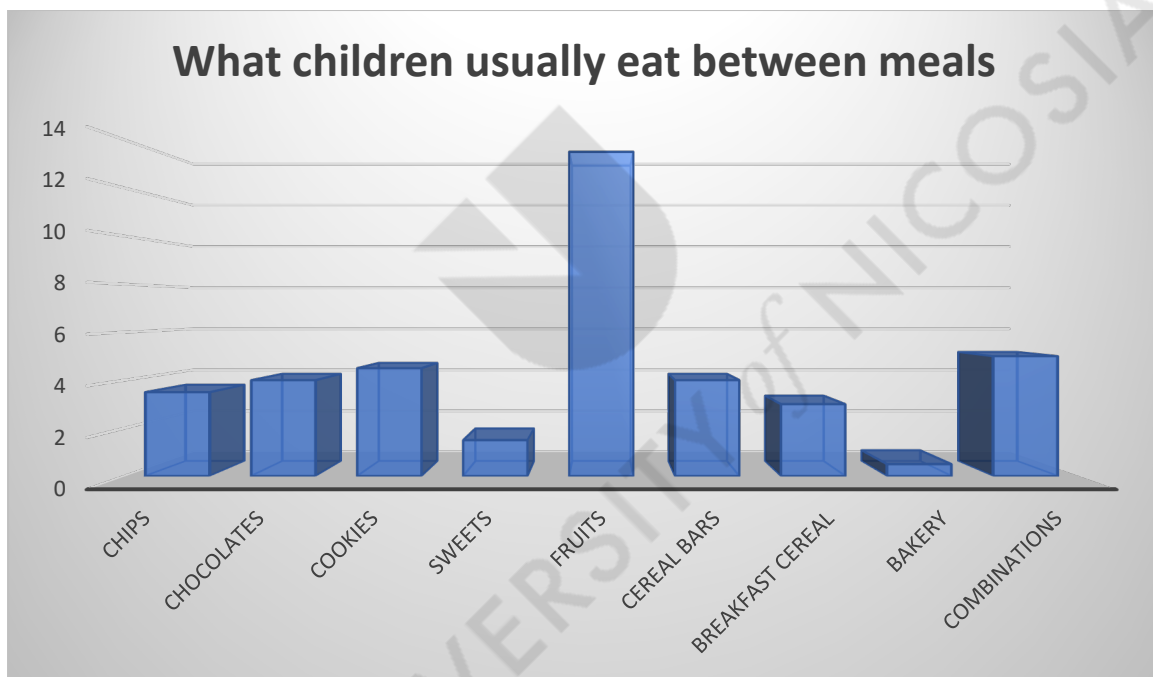
**Figure 13: What children usually drink along with their food.**

#### **4.4.3.6 What children usually eat between meals.**

Parents were asked to provide answers regarding what their child usually eat between meals. This was an open question and parents provided several answers. All answers were coded and analysed. As shown in Figure 14 (n=1088), between meals children usually prefer to eat “Fruit” (13.5%).

Further, 4.5% choose to eat “Biscuits” while a combination of the two is preferred by 5% of the parents’ answers. “Chocolates” and “Cereal bars” follow, sharing the same, smaller percentage (4%). “Chips” (3.5%), “Cereals” (3%), “Sweets” (1.5%) and, last, “Bakery products” (0.5%) come next. The remaining food combinations chosen are not repeated enough times to warrant further reporting.

Specifically, for overweight/obese children (N=329), the following answers were given: “Fruit” 13%, “Chips” 4,5%, “Chocolates” 4,2%, “Cereal bars” 4,2%, “Cereals” 4%, “Biscuits” 3,3%, “Sweets” 2,1% and “Bakery products” 1%.



**Figure 14: What children usually eat between meals.**

**4.4.3.7 As to the statement: “If I let my child unsupervised, he/she will always have food in his/her mouth”.**

Parents were asked to provide answers regarding to what level the specific statement corresponds to their child’s eating behaviour. Parents were asked to choose one of the following answers: “Never”, “Rarely”, “Sometimes”, “Often”, “Always”.

As to the statement: “If I let my child unsupervised, he/she will always have food in his/her mouth” (n= 1076), parents report the following: “Never” (35.2%), “Rarely” (37.4%), “Sometimes” (16.4%), “Often” (7.5%) and “Always” (3.5%).

For overweight/obese children (n=329), the following answers are given: “Never” 23,7%, “Rarely” 33,1%, “Sometimes” 23%, “Often” 11% and “Always” 7%.

**4.4.3.8 As to the statement: “My child enjoys trying new food items”.**

Parents were asked to provide answers regarding to what level the specific statement corresponds to their child’s eating behaviour. Parents were asked to choose one of the following answers: “Never”, “Rarely”, “Sometimes”, “Often”, “Always”.

As for the extent to which children enjoy trying new food items (n=1074), 39% of parent’s answer “Often”. The answers “Sometimes” and “Rarely” followed by 29% and 17% respectively. The options “Never” and “Always” appear at very low frequency (9% and 6% respectively).

**4.4.3.9 As to the statement: “If I don’t intervene, my child will eat a very large quantity of food”.**

Parents were asked to provide answers regarding to what level the specific statement corresponds to their child’s eating behaviour. Parents were asked to choose one of the following answers: “Never”, “Rarely”, “Sometimes”, “Often”, “Always”.

As to the statement: “If I don’t intervene, my child will eat a very large quantity of food” (n= 1074), parents report the following: “Never” (46.6%), “Rarely” (33.1%), “Sometimes” (13.1%), “Often” (5.5%) and “Always” (1.7%).

Specifically, for overweight/obese children (n=329), the following answers are given: “Never” 27%, “Rarely” 35%, “Sometimes” 20%, “Often” 11% and “Always” 5%.

**4.4.3.10 As to the statement “Even when my child feels full, he/she will make “room” for his/her favorite snack/sweet”.**

Parents were asked to provide answers regarding to what level the specific statement corresponds to their child’s eating behaviour. Parents were asked to choose one of the following answers: “Never”, “Rarely”, “Sometimes”, “Often”, “Always”.

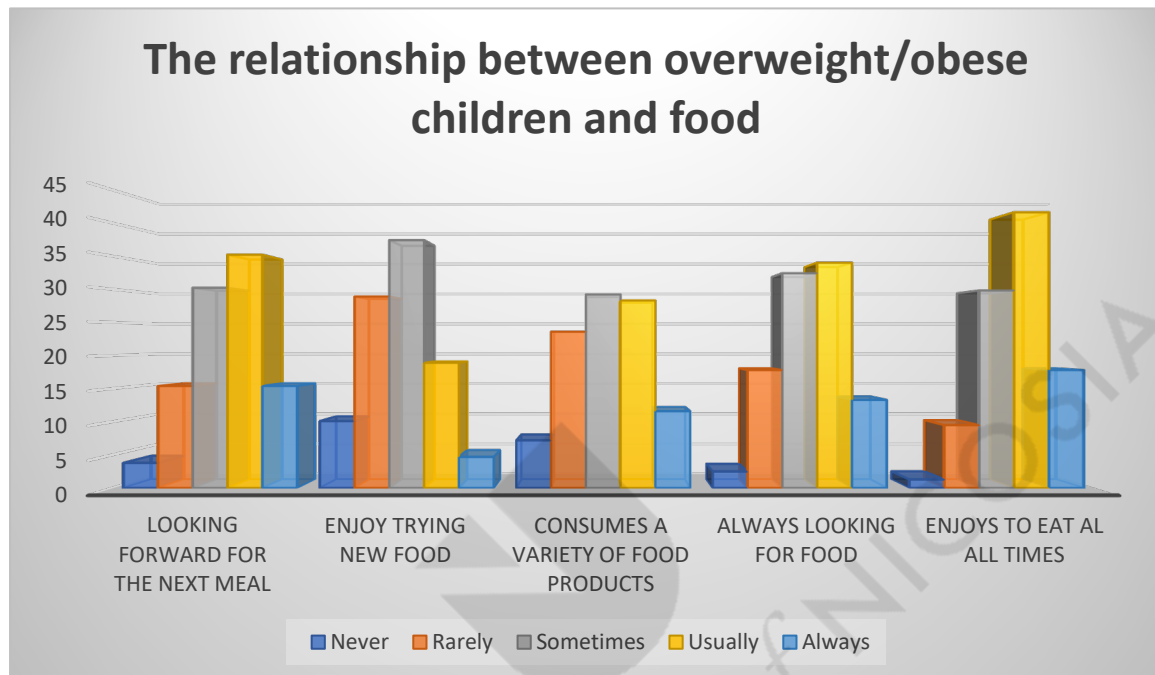
As to the statement “Even when my child feels full, he/she will make “room” for his/her favorite snack/sweet” (n=1075), parents report that this happens: 7.3% “Never”, 18.2% “Rarely”, 28.6% “Sometimes”, 28.5% “Often” and 17.4% “Always”.

Specifically, for overweight/obese children (n=318), these answers were given: 6.6% “Never”, 15.4% “Rarely”, 25.8% “Sometimes”, 31.4% “Often” and 20.8% “Always”.

#### **4.4.3.11 The relationship between overweight/obese children and food.**

Parents were asked to provide answers regarding to what they believed the relationship between their child and food was. Parents were asked to choose one of the following answers: “Looking forward for the next meal”, “Enjoy trying new food”, “Consumes a variety of food products”, “Always looking for food”, “Enjoys to eat at all times”.

Figure 15 presents the answers that parents provided regarding their children’s relationship with food. The results focused on overweight/obese children.



**Figure 15: The relationship between overweight/obese children and food.**



#### **4.4.3.12 To what level parents believe their children ask for advertised food/snacks while watching TV.**

Parents were asked to provide answers regarding to what level the specific statement corresponds to their child's eating behaviour/preference regarding advertised food products and television viewing. Parents were asked to choose one of the following answers: "Never", "Rarely", "Sometimes", "Often", "Always".

As to the extent to which children ask for food/snacks while watching TV (n=1079), parents report that this occurs: "Never" (8.2%), "Usually" (39.4%), "Rarely" (28.8%), "Often" (20.9%) and "Always" (2.7%).

#### **4.4.3.13 To what level parents believe their children are influenced by television food advertisements.**

Parents were asked to provide answers regarding to what level the specific statement corresponds to their child's eating behaviour. Parents were asked to choose one of the following answers: "Never", "Rarely", "Sometimes", "Often", "Always".

As to the extent to which parents believe their children are influenced by television food advertisements (n=1077), the following results are given: "Never" (35.2%), "Rarely" (35.3%), "Sometimes" (25.3%), "Often" (3.7%) and "Always" (.5%).

#### **4.4.3.14 To what level children sing TV advertisements jingles.**

Parents were asked to provide answers regarding to what level the specific statement corresponds to their child's related behaviour. Parents were asked to choose one of the following answers: "Never", "Rarely", "Sometimes", "Often", "Always".

As to whether children sing TV advertisements jingles (n=1078), the parents report the following: "Never" (23.9%), "Rarely" (31.2%), "Sometimes" (33.5%), "Often" (10.5%) and "Always" (.9%).

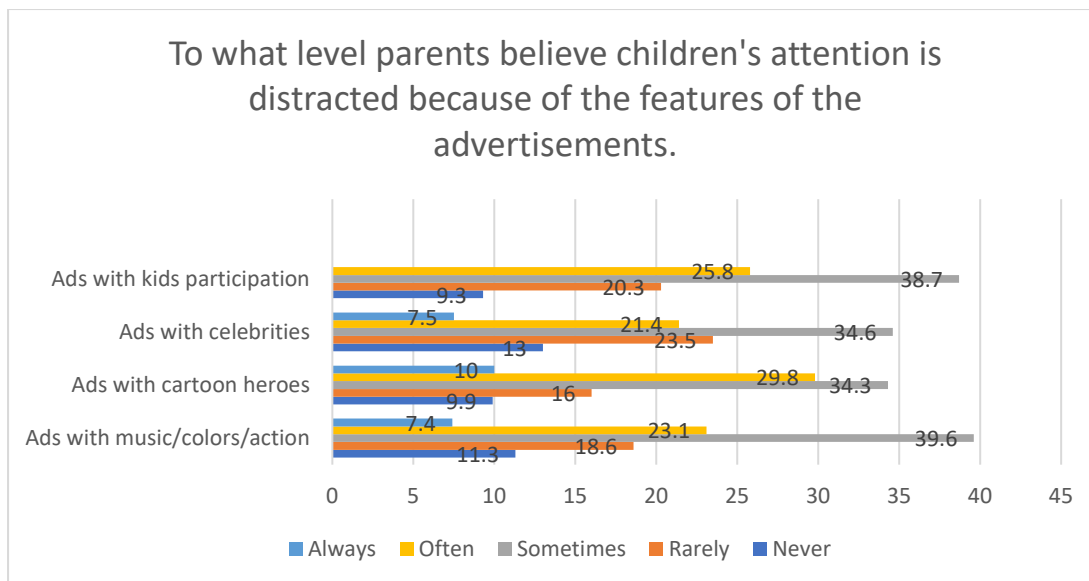
**4.4.3.15 To what level parents believe children's attention is distracted because of the features of the advertisements.**

Parents were asked to provide answers regarding to what level the specific statement corresponds to their child's related behaviour. Parents were asked to choose one of the following answers: "Never", "Rarely", "Sometimes", "Often", "Always". As to the extent to which children's attention is diverted because of the features of the advertisements, the parents report the following (Table 14).

- **To what level parents believe children's attention is distracted because of the features of the advertisements.**

	Advertisements with music/ colours/action (N=1074)	Advertisements with cartoon heroes (N=1073)	Advertisements with famous actors and football players (N=1072)	Advertisements with kids' participation (N=1071)
Never	11.3%	9.9%	13%	9.3%
Rarely	18.6%	16%	23.5%	20.3%
Sometimes	39.6%	34.3%	34.6%	38.7%
Often	23.1%	29.8%	21.4%	25.8%
Always	7.4%	10%	7.5%	5.9%

**Table 14: To what level parents believe children's attention is distracted because of the features of the advertisements.**



**Figure 16: To what level parents believe children's attention is distracted because of the features of the advertisements.**

#### **4.4.4 Section D: Family eating habits.**

##### **4.4.4.1 Frequency of cooking and visiting fast food-type restaurants.**

Parents were asked to provide answers regarding their family's eating habits and what answer corresponds best to them. As regards to the question "How often do you cook for your family", parents were asked to choose one of the following answers: "Every day", "5-6 times per week", "4-5 times per week", "1-3 times per week", "Never". As regards to the question "How often do you visit a fast-food type restaurant in a month", parents were asked to choose one of the following answers: "Once a week", "1-3 times a month", "4-6 times a month", "Less than once in a month", "Never"

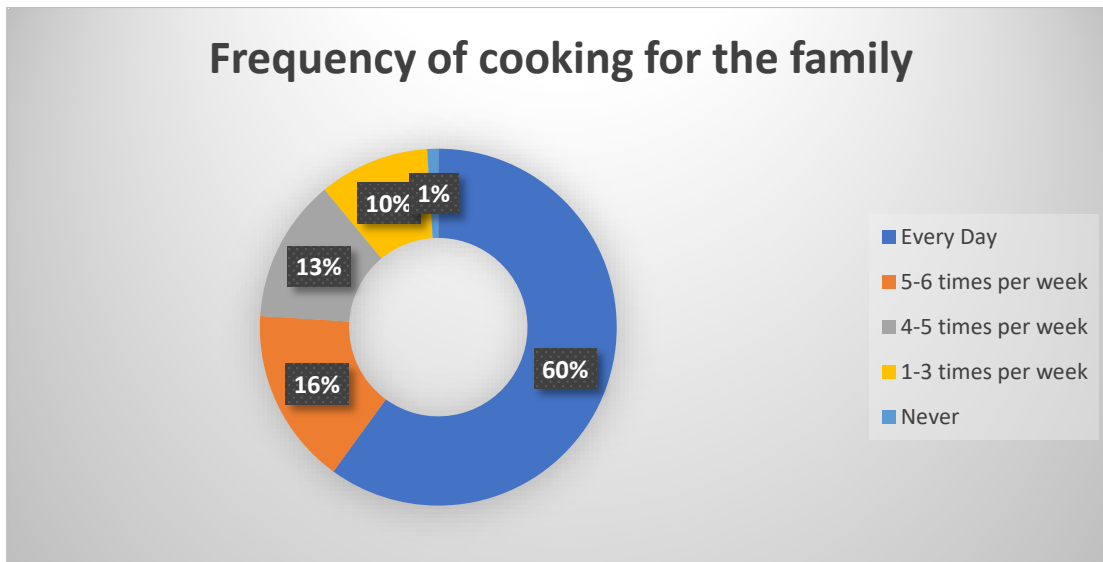
The following table (Table 15) indicates findings as to how often the parents cook and how often they visit fast food-type restaurants with their family (n=1089).

Specifically, 60% reported they cook "Every day" for the family. A meagre 1% reported they "Don't cook at all" (Figure 17). In terms of how frequently they visit a restaurant, 43% reported going "Less than once in a month" and 8% reported going "Once a week" (Figure 18).

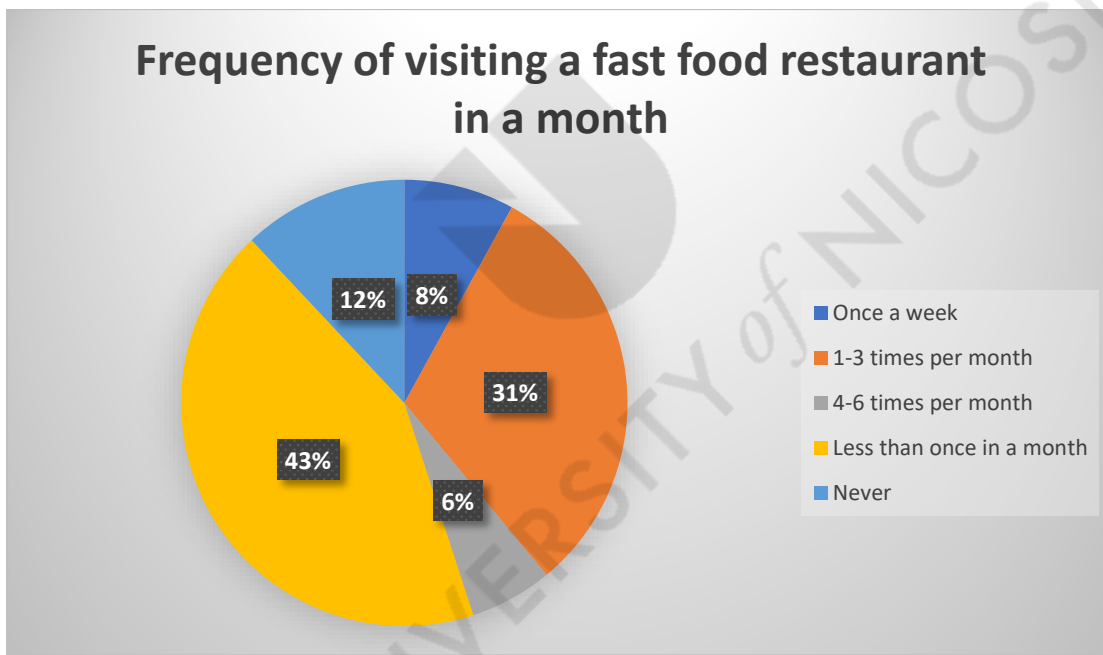
- **Frequency of cooking and visiting fast food-type restaurants**

<b>How often do you cook for your family</b>		<b>How often do you visit a fast food-type restaurant</b>	
<b>Every day</b>	652 (60%)	<b>Once a week</b>	85 (8%)
<b>5-6 times per week</b>	171 (16%)	<b>1-3 times a month</b>	337 (31%)
<b>4-5 times per week</b>	146 (13%)	<b>4-6 times a month</b>	64 (6%)
<b>1-3 times per week</b>	110 (10%)	<b>Less than once in a month</b>	475 (43%)
<b>Never</b>	10 (1%)	<b>Never</b>	128 (12%)

**Table 15: Frequency of cooking and visiting fast food-type restaurants.**



**Figure 17: Frequency of cooking.**



**Figure 18: Frequency of visiting fast food-type restaurants in a month.**

#### **4.4.5 Section E: Family knowledge/perceptions regarding healthy eating habits.**

##### **4.4.5.1 Healthy eating habits knowledge and level of education.**

In order to investigate whether there was any interaction between levels of education of mothers and fathers to their knowledge about healthy eating habits, a two-way ANOVA (analysis of variance) was performed. This test was selected to examine the influence of two different categorical independent variables on one continuous dependent variable. Results are presented in Table 16.

- **Two-Way analysis of variance of parent's knowledge about healthy eating habits by their level of education.**

Source	Sum of squares	df	Mean square	F
Mother's education (A)	14.37	3	4.79	5.55***
Father's education (B)	1.48	3	.49	.57
A X B	4.31	9	.48	.56
Error	901.28	1045	.86	

\*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 16: Two-Way analysis of variance of parent's knowledge about healthy eating habits by their level of education.**

Table 16 shows that mothers with different education levels have on average different levels of knowledge about healthy eating habits, as the test was significant ( $F_{3, 1045}=5.55, p=.001$ ). Father's educational level and the interactions of the 2 (AXB), were not significant ( $F_{3,1045}=.57, p>.05$  and  $F_{9,1045}=.56, p>.05$  respectively.).

Therefore, a one-way analysis of variance (single factor analysis) was carried out, to further investigate the mother's education level. Due to the fact that the homogeneity of the variance is affected, only p-value of less than .001 were considered statistically significant.

The results of this analysis are shown in Table 17.

- **One-Way ANOVA of parents' knowledge about healthy eating habits by the mother's educational level.**

Source	Sum of squares	df	Mean square	F
Between groups	39.20	3	13.07	15.25***
Within groups	913.40	1066	.86	

\*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 17: One-Way ANOVA of parents' knowledge about healthy eating habits by the mother's educational level.**

The analysis showed that there was indeed a statistically significant difference in the mother's' level of knowledge of healthy eating habits depending on the mother's level of education ( $F_{3, 1066} = 15.25, p < .001$ ).

Post-hoc tests for differences were carried out by running Scheffe test, and showed statistically significant differences (at a level of  $\alpha = .001$ ) only between mothers who were lyceum graduates ( $\bar{x} = 3.51, SD = 1$ ) and mothers who were university graduates ( $\bar{x} = 3.88, SD = .92$ ), as well as mothers-lyceum graduates and mothers with an MA degree ( $\bar{x} = 4, SD = .85$ ).

#### **4.4.5.2 What parents believe is the most suitable way to educate children regarding healthy eating habits.**

Parents were asked to provide answers regarding to what they believed is the most suitable way to educate children in regards to healthy eating habits. Parents were asked to choose one of the following answers: “*School lectures*”, “*TV- educational programs*”, “*Free community programs*”, “*Free subscription magazines*”, “*Other*”.

According to Figure 19, parents report “*School-Lectures*” as the most suitable way to educate children about healthy eating habits (n=1088), at a percentage as high as 52% of the answers.

The options “*TV-educational programs*”, “*Free community Programs*” and “*Free subscription magazines*” follow at a lower frequency: 7%, 4% and 2% respectively.

The options “*Other*” and “*Combined Answers*” correspond to 35% (8% and 27% respectively). As for combined answers, the highest percentage (16%) corresponds to the combination “*TV-Educational Shows and School-Lectures*”.



**Figure 19: The most suitable way to educate children regarding healthy eating habits.**



#### **4.4.5.3 Reasons that usually prevent children to have better eating habits.**

Parents were asked to provide answers regarding to what they believed is the reason that usually prevent their child to have better eating habits.

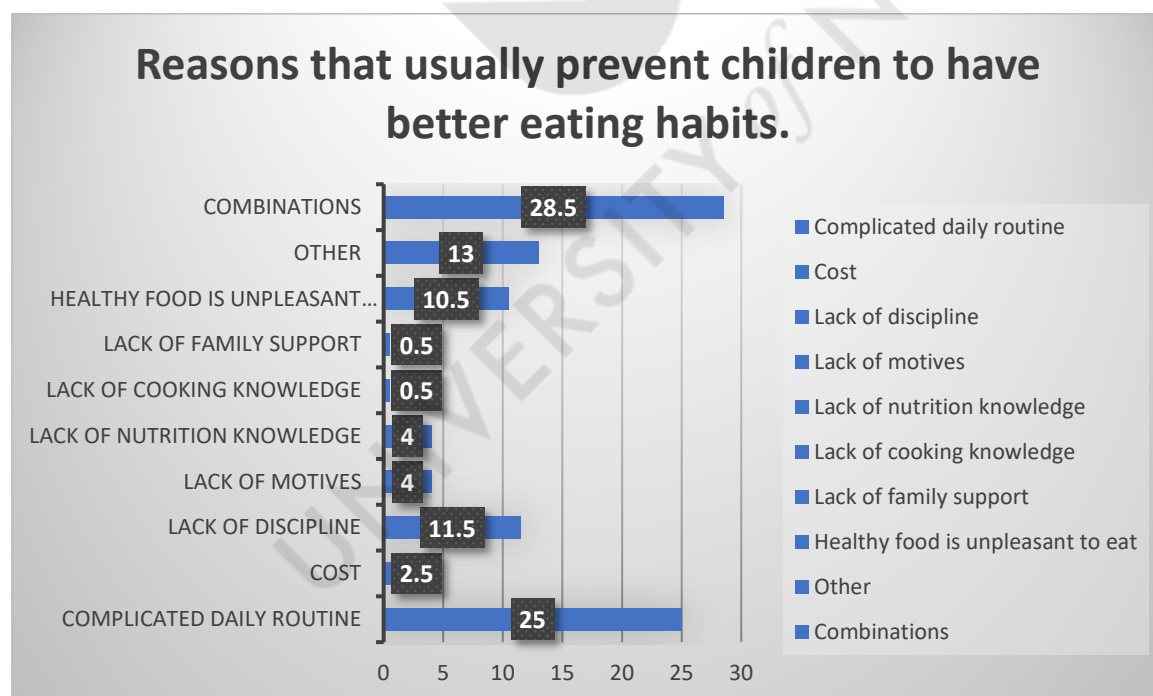
Parents were asked to choose one of the following answers: “*Complex daily routine*”, “*Cost of healthy foods*”, “*Lack of discipline*”, “*Lack of motives*”, “*Lack of nutrition knowledge*”, “*Lack of cooking knowledge*”, “*Lack of family support*”, “*Healthy food is unpleasant to eat*”, “*Other*”.

As shown in Figure 20, 25% of the answers point to “*Complex daily routine*” as the reason why children (n=1088) do not have better eating habits. “*Lack of discipline*” (11.5%) and the statement that “*Healthy food is unpleasant to eat*” (10.5%) come next.

The options “*Lack of motivation*” and “*Lack of awareness about healthy eating*” follow with the same percentage (4%). A very small percentage reports “*Cost*” (2.5%) as a reason and a meagre percentage reports “*Lack of cooking skills*” and “*Lack of support from the family*” (0.5%). Last, Combined Answers make up 28.5% of all answers.

Of those, the combination of “*Complex daily routine*” and “*Healthy food is unpleasant to eat*” occurs more frequently (2.5%).

Specifically, the following answers are given for “*Overweight/Obese*” children (n=232): “*Complex daily routine*” 35%, “*Lack of discipline*” 19%, “*Healthy food is unpleasant to eat*” 17%, “*Lack of motivation*” 7%, “*Lack of nutrition knowledge*” 6%, “*Cost*” 3%, “*Lack of cooking skills*” 2%, “*Lack of family support*” 1% and “*Other*” 12%.



**Figure 20: Reasons that usually prevent children to have better eating habits.**

#### **4.4.5.4 How parents assess their family's eating habits.**

Parents were asked to provide answers regarding to how they assess their family's eating habits. Parents were asked to choose one of the following answers: "Bad", "Average", "Good", "Very good", "Excellent".

Parents (n=1088), provided the following answers: 1% considers them "Bad", 12.2% "Average", 42.8% "Good", 41.5% "Very Good" and 2.5% "Excellent".

#### **4.4.5.5 How satisfactory is the level of information offered by school to children regarding healthy eating habits.**

Parents were asked to provide answers regarding to how they assess the level of information offered by school to children regarding healthy eating habits. Parents were asked to choose one of the following answers: "Not satisfactory", "Average", "Satisfactory", "Very Satisfactory", "Excellent".

As to the parents' view of how satisfactory is the information offered by the school to children about healthy eating habits (n=1088), the following answers are given: "Not satisfactory": 4.9%, "Average": 29.2%, "Satisfactory": 32.5%, "Very Satisfactory": 31.3%, "Excellent": 2.1%.

#### **4.4.5.6 The level of influence parents believe they exert on their children in terms of what their children choose to eat.**

Parents were asked to provide answers regarding to how they assess the level of influence they exert on their children in terms of what their children choose to eat. Parents were asked to choose one of the following answers: "None influence", "Minimal influence", "Moderate influence", "Considerable influence", "Absolute influence".

As to the level of influence parents believe they exert on their children in terms of what their children choose to eat (n=1088), the following have been noted: "None influence": 9%, "Minimal influence": 7.5%, "Moderate influence": 24.8%, "Considerable influence": 53.8% and 13% "Absolute influence".

#### **4.4.5.7 To what level parents believe children are "used" by food companies (in food advertisements) as the "means" in order to achieve sales.**

Parents were asked to provide answers regarding to what level they believed the food companies use children (in food advertisements) as the "means" in order to achieve sales.

Parents were asked to choose one of the following answers: "Not used at all", "Rarely", "Often", "Usually", "Always".

Parents (n=1087), claim that this happens: "Not used at all" (7.3%), "Rarely" (10.6%), "Often" (34.5%), "Usually" (31.4%) and "Always" (16.2%).

#### **4.4.6 Section F: Child's television viewing habits and TV impact.**

##### **4.4.6.1 To what level parents believe children are influenced by the "standards-role models, men/women" promoted through television food advertising.**

Parents were asked to provide answers regarding to what level they believed children are influenced by the "standards-role models, men/women" promoted through television food advertising. In order to investigate whether there were any differences in the level of influence by the "standards-role models, men/women" promoted through television food advertising depending on the children's gender and age (from first to sixth elementary school grade) a two-way analysis of variance was carried out.

- **Two-way analysis of variance of the level of influence exerted on children by the "standards-role models" men/women promoted through television food advertising by their gender and age.**

Source	Sum of squares	df	Mean square	F
Gender (A)	19.35	2	9.68	8.99***
Age (B)	2.74	5	.55	.51
A X B	3.04	5	.61	.56
Error	1131.19	1051	1.08	

\*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 18: Two-way analysis of variance of the level of influence exerted on children by the "standards-role models" men/women promoted through television food advertising by their gender and age.**

As shown in Table 18, gender was found to be statistically significant ( $F_{2, 1051} = 8.99, p = .001$ ) whereas age and the interaction between gender and age were not ( $(F_{5, 1051} = .51, p > .05$  and  $F_{5, 1051} = .56, p > .05$  respectively)

Therefore, a two-tailed t-test was carried out for independent samples in terms of gender.

Results presented in Table 19, showed a significantly higher mean for girls in terms of the level of the influence of "role models" at a significant level of  $\alpha = .001$  ( $t = 4.47, df = 1086, p = .001$ ).

Such difference was statistically significant at a level of  $\alpha = .001$  ( $t = 4.47, df = 1086, p = .001$ ).

- **Two-sample t-test of the level of influence exerted on children by the "role models" of men and women promoted through TV by gender.**

	Gender*	$\bar{X}$	SD	t	df	p
<b>Influence exerted on children by the role models.</b>	Boys	2.22	1	4.47	1086	.001
	Girls	2.50	1.07			

\*N<sub>boys</sub> = 541, N<sub>girls</sub> = 547

**Table 19: Two-sample t-test of the level of influence exerted on children by the "role models" of men and women promoted through TV by gender.**

#### **4.4.6.2 The level to which children understand the difference between advertisements and the rest of the TV program.**

To investigate whether there were differences in the extent to which children understand the difference between advertisements and the rest of the TV program depending on their gender and age (first to sixth elementary school grade), a two-way analysis of variance was carried out.

- **Two-way analysis of variance of the level of understanding the difference between advertisements and the rest of the TV program by children's gender and age.**

Source	Sum of squares	df	Mean square	F
Gender (A)	4.94	1	4.94	4.74*
Age (B)	3.07	5	.61	.59
A X B	1.78	5	.36	.34
Error	1082.23	1038	1.04	

\*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 20: Two-way analysis of variance of the level of understanding the difference between advertisements and the rest of the TV program by children's gender and age.**

As shown in Table 20, there was statistically significant difference on the level of this understanding between boys and girls ( $F_{1, 1038} = 4.74, p = .03$ ). However, this was not the case for the splits by age and the interaction between gender and age ( $F_{5, 1038} = .59, p > .05$  and  $F_{5, 1038} = .34, p > .05$  respectively).

Next, a two-sample t-test of independent sample was carried out between the sample of girl's vs that of boys. The results, reported in Table 21, showed a higher mean for boys in terms of the level to which they perceive the difference between advertisements and the rest of the TV program ( $\bar{x} = 4.40$ ,  $SD = .92$ ) than for girls ( $\bar{x} = 4.26$ ,  $SD = 1.11$ ). This difference was statistically significant at level of  $\alpha = .05$  ( $t = -2.27$ ,  $df = 1037$ ,  $p = .02$ ).

- **Two Sample t-test of between the level of understanding the difference of advertisements from the rest children program by gender.**

	Gender*	$\bar{X}$	SD	t	df	p
Level of understanding the difference of advertisements and the rest of TV program	Boys	4.40	.92	-2.27	1037	.02
	Girls	4.26	1.11			

\* $N_{boys} = 535$ ,  $N_{girls} = 538$

**Table 21: Two Sample t-test of between the level of understanding the difference of advertisements from the rest children program by gender.**

#### **4.4.6.3 The level to which advertisements attract children's attention.**

In order to investigate the extent to which advertisements attract the attention of children depending on their gender and age (1<sup>st</sup> to 6<sup>th</sup> elementary school grade) a two-way analysis of variance was carried out. As shown in Table 22, age was statistically significant ( $F_{5, 1037} = 6.31$ ,  $p = .001$ ).

Gender was not statistically significant ( $F_{1, 1037} = .79$ ,  $p > .05$ ). On the other hand, the interaction between gender and age was statistically significant ( $F_{5, 1037} = 3.06$ ,  $p = .01$ ).

- **Two-way analysis of variance of the level in which advertising attracts children's attention by gender and age.**

Source	Sum of squares	df	Mean square	F
Gender (A)	.77	1	.77	.79
Age (B)	30.56	5	6.11	6.31***
A X B	14.82	5	2.96	3.06*
Error	1005	1037	.97	

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

**Table 22: Two-way analysis of variance of the level in which advertising attracts children's attention by gender and age.**

Therefore, a one-way analysis of variance was carried out on 12 groups (gender x age) which, as reported in Table 23, showed statistically significant differences between such groups ( $F_{11, 1037} = 4.27$ ,  $p < .001$ ).

Post-hoc tests for differences were carried out by running Scheffe test, and showed statistically significant differences between 2<sup>nd</sup> grade girls ( $\bar{x} = 2.70$ ,  $SD = .94$ ) and 6<sup>th</sup> grade girls ( $\bar{x} = 2.02$ ,  $SD = .90$ ).

There were also differences between 6<sup>th</sup> grade girls ( $\bar{x} = 2.02$ ,  $SD = .90$ ) and 2<sup>nd</sup> grade boys ( $\bar{x} = 2.73$ ,  $SD = .94$ ).

Differences were also noted between 6<sup>th</sup> grade girls ( $\bar{x} = 2.02$ ,  $SD = .90$ ) and 3<sup>rd</sup> grade girls ( $\bar{x} = 2.77$ ,  $SD = 1.08$ ).

These differences were statistically significant at a level of  $\alpha=.05$ .

- **One-way analysis of variance of the extend in which advertising attracts children's attention on the interaction of gender x age.**

Source	Sum of squares	df	Mean square	F
Between groups	45.49	11	4.14	4.27***
Within groups	1005	1037	.97	

\*p<.05, \*\*p<.01, \*\*\*p<.001

**Table 23: One-way analysis of variance of the extend in which advertising attracts children's attention on the interaction of gender x age.**



#### **4.4.6.4 The extent to which children watch television depending on their age.**

To investigate the extent to which children spend time watching television depending by age (1<sup>st</sup> to 6<sup>th</sup> Elementary School Grades) a one-way analysis of variance was carried out.

As shown in Table 24, there was a statistically significant difference in the time spent watching Kids TV shows depending on the children's age ( $F_{5, 1057} = 9.45, p = .001$ ).

Post-hoc tests for differences, carried out by running Scheffe test, showed statistically significant differences between 1<sup>st</sup> grade students ( $\bar{x} = 3.92, SD = .91$ ) and 6<sup>th</sup> grade students ( $\bar{x} = 3.41, SD = 1.18$ ).

There were also differences between 2<sup>nd</sup> grade students ( $\bar{x} = 4.03, SD = .95$ ) and 6<sup>th</sup> grade students ( $\bar{x} = 3.41, SD = 1.18$ ).

These differences were statistically significant at a level of  $\alpha = .001$ .

- **One-way analysis of variance on the extent to which children spend time watching Kids TV shows depending on their age (1<sup>st</sup> to 6<sup>th</sup> Elementary School Grades).**

Source	Sum of squares	df	Mean square	F
Between groups	48.33	5	9.67	9.45***
Within groups	1080.89	1057	1.02	

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

**Table 24: One-way analysis of variance on the extent to which children spend time watching Kids TV shows depending on their age (1<sup>st</sup> to 6<sup>th</sup> Elementary School Grades).**

#### **4.4.6.5 The presence of a television set in the children's bedroom.**

To investigate the relationship between the mother's education level and the presence of a TV in the child's bedroom, chi-square test was carried out, demonstrating significant associations ( $\chi^2_{(3,1046)} = 29.14, p < .05$ ).

Descriptively of the mothers who are "*Lyceum graduates*", 26% keep a TV in their child's bedroom.

Of the mothers who are "*University graduates*", 17% keep a TV in their child's bedroom whilst of the mothers with a "*Postgraduate degree*" only 10% keep a TV in their child's bedroom.

Of the children who have a TV in their bedroom, 35% have a mother who is a "*Lyceum graduate*"; 37% have a mother who is "*University graduate*" and only 16% have a mother with a "*Postgraduate degree*".

To investigate the relation between the father's education level and the presence of a TV in the child's bedroom, chi-square test was performed, demonstrating significant associations ( $\chi^2_{(3,1043)} = 21.52, p < .05$ ).

Of the fathers who are "*Lyceum graduates*", 26% keep a TV in their child's bedroom.

Of those who are "*University graduates*", 15% keep a TV in their child's bedroom.

Of those who have a "*Postgraduate degree*", only 12% keep a TV in their child's bedroom.

Of the children who have a TV in their bedroom, 49% have a father who is a "*Lyceum graduate*", 25% have a father who is a "*University graduate*" and only 19% have a father with a "*Postgraduate degree*".

#### **4.4.6.6 Advertised product most persistently asked for by children.**

As shown in Table 25, parents (n=1088) provided the following answers regarding the advertised product most persistently asked for by children.

Most popular answers were “*Chips*” (13.5%), followed by “*Chocolates*” for a total percentage of approximately 10%.

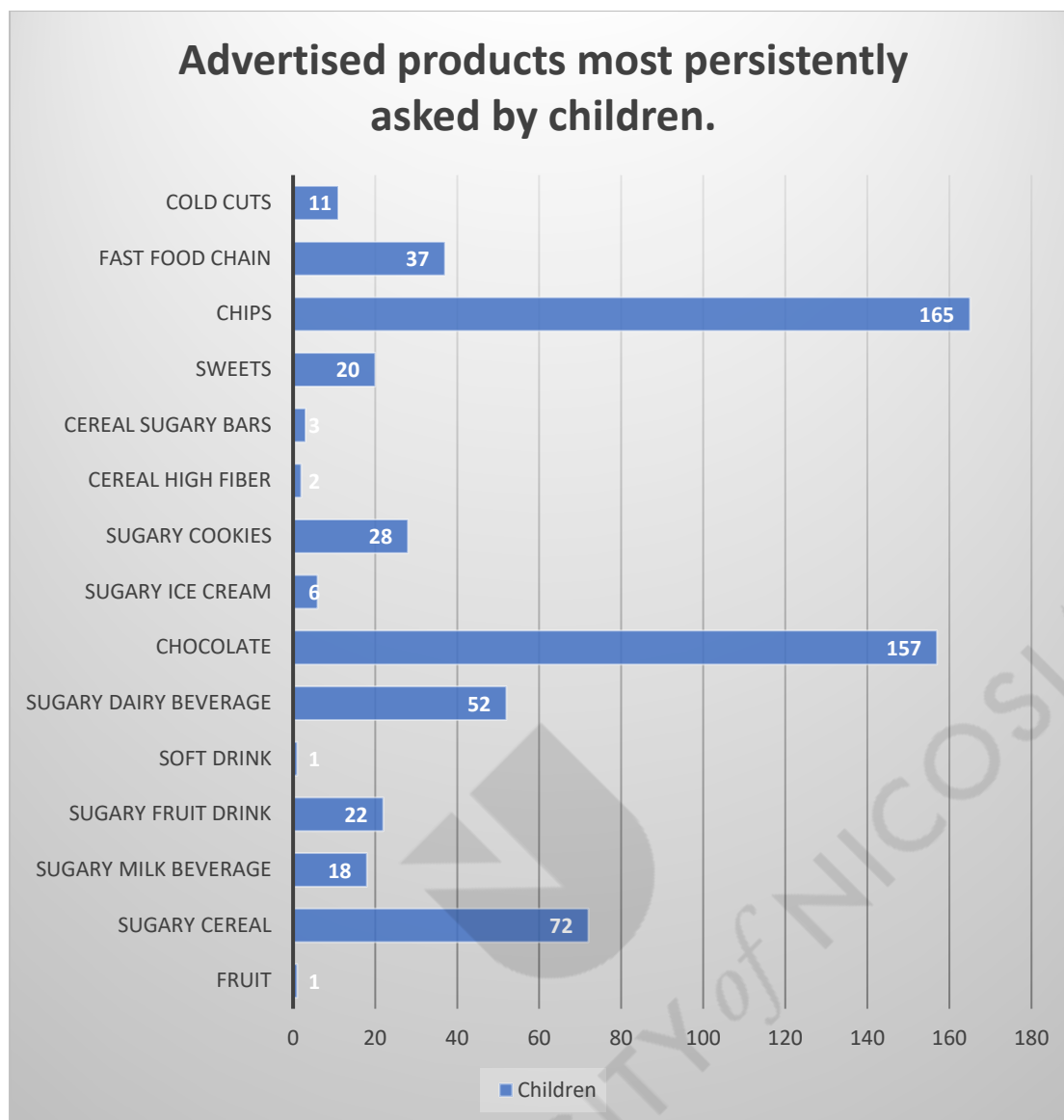
It is worth mentioning that from the entire sample only one individual mentioned “*Fruit*” as an advertised product.

The rest of the answers, not reported in the Table 25, pertain to combinations, none of which occurs repeatedly.

- **Advertised product most persistently asked for by children**

Advertised food product	Frequency	Advertised food product	Frequency
Fruit	1	Sweets	20
Cereal	72	Chips	2
Sugary milk beverage	18	Fast food chain 1	4
Sugary fruit drink	22	Fast food chain 2	8
Soft drink	1	Fast food chain 3	25
Sugary dairy beverage	52	Cold-cuts	11
7-days	9	Snack-a-Jacks	15
Sugary ice cream	6	Chips 2	148
Sugary biscuits	28	Chocolate 1	112
High fibre cereal	2	Chocolate 2	25
Cereal bars	3	Chocolate 3	10

**Table 25: Advertised products most persistently asked by children**



**Figure 21: Advertised product most persistently asked for by children.**

#### 4.4.6.7 Television advertisement jingle mostly sang by children.

Parents were asked to provide answers regarding to the advertisement jingle mostly sang by children. Parents (n=213) reported as the advertisement jingle mostly sang by children the “Toy store” jingle (20%). In terms of food items, children most often mention jingles about “Cold-cuts 1 advertisement” (28%) and “Chocolate 1 advertisement” (4%). Last, as to drinks, children most often mention the “Soft drink advertisement” (16.5%) and “Sugary fruit drink advertisement” (10.5%). The rest of the answers are shown in Table 26.

- **Television advertisement jingle mostly sang by children.**

Advertised product	Frequency	Advertised product	Frequency
Corn-Flakes	6(3%)	Cold-cuts 2	2(1%)
Fat spread	3(1.4%)	Sugary dairy beverage	3(1%)
Services	13(6%)	Sugary cookies	6(3%)
Sugary fruit drink	22(10.5%)	Dairy sugary yogurt desert	3(1%)
Soft drink	35(16.5%)	Sweets	5(2%)
Chocolate 2	2(1%)	Cold-cuts 1	59(28%)
Toy store	43(20%)	Fast food chain	2(1%)
Chocolate 1	9(4%)		

Table 26: Television advertisement jingle mostly sang by children.

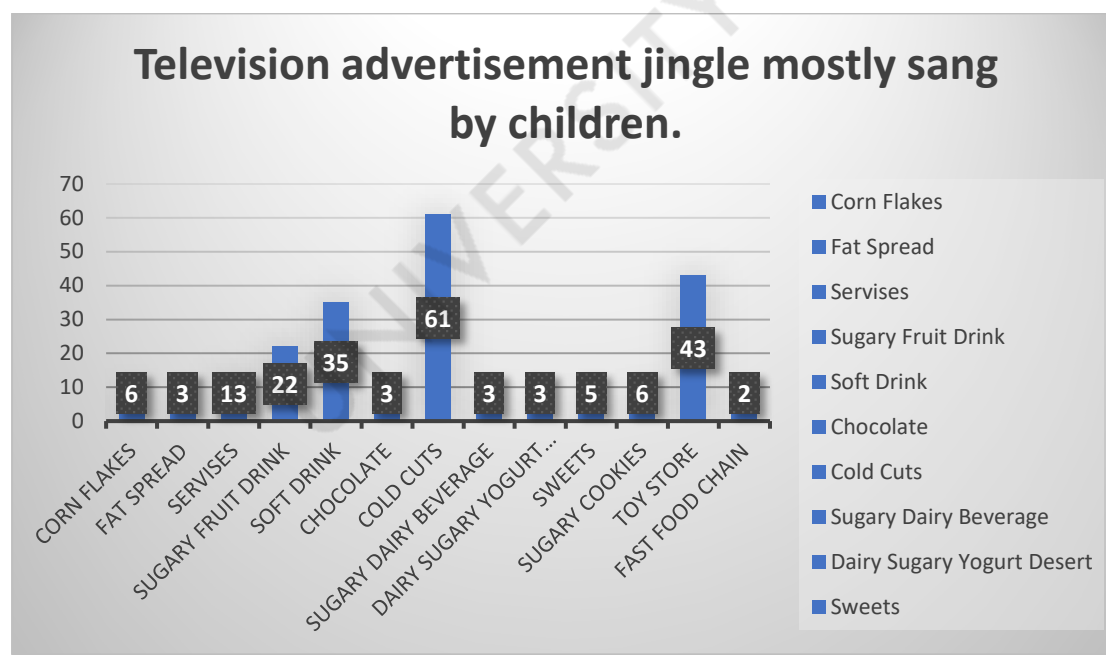
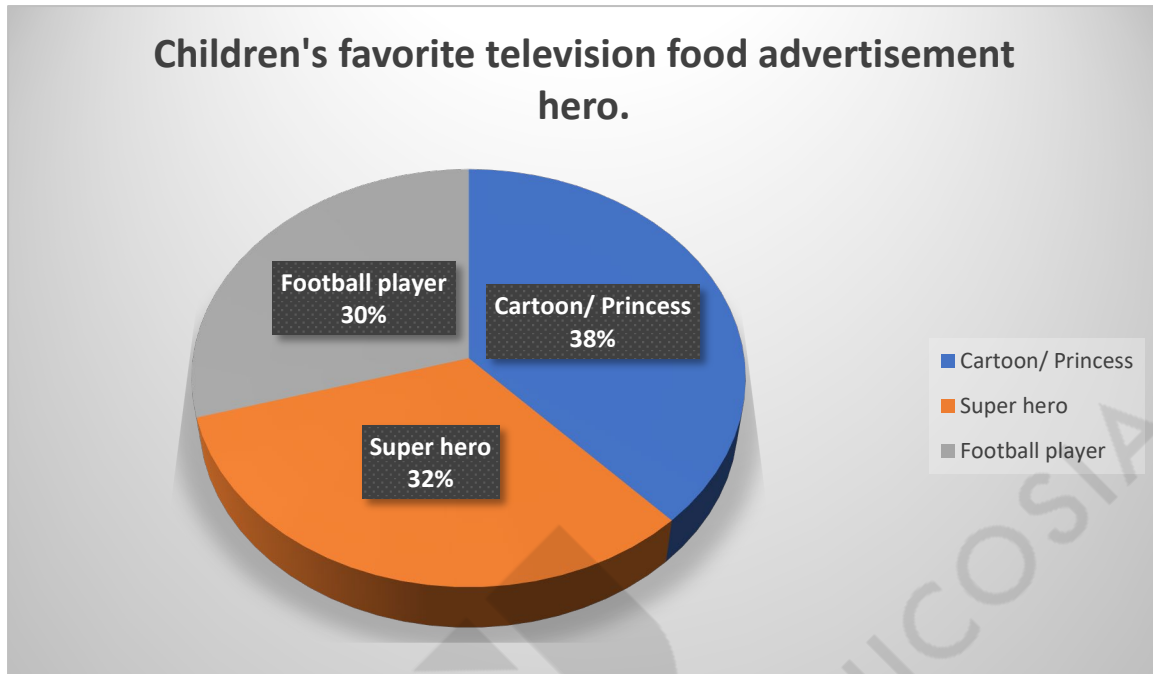


Figure 22: Television advertisement jingle mostly sang by children.

#### **4.4.6.8 Children's favorite television food advertisement hero.**

To find the children's favorite television food advertisement hero (n=68), the parents' answers have been grouped in three categories. Specifically, 38% of the answers refer to a "*Cartoon hero or Disney princesses (Cartoon/ Princess)*". Further, 32% report "*Super hero*" and 30% report "*Football players*". These three groups generally occur at similar percentages.



**Figure 23: Children's favorite television food advertisement hero.**

#### **4.4.7 Section G: Family buying/shopping habits.**

##### **4.4.7.1 To what level family's buying habits are being influenced by TV food advertisements.**

Parents were asked to provide answers regarding at what level they believe their family's buying habits are being influenced by television food advertisements. Parents were asked to choose one of the following answers: *"Not influenced at all"*, *"Influenced at minimum level"*, *"Influenced at average level"*, *"Influence at high level"*, *"Influence at very high level"*.

As to whether the buying habits of the family are influenced by TV commercials (n=1088), the following answers are given: 33.4% *"Not influenced at all"*, 29.8% *"Influenced at minimum level"*, 29.8% *"Influenced at average level"*, 5.1% *"Influence at high level"*, and 1.9% *"Influence at very high level"*.

##### **4.4.7.2 To what level parents are aware regarding the food item their child asks for at the supermarket is a TV advertised product.**

As for whether parents are aware of the fact that the food item their child asks for at the supermarket is a TV advertised product (n=1072), it is observed that 29% answers *"Sometimes"*, followed by 24% with *"Often"*, 19% with *"Rarely"*, 17% with *"Always"* and 11% with *"Never"*.

##### **4.4.7.3 How frequently parents buy food items after their promotion on television.**

As for the frequency of buying food items after their promotion on television (n=1079), 40% answers *"Rarely"*, 32% *"Sometimes"* and 23% *"Never"*. The options *"Often"* and *"Always"* appear at much smaller rates (4.8% and 0.2% respectively).

##### **4.4.7.4 To what level children encourage parents to buy an advertised food item for the first time at home during or after the advertisement.**

As for the questions about the encouragement to buy a new food item for the first time at home during or after the advertisement was aired (N=1079), results are noted. More specifically, 42% and 40% respectively answered *"Sometimes"*, with 42% and 44% respectively opting for *"Usually"*. The answer *"Always"* follows by 13% while merely 3% opted for *"Never"* and *"Rarely"*.

##### **4.4.7.5 To what level children encourage parents to buy an advertised food item for the first time in the supermarket.**

However, the question about encouragement at the supermarket to buy a new food item for the first time gets different answers.

The most frequent answer given by parents is *"Often"*, corresponding to 42%, followed by *"Sometimes"* with 29%. Lower percentages are traced in the options *"Rarely"*, *"Never"* and *"Always"* (15%, 9% και 5% respectively).

#### **4.4.8 Section H: Child's physical activity.**

##### **4.4.8.1 Frequency of children's engagement in extra curriculum physical activity.**

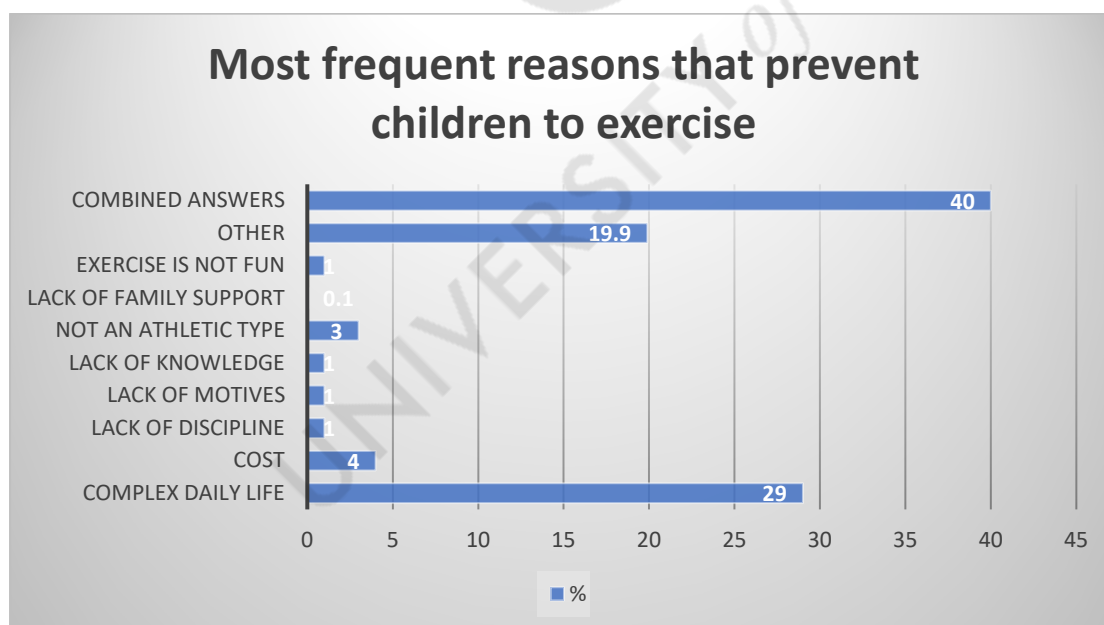
Parents were asked to provide answers regarding the frequency their child is engaged in any type of extra curriculum physical activity. Parents were asked to choose one of the following answers: "Never", "Rarely", "Usually", "Often", "Always". As to engagement in any type of extra curriculum physical activity parents provided the following answers (n=1076), 2.6% of children "Never", 7.8% "Rarely", 13.2% "Usually", 29.8% "Often" and 46.6%

"Always". Specifically, parents of "Overweight/Obese" children (n= 319) give the following answers: "Never" (13 answers), "Rarely" (33 answers), "Usually" (53 answers), "Often" (88 answers) and "Always" (132 answers).

##### **4.4.8.2 Most frequent reasons that prevent children to engage in extra curriculum physical activities.**

As shown in Figure 24, 29% the most frequent reason that might prevent children to engage in extra curriculum physical activities (n=1089), corresponds to "Complex Daily Routine". "Cost of activities" gets 4% of the answers and "My child is not into sports" gets 3%. 1% of the answers corresponds to these options: "Lack of discipline", "Lack of motivation", "Lack of awareness of the benefits of exercise" and "My child believes that it is not fun to exercise".

A meagre 0.1% percentage corresponds to the answer "Lack of support from the family". Finally, the option "Other" as well as "Combined Answers" correspond to a high percentage of 59.9% (19.9% and 40% respectively). Among the combined answers, of note is the "Complex Daily Routine" and "Cost" which corresponds to the highest percentage (4%).



**Figure 24: Most frequent reasons that prevent children to exercise.**



## **4.5 Study Part 2: Analysis of Television Advertisements.**

During the 365 days of documentation 299,421 advertisements aired from all the television channels.

The documentation was defined from November 2016-October 2017. More specifically, 14.4% of the advertisements aired from Channel:05 and Channel:06, 12.9% from Channel:04, 13.4% from Channel:09, 8.3% from Channel:08, 13% from Channel:03m, 17.6% from Channel: 07, 3.6% from Channel:01, 2.3% from Channel:02.

Names of the television channels are shown in the table below (Table 27):

PIK1: Channel:01, RIK2: Channel:02, OMEGA: Channel:03, ANT: Channel: 04, SIGMA: Channel:05, ALPHA: Channel:06, PLUS: Channel: 07, EXTRA: Channel:08, CAPITAL: Channel: 09.

### **4.5.1 Frequency of advertisements per television channel.**

TV Channel	Advertisements (%)	TV Channel	Advertisements (%)
PLUS	52690 (17.6%)	ANT1	38667 (12.9%)
ALPHA	43227 (14.4%)	EXTRA	24810 (8.3%)
SIGMA	43208 (14.4%)	PIK1	10877 (3.6%)
CAPITAL	40138 (13.4%)	PIK2	6746 (2.3%)
OMEGA	39058 (13%)		

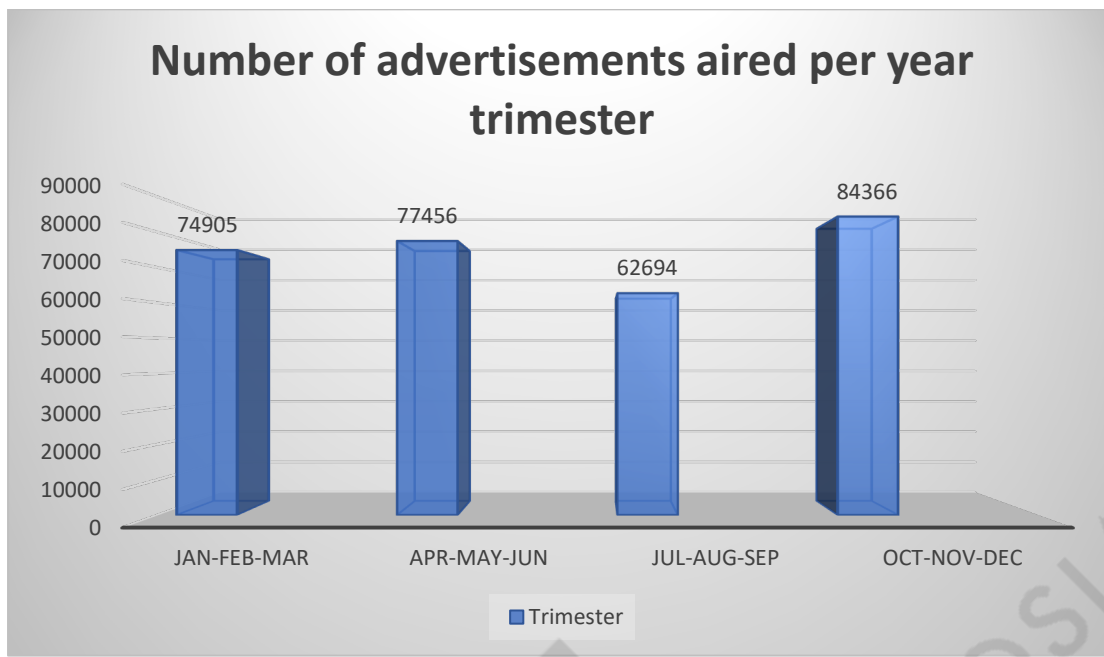
**Table 27: Frequency of advertisements per television channel.**

The total advertisements aired time calculated for all the channels was 5,894 hours, 54 minutes and 45 seconds. Especially during weekdays, advertisements aired time was 4,162 hours, 24 minutes and 25 seconds. During weekends was 1732 hours, 30 minutes and 20 seconds.

The total number of advertisements per trimester is shown in the table below (Figure 25).

As it turns out from the data most of the advertisements were aired during the 4<sup>th</sup> trimester October-November-December.

#### **4.5.2 Number of advertisements aired per year trimester.**

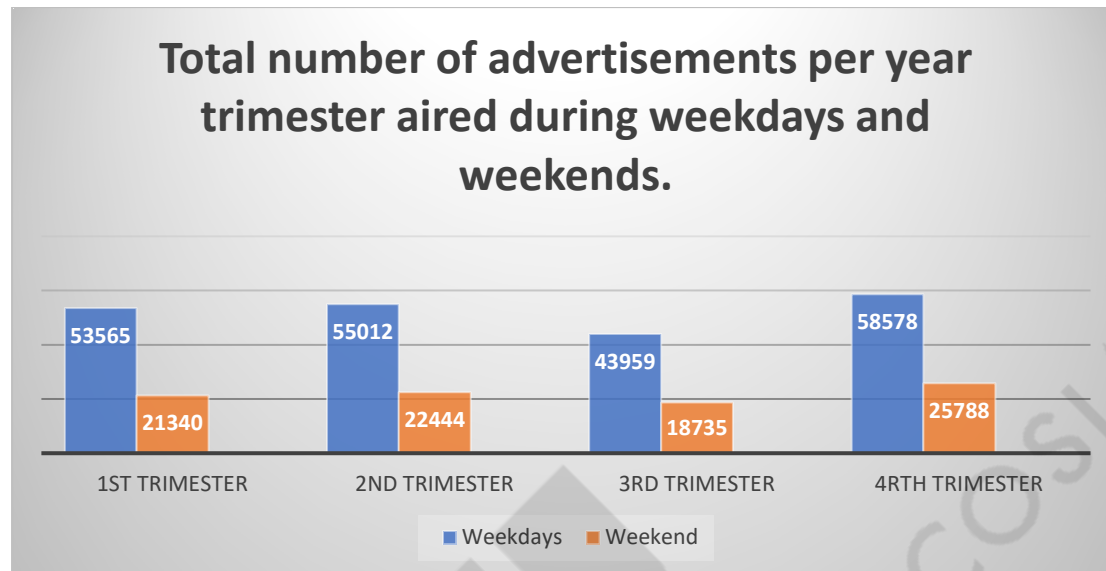


**Figure 25: Number of advertisements aired per year trimester.**

#### **4.5.3 Total number of advertisements per year trimester that aired during weekdays and during weekends.**

The figure below (Figure 26) presents the total number of advertisements per trimester that aired during weekdays and during weekends.

According to the data most of the advertisements that were aired during weekdays and during weekends were aired during the 4<sup>th</sup> trimester October-November-December.



**Figure 26: Total number of advertisements per year trimester that aired during weekdays and during weekends.**

#### **4.5.4 Frequency of all aired advertisements (Single and Supermarket advertising products).**

The table below (Table 28) presents the aired frequency of each product (this documentation includes single food, supermarket advertisements and non-food advertisements like services and OTC products). According to the data, advertisements that aired the most were related to services.

#### **Frequency of all aired advertisements (Single and Supermarket advertising products).**

<b>Advertised Product</b>	<b>Aired Frequency</b>	<b>Advertised Product</b>	<b>Aired Frequency</b>
<b>Services</b>	191440 (53.4%)	<b>Dairy Full Fat Sugary Ice Cream</b>	1956 (.5%)
<b>OTC</b>	12908 (3.6%)	<b>Dairy Milk</b>	1925 (.5%)
<b>Red meat</b>	10054 (2.8%)	<b>Sugary Fruit Drinks</b>	1762 (.5%)
<b>Chips</b>	7873 (2.2%)	<b>Pre-Fried Potatoes</b>	1581 (.4%)
<b>Soft Drinks</b>	7379 (2.1%)	<b>Rice</b>	1559 (.4%)
<b>Chocolate</b>	6910 (1.9%)	<b>Frozen Vegetables</b>	1500 (.4%)
<b>Sugary Cookies</b>	6218 (1.7%)	<b>Can Tuna</b>	1443 (.4%)
<b>Dairy Full Fat Cheese</b>	5938 (1.7%)	<b>Sugary Cream Desserts</b>	1175 (.3%)
<b>Processed Meat</b>	5565 (1.6%)	<b>Bakery</b>	1151 (.3%)
<b>Coffee/Tea</b>	5459 (1.5%)	<b>Dairy Sugary Milk Beverages</b>	1109 (.3%)
<b>Fat Spreads</b>	5158 (1.4%)	<b>Juice with Sugar Substitutes</b>	882 (.2%)
<b>HFSS Condiment - (High Fat Sugar Salt)</b>	5152 (1.4%)	<b>Olive Oil</b>	724 (.2%)
<b>Fast Food Chains</b>	5092 (1.4%)	<b>Cereal Sugary Bars</b>	717 (.2%)
<b>Juice</b>	4955 (1.4%)	<b>HFSS Meat</b>	582 (.2%)
<b>Dairy Sugary Yogurt</b>	4193 (1.2%)	<b>Nuts Salted</b>	524 (.1%)
<b>Dessert</b>			
<b>Poultry</b>	4075 (1.1%)	<b>Non-Dairy Milk</b>	515 (.1%)
<b>Fruits</b>	3947 (1.1%)	<b>Pulses</b>	511 (.1%)
<b>Bottle Table Water</b>	3783 (1.1%)	<b>Eggs</b>	468 (.1%)
<b>Fish</b>	3692 (1%)	<b>Honey</b>	458 (.1%)

<b>Dairy Low-Fat Cheese</b>	3547 (.1%)	<b>Dairy Sugary Milk Powder</b>	452 (.1%)
<b>Pastries/Pizza</b>	3357 (.9%)	<b>Sugary Tea Beverages</b>	437 (.1%)
<b>Dairy Yogurt</b>	3328 (.9%)	<b>HFSS Fish</b>	427 (.1%)
<b>Weight Loss</b>	3324 (.9%)	<b>Sugar free Gums</b>	344 (.1%)
<b>Supplements</b>			
<b>Cereal High Sugar</b>	3229 (.9%)	<b>Soft Drinks with Sugar</b>	329 (.1%)
		<b>Substitutes</b>	
<b>Sugary Products</b>	3029 (.8%)	<b>Dairy Full Fat Cream</b>	225 (.1%)
<b>Cereal High Fiber</b>	3022 (.8%)	<b>Sugar</b>	222 (.1%)
<b>Vegetables</b>	3006 (.8%)	<b>Sugarless Cream Desserts</b>	182 (.1%)
<b>Pasta</b>	2689 (.8%)	<b>Sugar Substitutes</b>	176 (.0%)
<b>Cold Cuts</b>	2129 (.6%)	<b>Sugar Free Ice Cream</b>	170 (.0%)
<b>Processed Meat for Kids</b>	2074 (.6%)	<b>Alcohol</b>	164 (.0%)
<b>Vegetable Oil</b>	2037 (.6%)	<b>Chocolate with Sugar</b>	162 (.0%)
		<b>Substitutes</b>	
		<b>Total</b>	<b><u>358394</u></b>

**Table 28: Frequency of all aired advertisements (single and advertising products).**

The table below (Table 29) presents the mean duration of each advertised product (seconds). This analysis includes only food advertisements and supermarket advertisements and does not include services and OTC products. This analysis shows that the advertisement with the biggest mean duration was the “*Processed meat for kids*” advertisements and the advertisement with the minimum mean duration were related to alcohol.

#### **4.5.5 Mean duration (seconds) for food product advertisements.**

<b>Advertisement</b>	<b>Mean (s)</b>	<b>Advertisement</b>	<b>Mean (s)</b>
<b>Processed Meat for Kids</b>	27.70	<b>Sugary Cookies</b>	19.93
<b>Weight Loss</b>	26.83	<b>Soft Drinks</b>	19.72
<b>Supplements</b>			
<b>Chocolate with Sugar</b>	25	<b>Dairy Milk</b>	19.37
<b>Substitutes</b>			
<b>Sugary Products</b>	24.20	<b>Sugary Cream Desserts</b>	19.22
<b>Dairy Yogurt</b>	23.38	<b>Dairy Sugary Milk</b>	18.92
		<b>Beverages</b>	
<b>Cereal High Fiber</b>	22.40	<b>Dairy Full Fat Cheese</b>	18.74
<b>Non-Dairy Milk</b>	22.11	<b>OTC</b>	18.30
<b>Chocolate</b>	21.81	<b>Dairy Low-Fat Cheese</b>	18.13
<b>Sugary Fruit Drinks</b>	21.39	<b>HFSS Condiment - (High Fat Sugar Salt)</b>	18.06
		<b>Juice</b>	18.01
<b>Coffee/Tea</b>	21.15	<b>Pasta</b>	17.36
<b>Sugar Substitutes</b>	21.14	<b>Dairy Sugary Yogurt</b>	17.20
<b>Fast Food Chains</b>	20.73	<b>Dessert</b>	
		<b>Dairy Full Fat Sugary Ice Cream</b>	17.14
<b>Cereal High Sugar</b>	20.72	<b>Can Tuna</b>	17.01
<b>Processed Meat</b>	20.68	<b>Bottle Table Water</b>	16.04
<b>Chips</b>	20.24	<b>Services</b>	15.91
<b>Dairy Sugary Milk</b>	20.18		
<b>Powder</b>			
<b>Pulses</b>	20	<b>Bakery</b>	15.34
<b>Fat Spreads</b>	20	<b>Juice with Sugar Substitutes</b>	14.95
<b>Sugar Free Ice Cream</b>	20	<b>Supermarkets</b>	14.93

<b>Soft Drinks with Sugar Substitutes</b>	20	<b>Sugar free Gums</b>	14.42
<b>Sugarless Cream Desserts</b>	20	<b>Alcohol</b>	10.14

**Table 29: Mean duration (seconds) for food product advertisements.**

The following table (Table 30) pertain solely to food commercials. For this reason, commercials on SERVICES, OTC and WEIGHT LOSS SUPPLEMENTS have been removed (N=207672), leaving behind a total of 91747 food commercials.

The table below (Table 30) shows the frequency of food commercials aired per channel.

**4.5.6 Frequency of food product advertisements per television channel.**

<b>Channel</b>	<b>Advertisements (%)</b>	<b>Channel</b>	<b>Advertisements (%)</b>
SIGMA	24669 (26.9%)	CAPITAL	3771 (4.1%)
ALPHA	17078 (18.6%)	PIK2	2936 (3.2%)
ANT1	15862 (17.3%)	PLUS	2161 (2.4%)
MEGA	12714 (13.9%)	PIK1	1884 (2.1%)
EXTRA	10672 (11.6%)		

**Table 30: Frequency of food product advertisements per television channel.**

Taking into consideration the total number of food advertisements of all 9 TV channels, seems that all channels air mostly supermarket advertisements. (As to commercials broadcast by the nine channels, it appears that they all advertise supermarket products the most.)

It is important to note that supermarket advertisements promote 3-5 products in one advertisement, while single advertisement promote only one product.

From the rest of the single food advertisements each channel promotes mostly the following food products (Table 31).

#### **4.5.7 Television's channel's most promoted food products (Single product advertisements)**

<b>Channel's name</b>	<b>Food product advertisement</b>
PIK1: Channel:01	Fat Spreads (23.2%)
RIK2: Channel:02	Dairy Sugary Yogurt Dessert (32.4%)
OMEGA: Channel:03	HFSS Continent - (High Fat Sugar Salt) (10.2%)
ANT1: Channel: 04	Soft Drinks (8.7%)
SIGMA: Channel:05	Chocolate (14%)
ALPHA: Channel:06	Soft Drinks (11.7%)
PLUS: Channel: 07	Dairy Yogurt (17.6%)
EXTRA: Channel:08	Fast Food Chains (27.2%)
CAPITAL: Channel: 09	Processed Meat for kids (30.8%)

**Table 31: Television's channel's most promoted food products (single product advertisements)**

As to the relationship between TV advertised products and week days results are presented in Table 32.

#### **4.5.8 Frequency of advertised food products per day (Single product advertisements)**

Monday	HFSS Continent - (High Fat Sugar Salt) (6.5%)
Tuesday	Chips (6.5%)
Wednesday	Fast Food Chains (6.9%)
Thursday	Fast Food Chains (6.5%)
Friday	Chips and Fast Food Chains (5.7%)
Saturday	Chips (10.7%)
Sunday	Chocolate and Chips (10.9%)

**Table 32: Frequency of advertised food products per day (single product advertisements).**

HFSS Continent - (High Fat Sugar Salt) (6.5%) are mostly aired on Mondays; Chips (6.5%) on Tuesdays; Fast Food Chains (6.9%) on Wednesdays; Fast Food Chains (6.5%) on Thursdays; Chips and Fast Food Chains (5.7%) on Fridays; Chips (10.7%) on Saturdays and Chocolate and Chips (10.9%) on Sundays.



#### **4.5.9 Relationship between TV advertised products and time slots (07.00am-21.30pm).**

In terms of the relationship between TV advertised products and time slots, the greatest promotion of supermarkets occurs between 07:00am-21:30pm. The following analysis refers to only single product advertisements.

07.00:08.00	Chips (17.2%)
08.00:09.00	Chocolate (13.9%)
09.00:10.00	Dairy Sugary Yogurt Dessert (10.1%)
10.00:11.00	Chocolate (6.9%)
11.00:12.00	Juice (8.6%)
12.00:13.00	Fast Food Chains (9.9%)
13.00:14.00	Chips (9%)
14.00:15.00	HFSS Continent - (High Fat Sugar Salt) (7.5%)
15.00:16.00	Chips (9.4%)
16.00:17.00	Chips (9.6%)
17.00:18.00	Chips (9%)
18.00:19.00	Chips (7.8%)
19.00:20.00	Soft Drinks (8.5%)
20.00:21.00	Processed Meat (6.4%)
21.00:21.30	Soft Drinks (9.9%)

**Table 33: Relationship between TV single advertised products and time slots (07.00am-21.30pm)**

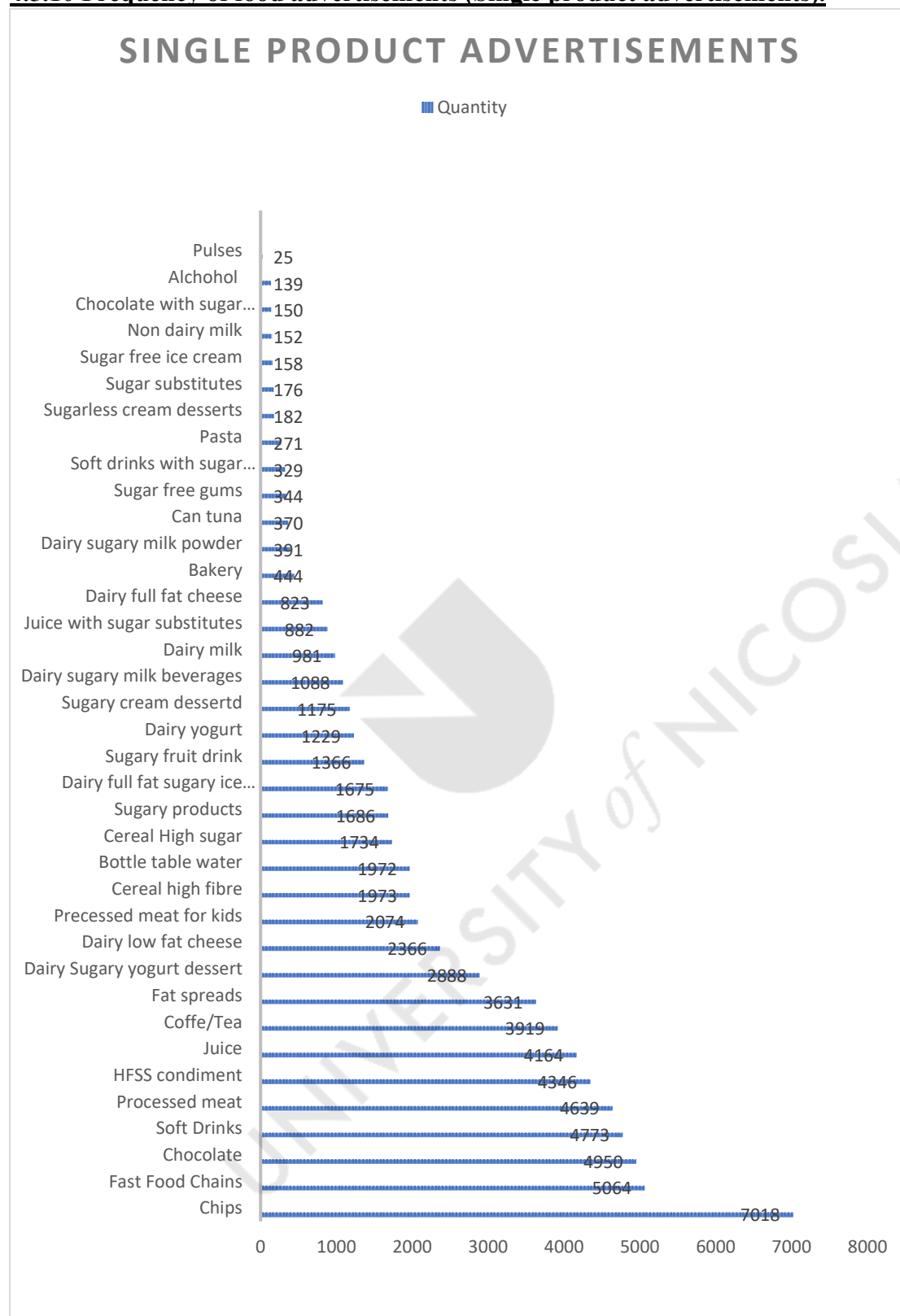
The air frequency of advertised food (independent from supermarkets) is shown below. Based on the observed data, it appears that – with the exception of supermarket commercials – Chips are advertised the most and Pulses the least (Table 34)

#### 4.5.10 Frequency of food advertisements (Single product advertisements).

Advertised product	Aired frequency	Advertised product	Aired frequency
<b>Supermarkets</b>	17651 (19.2%)	<b>Dairy Yogurt</b>	1229 (1.3%)
<b>Chips</b>	7018 (7.6%)	<b>Sugary Cream Desserts</b>	1175 (1.3%)
<b>Fast Food Chains</b>	5064 (5.5%)	<b>Dairy Sugary Milk</b>	1088 (1.2%)
		<b>Beverages</b>	
<b>Chocolate</b>	4950 (5.4%)	<b>Dairy Milk</b>	981 (1.1%)
<b>Soft Drinks</b>	4773 (5.2%)	<b>Juice with Sugar</b>	882 (1%)
		<b>Substitutes</b>	
<b>Processed Meat</b>	4639 (5.1%)	<b>Dairy Full Fat Cheese</b>	823 (1%)
<b>HFSS Condiment - (High Fat Sugar Salt)</b>	4549 (5%)	<b>Bakery</b>	444 (.5%)
<b>Sugary Cookies</b>	4346 (4.7%)	<b>Dairy Sugary Milk Powder</b>	391 (.4%)
<b>Juice</b>	4164 (4.5%)	<b>Can Tuna</b>	370 (.4%)
<b>Coffee/Tea</b>	3919 (4.3%)	<b>Sugar free Gums</b>	344 (.4%)
<b>Fat Spreads</b>	3631 (4%)	<b>Soft Drinks with Sugar</b>	329 (.4%)
		<b>Substitutes</b>	
<b>Dairy Sugary Yogurt Dessert</b>	2888 (3.1%)	<b>Pasta</b>	271 (.3%)
<b>Dairy Low-Fat Cheese</b>	2366 (2.6%)	<b>Sugarless Cream Desserts</b>	182 (.2%)
<b>Processed Meat for Kids</b>	2074 (2.3%)	<b>Sugar Substitutes</b>	176 (.2%)
<b>Cereal High Fiber</b>	1973 (2.2%)	<b>Sugar Free Ice Cream</b>	158 (.2%)
<b>Bottle Table Water</b>	1972 (2.1%)	<b>Non-Dairy Milk</b>	152 (.2%)
<b>Cereal High Sugar</b>	1734 (1.9%)	<b>Chocolate with Sugar</b>	150 (.2%)
		<b>Substitutes</b>	
<b>Sugary Products</b>	1686 (1.8%)	<b>Alcohol</b>	139 (.2%)
<b>Dairy Full Fat Sugary Ice Cream</b>	1675 (1.8%)	<b>Pulses</b>	25 (.0%)
<b>Sugary Fruit Drinks</b>	1366 (1.5%)	<b>Total</b>	<b>91747</b>

Table 34: Frequency of food advertisements (Single product advertisements).

#### 4.5.10 Frequency of food advertisements (Single product advertisements).



**Figure 27: Frequency of food advertisements (Single product advertisements).**

#### **4.6 Supermarket Advertisements.**

Of the total of advertised products, 19.2% consists of supermarket commercials. Their total time amounts to 73 hours, 11 minutes and 35 seconds, their average duration being 14.93 seconds. On weekdays, 13577 supermarket commercials are broadcast, and 4074 on weekends.

The following table presents the frequency of supermarket advertisements per television channel.

##### **4.6.1 Frequency of supermarket advertisements per television channel.**

<b>Channel</b>	<b>Advertisements (%)</b>	<b>Channel</b>	<b>Advertisements (%)</b>
ANT1	4182 (23.7%)	PLUS	1642 (9.3%)
ALPHA	2906 (16.5%)	EXTRA	932 (5.3%)
MEGA	2767 (15.7%)	PIK1	786 (4.5%)
SIGMA	2720 (15.4%)	PIK2	30 (.2%)
CAPITAL	1686 (9.6%)		

**Table 35: Frequency of supermarket advertisements per television channel.**

In terms of supermarket advertised products that broadcast per month, the following has been observed: during December, up to 11.6% of the total number of relevant commercials was broadcast.

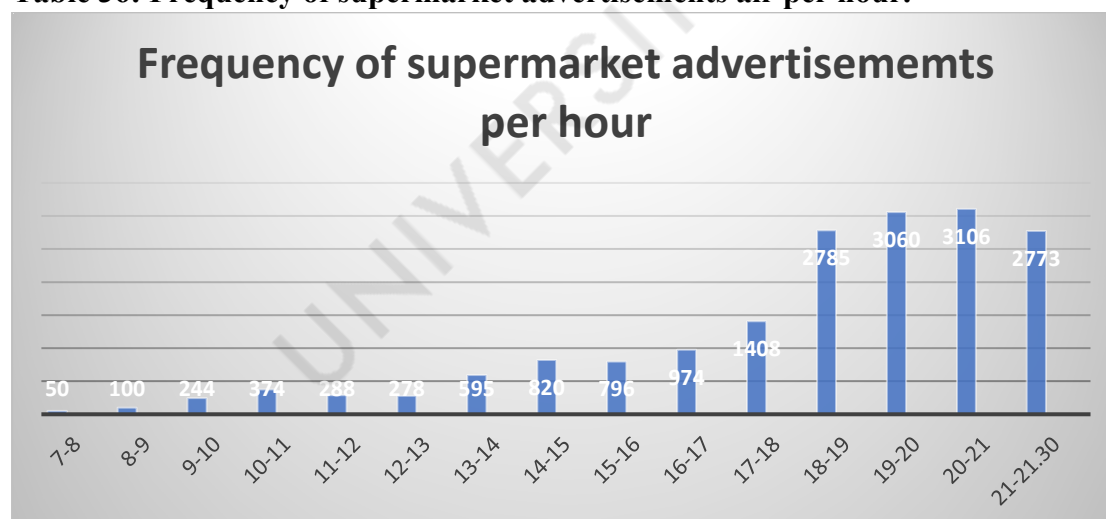
By the end of January, the overall rate of advertised supermarket products was as high as 20.9%. By the end of February, it reached 30.6%; of March 40.7%, of April 50.9%, of May 60.8%, of June 67.7%, of July 75.8%, of August 83.6%, of September 93.3% and of October 100%.

In terms of the relationship between broadcast advertised products and time slots, the following has been observed.

#### **4.6.2 Frequency of Supermarket advertisements air per hour.**

<b>Time zone</b>	<b>Advertisements – supermarkets (%)</b>
07:00-08:00	50 (.3%)
08:00-09:00	100 (.6%)
09:00-10:00	244 (1.4%)
10:00-11:00	374 (2.1%)
11:00-12:00	288 (1.6%)
12:00-13:00	278 (1.6%)
13:00-14:00	595 (3.4%)
14:00-15:00	820 (4.6%)
15:00-16:00	796 (4.5%)
16:00-17:00	974 (5.5%)
17:00-18:00	1408 (8%)
18:00-19:00	2785 (15.8%)
19:00-20:00	3060 (17.3)
20:00-21:00	3106 (17.6)
21:00-21:30	2773 (15.7%)

**Table 36: Frequency of supermarket advertisements air per hour.**



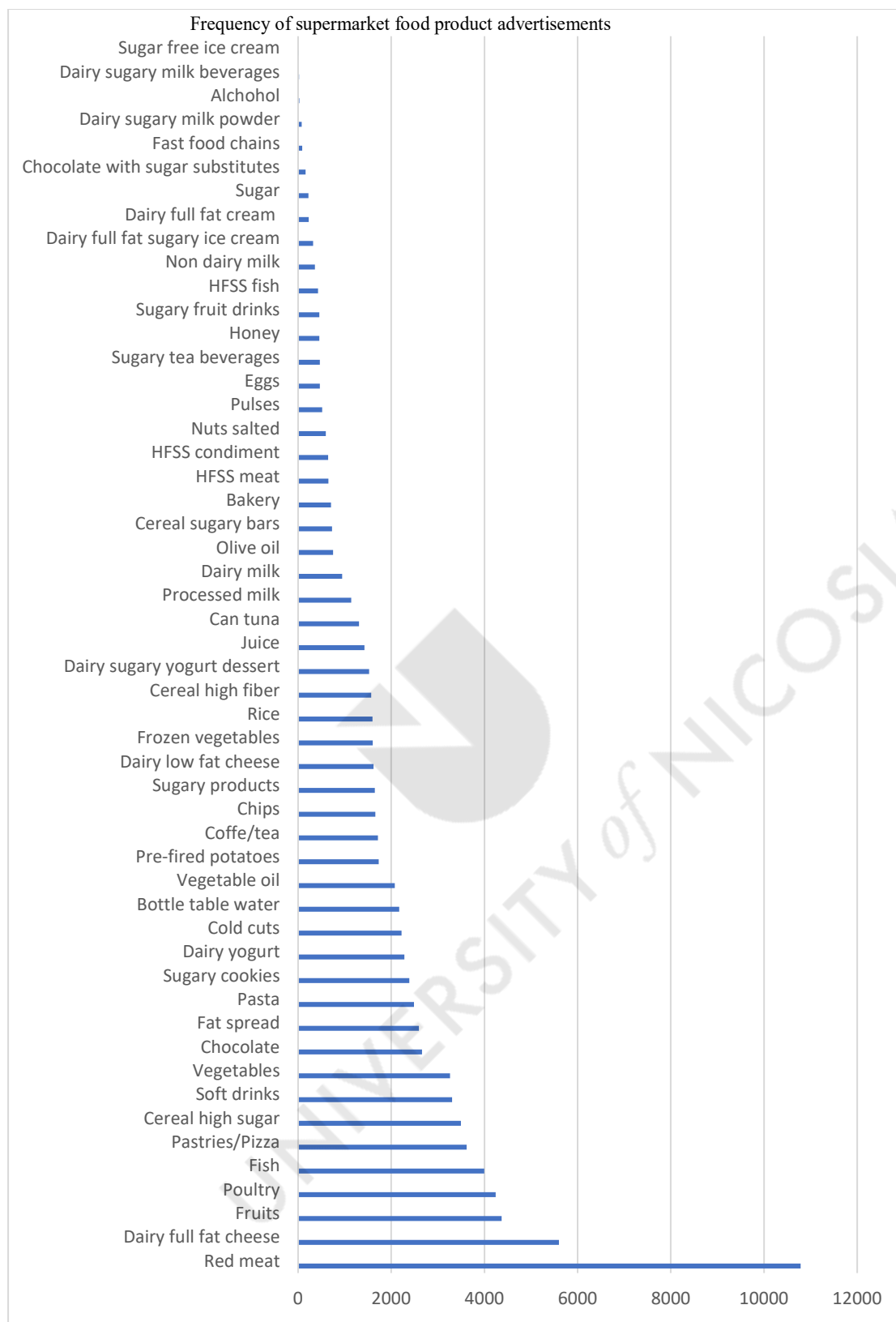
**Figure 28: Frequency of supermarket advertisements air per hour.**

#### 4.6.3 Frequency of Supermarket food product advertisements.

Advertised product	Frequency	Advertised product	Frequency
Red meat	10784 (12.1%)	Can Tuna	1307 (1.5%)
Dairy Full Fat Cheese	5601 (6.3%)	Processed Meat	1139 (1.3%)
Fruits	4371 (4.9%)	Dairy Milk	944 (1.1%)
Poultry	4238 (4.7%)	Olive Oil	751 (.8%)
Fish	3997 (4.5%)	Cereal Sugary Bars	726 (.8%)
Pastries/Pizza	3615 (4%)	Bakery	707 (.8%)
Cereal High Sugar	3494 (3.9%)	HFSS Meat	648 (.7%)
Soft Drinks	3307 (3.7%)	HFSS Condiment	646 (.7%)
Vegetables	3260 (3.6%)	Nuts Salted	594 (.7%)
Chocolate	2662 (3%)	Pulses	516 (.6%)
Fat Spreads	2595 (2.9%)	Eggs	468 (.5%)
Pasta	2489 (2.8%)	Sugary Tea Beverages	467 (.5%)
Sugary Cookies	2385 (2.7%)	Honey	458 (.5%)
Dairy Yogurt	2281 (2.6%)	Sugary Fruit Drinks	455 (.5%)
Cold Cuts	2220 (2.5%)	HFSS Fish	427 (.5%)
Bottle Table Water	2171 (2.4%)	Non-Dairy Milk	363 (.4%)
Vegetable Oil	2074 (2.3%)	Dairy Full Fat Sugary Ice Cream	324 (.4%)
Pre-Fried Potatoes	1728 (1.9%)	Dairy Full Fat Cream	225 (.3%)
Coffee/Tea	1711 (1.9%)	Sugar	222 (.2%)
Chips	1656 (1.9%)	Chocolate with Sugar Substitutes	162 (.2%)
Sugary Products	1646 (1.8%)	Fast Food Chains	88 (.1%)
Dairy Low-Fat Cheese	1617 (1.8%)	Dairy Sugary Milk Powder	76 (.1%)
Frozen Vegetables	1600 (1.8%)	Alcohol	25 (.0%)
Rice	1595 (1.8%)	Dairy Sugary Milk Beverages	21 (.0%)
Cereal High Fiber	1568 (1.8%)		
Dairy Sugary Yogurt	1527 (1.7%)		
Dessert			
Juice	1427 (1.6%)	Sugar Free Ice Cream	12 (.0%)
		<b>Total</b>	<b>89390</b>

**Table 37: Frequency of Supermarket food product advertisements.**

Based on the observed data, it appears that “Red Meat” advertisements are the most frequent, while advertisements on “Sugar Free Ice Cream” are the least frequent.



**Figure 29: Frequency of supermarket food product advertisements.**

#### 4.6.4 Advertisements (Single product and Supermarket product) throughout the study year.

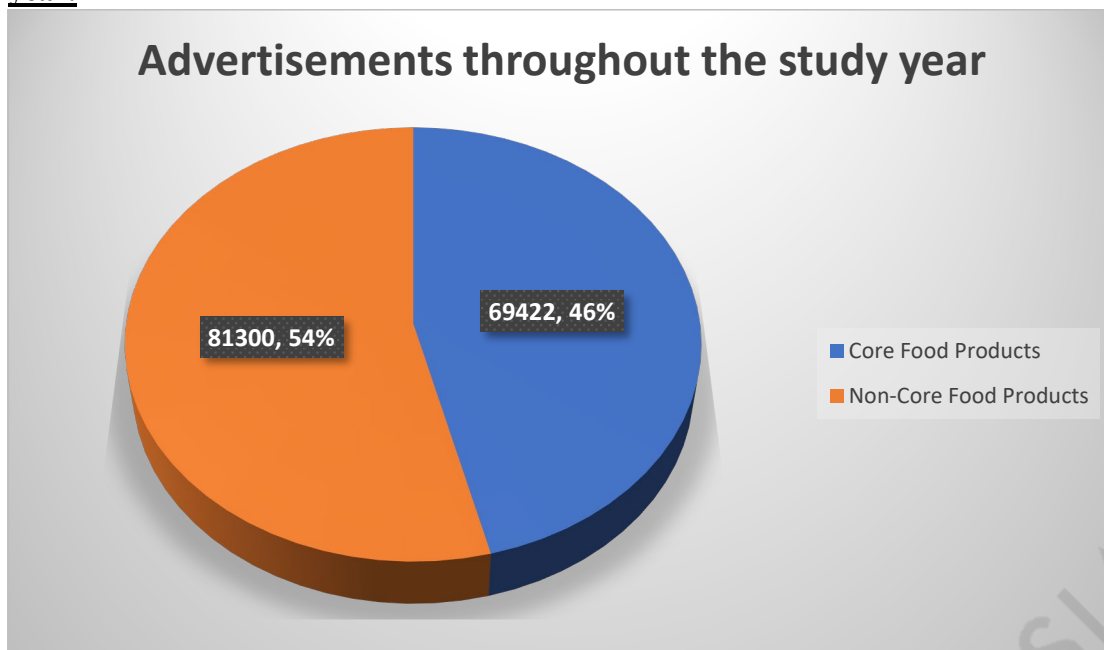


Figure 30: Advertisements (single product and supermarket product) throughout the study year.

#### 4.6.5 Core vs Non-Core Food Products per month in Study Year.

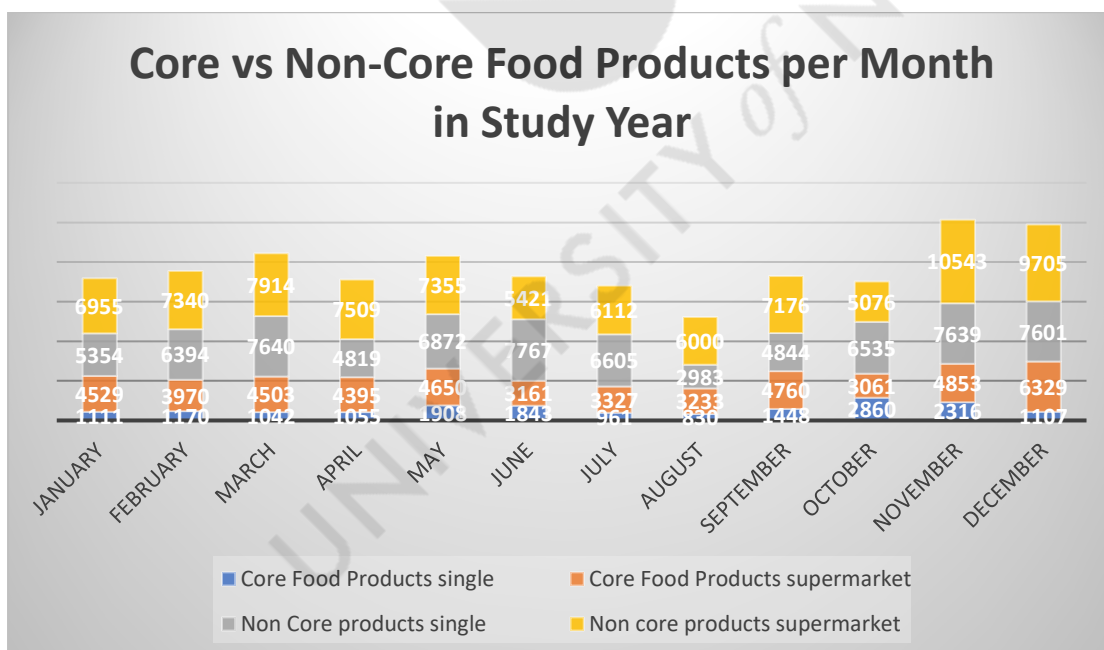


Figure 31: Core vs Non-Core Food Products per month in Study Year.



#### **4.6.6 Study's formed Food Pyramid vs Eat Well Plate Pyramid.**

In a further step of the study all food/beverage advertisements that a child is exposed to during family zone formed a pyramid.

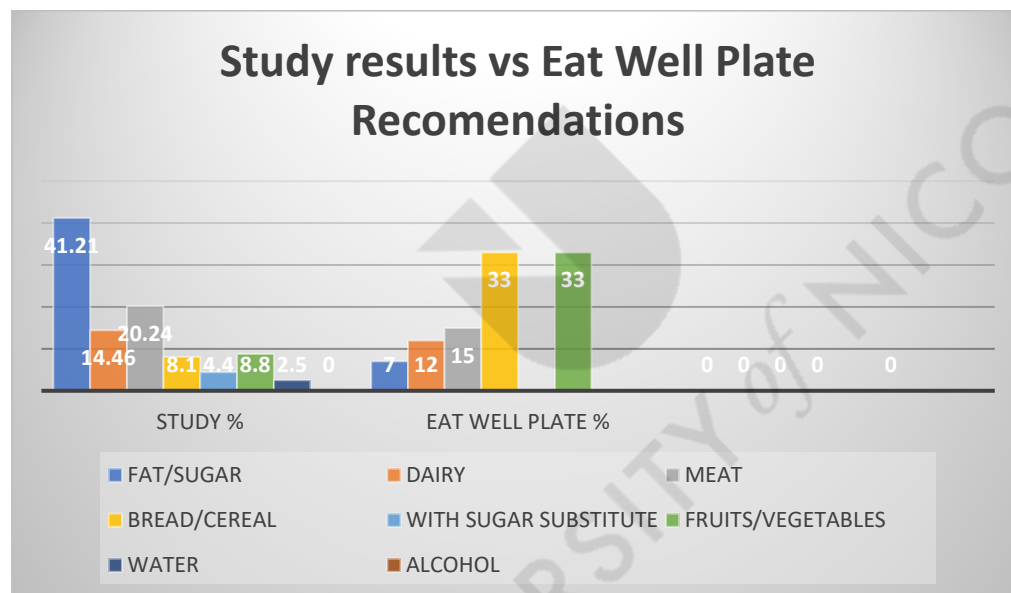
This pyramid represents all the broadcast food/beverage advertisements.

This number involves all single product advertisement and all supermarket advertisements break down per product.

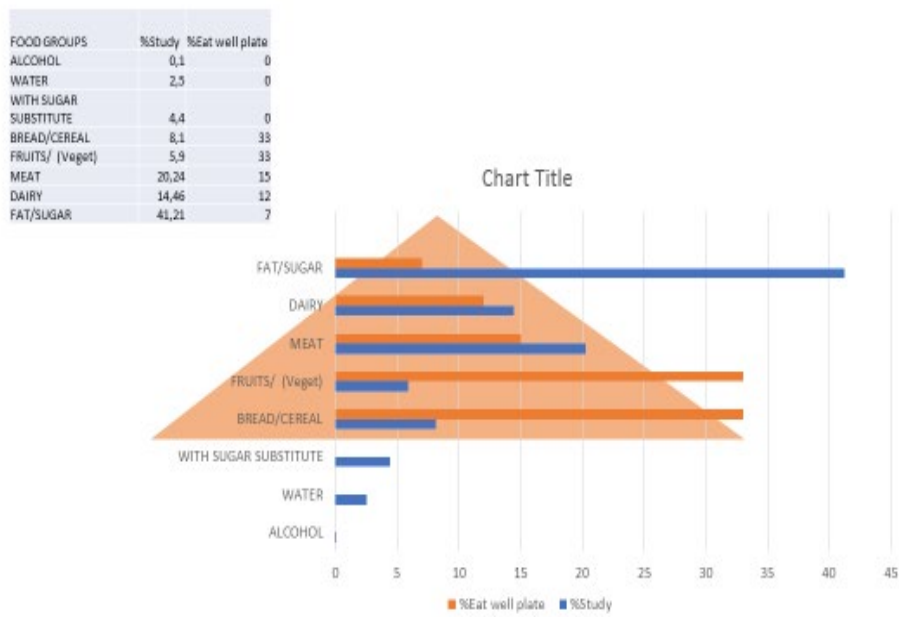
Food Pyramid was used for the break-down of the food groups.

The percentage allocated for each foods group in the food pyramid were those in the Eat Well Plate (33% Bread & Cereal, 33% Fruits & Vegetables, 12% Dairy, 15% Meat, 7% Fat & Sugar) (Food Standard Agency).

There was an attempt to build a pyramid of ads in Cyprus with the basis of the pyramid the food group consumed-promoted the most using a hierarchy order (Pyramid 1) and correlate the results with the Eat Well Plate recommendations.



**Figure 32: Study results vs Eat Well Plate recommendations.**



**Figure 33: Study results vs Eat Well Plate recommendations.**

#### **4.7 Frequency of food advertisements (Single and Supermarket) per month.**

The following tables present the frequency for Single advertisements, Supermarket advertisements, and the sum of both, per month.

##### **4.7.1 Frequency of all food advertisements (Single and Supermarket) in January.**

January

Food product	Single ads	Supermarket ads	Total
1. Red meat		1135 (16.3%)	1135 (10%)
2. Fruits		297 (4.3%)	297 (2.6%)
3. Pasta		190 (2.7%)	190 (1.7%)
4. Dairy Full Fat Cheese	21 (.4%)	401 (5.8%)	422 (3.7%)
5. Fish		132 (1.9%)	132 (1.2%)
6. Vegetables		320 (4.6%)	320 (2.8%)
7. Pulses		20 (.3%)	20 (.2%)
8. Poultry		312 (4.5%)	312 (2.8%)
9. Honey		43 (.6%)	43 (.4%)
10. Juice with Sugar Substitutes	8 (.1%)		8 (.1%)
11. Cereal High Fiber	35 (.6%)	82 (1.2%)	117 (1%)
12. Cold Cuts		245 (3.5%)	245 (2.2%)
13. Bakery		14 (.2%)	14 (.1%)
14. Juice	147 (2.5%)	64 (.9%)	211 (1.9%)
15. Processed Meat	439 (7.3%)	75 (1.1%)	514 (4.5%)
16. Soft Drinks	76 (1.3%)	220 (3.2%)	296 (2.6%)
17. Coffee/Tea	749 (12.5%)	93 (1.3%)	842 (7.4%)
18. HFSS Continent - (High Fat Sugar Salt)	8 (.1%)		8 (.1%)
19. Dairy Yogurt	6 (.1%)	242 (3.5%)	248 (2.2%)
20. Olive Oil		127 (1.8%)	127 (1.1%)
21. Cereal High Sugar	102 (1.7%)	139 (2%)	241 (2.1%)
22. Dairy Sugary Yogurt Dessert	169 (2.8%)		169 (1.5%)
23. HFSS Meat		21 (.3%)	21 (.2%)
24. Chocolate	415 (6.9%)	119 (1.7%)	534 (4.7%)
25. Fat Spreads	278 (4.6%)	153 (2.2%)	431 (3.8%)
26. Dairy Full Fat Cream		7 (.1%)	7 (.1%)
27. Sugary Cookies	204 (3.4%)	41 (.6%)	245 (2.2%)

<b>28. Pastries/Pizza</b>		240 (3.5%)	240 (2.1%)
<b>29. HFSS Fish</b>		33 (.5%)	33 (.3%)
<b>30. Can Tuna</b>		43 (.6%)	43 (.4%)
<b>31. Cereal Sugary Bars</b>		117 (1.7%)	117 (1%)
<b>32. Dairy Low-Fat Cheese</b>	84 (1.4%)	109 (1.6%)	193 (1.7%)
<b>33. Frozen Vegetables</b>		257 (4%)	257 (2.3%)
<b>34. Pre-Fried Potatoes</b>		207 (3%)	207 (1.8%)
<b>35. Vegetable Oil</b>		202 (3%)	202 (1.8%)
<b>36. Nuts Salted</b>		45 (.6%)	45 (.4%)
<b>37. Sugary Fruit Drinks</b>		8 (.1%)	8 (.1%)
<b>38. Eggs</b>		198 (2.8%)	198 (1.8%)
<b>39. Chips</b>	135 (2.3%)	165 (2.4%)	300 (2.7%)
<b>40. Sugar</b>		69 (1%)	69 (.6%)
<b>41. Rice</b>		142 (2%)	142 (1.3%)
<b>42. Bottle Table Water</b>	89 (1.5%)	235 (3.4%)	324 (2.9%)
<b>43. Sugary Tea Beverages</b>		89 (1.3%)	89 (.8%)
<b>44. Dairy Milk</b>	472 (7.9%)	212 (3%)	684 (6%)
<b>45. Sugary Products</b>	100 (1.7%)	92 (1.3%)	192 (1.7%)
<b>46. Fast Food Chains</b>	566 (9.4%)		566 (5%)
<b>47. Processed Meat for Kids</b>	198 (3.3%)		198 (1.8%)
<b>48. Sugar free Gums</b>	53 (.9%)		53 (.5%)
<b>49. Supermarkets</b>	1640 (27.4%)	-----	-----
<b><u>Total</u></b>	<b><u>5994</u></b>	<b><u>6955</u></b>	<b><u>11309</u></b>

**Table 38: Frequency of all food advertisements (Single and Supermarkets) in January.**

**4.7.2 Frequency of all food advertisements (Single and Supermarkets) in February.**  
**February**

Food product	Single ads	Supermarket ads	Total
1. Red meat		998 (13.6%)	998 (7.3%)
2. Fruits		351 (4.8%)	351 (2.6%)
3. Pasta		271 (3.7%)	271 (2%)
4. Dairy Full Fat Cheese	148 (1.8%)	665 (9.1%)	813 (5.9%)
5. Fish		330 (4.5%)	330 (2.4%)
6. Vegetables		168 (2.3%)	168 (1.2%)
7. Pulses		4 (.0%)	4 (.0%)
8. Poultry		274 (3.7%)	274 (2%)
9. Honey		2 (.0%)	2 (.0%)
10. Cereal High Fiber	46 (.6%)	60 (.8%)	106 (.8%)
11. Cold Cuts		262 (3.6%)	262 (1.9%)
12. Bakery	69 (.9%)		69 (.5%)
13. Juice	184 (2.3%)	62 (.8%)	246 (1.8%)
14. Processed Meat	218 (2.7%)	442 (6%)	660 (4.8%)
15. Soft Drinks	189 (2.3%)	292 (4%)	481 (3.5%)
16. Coffee/Tea	326 (4%)	28 (.4%)	354 (2.6%)
17. HFSS Continent - (High Fat Sugar Salt)	640 (7.9%)	40 (.5%)	680 (5%)
18. Dairy Yogurt	41 (.5%)	304 (4.1%)	345 (2.5%)
19. Cereal High Sugar	156 (1.9%)	149 (2%)	305 (2.2%)
20. Dairy Sugary Yogurt Dessert	344 (4.2%)		344 (2.5%)
21. Chocolate	711 (8.8%)	308 (4.2%)	1019 (7.4%)
22. Fat Spreads	418 (5.2%)	104 (1.4%)	522 (3.8%)
23. Sugary Cookies	597 (7.4%)	58 (.8%)	655 (4.8%)
24. Pastries/Pizza		412 (5.6%)	412 (3%)
25. Can Tuna		196 (2.7%)	196 (1.4%)
26. Cereal Sugary Bars		108 (1.5%)	108 (.8%)
27. Dairy Low-Fat Cheese	308 (3.8%)	14 (.2%)	322 (2.3%)
28. Frozen Vegetables		100 (1.4%)	100 (.7%)
29. Dairy Sugary Milk Beverages	76 (.9%)		76 (.6%)

30. Pre-Fried Potatoes		102 (1.4%)	102 (.7%)
31. Vegetable Oil		326 (.4%)	326 (2.4%)
32. Non-Dairy Milk		56 (4.4%)	56 (.4%)
33. Nuts Salted		27 (.4%)	27 (.2%)
34. Sugary Fruit Drinks		67 (.9%)	67 (.5%)
35. Eggs		22 (.3%)	22 (.2%)
36. Chips	523 (6.5%)	154 (2.1%)	677 (4.9%)
37. Rice		170 (2.3%)	170 (1.2%)
38. Bottle Table Water	104 (1.3%)	54 (.7%)	158 (1.2%)
39. Dairy Milk		104 (1.4%)	104 (.8%)
40. Dairy Sugary Milk Powder	202 (2.5%)	38 (.5%)	240 (1.7%)
41. Sugary Products	176 (2.2%)	204 (2.8%)	380 (2.8%)
42. Alcohol	2 (.0%)	14 (.2%)	16 (.1%)
43. Fast Food Chains	290 (3.6%)		290 (2.1%)
44. Processed Meat for Kids	436 (5.4%)		436 (3.2%)
45. Sugar free Gums	92 (1.1%)		92 (.7%)
46. Sugarless Cream Desserts	90 (1.1%)		90 (.7%)
47. Sugary Cream Desserts	10 (.1%)		10 (.1%)
48. Supermarkets	1710 (21.1%)	-----	-----
<b><u>Total</u></b>	<b><u>8106</u></b>	<b><u>7340</u></b>	<b><u>13736</u></b>

Table 39: Frequency of all food advertisements (Single and Supermarkets) in February.

**4.7.3 Frequency of all food advertisements (Single and Supermarkets) in March.**  
**March**

Food product	Single ads	Supermarket ads	Total
1. Red meat		548 (7%)	548 (3.5%)
2. Fruits		387 (4.9%)	387 (2.5%)
3. Pasta	77 (.8%)	250 (3.2%)	327 (2.1%)
4. Dairy Full Fat Cheese	129 (1.4%)	465 (5.9%)	594 (3.8%)
5. Fish		504 (6.4%)	504 (3.2%)
6. Vegetables		492 (6.2%)	492 (3.2%)
7. Pulses	25 (.3%)	228 (2.9%)	253 (1.6%)
8. Poultry		231 (2.9%)	231 (1.5%)
9. Honey		2 (.0%)	2 (.0%)
10. Juice with Sugar Substitutes	184 (2%)		184 (1.2%)
11. Cereal High Fiber	247 (2.6%)	8 (.1%)	255 (1.6%)
12. Cold Cuts		302 (3.8%)	302 (1.9%)
13. Bakery	97 (1%)		97 (.6%)
14. Juice		310 (3.9%)	310 (2%)
15. Processed Meat	547 (5.8%)	135 (1.7%)	682 (4.4%)
16. Soft Drinks	659 (7%)	337 (4.3%)	996 (6.4%)
17. Coffee/Tea	196 (2.1%)	170 (2.1%)	366 (2.4%)
18. HFSS Continent - (High Fat Sugar Salt)	1527 (16.2%)	120 (1.5%)	1647 (10.6%)
19. Dairy Yogurt	18 (.2%)	370 (4.7%)	388 (2.5%)
20. Olive Oil		120 (1.5%)	120 (.8%)
21. Cereal High Sugar	245 (2.6%)	209 (2.6%)	454 (2.9%)
22. Dairy Sugary Yogurt Dessert	329 (3.5%)	98 (1.2%)	427 (2.7%)
23. Chocolate	333 (3.5%)	326 (4.1%)	659 (4.2%)
24. Fat Spreads	124 (1.3%)	174 (2.2%)	298 (1.9%)
25. Sugary Cookies	289 (3.1%)	12 (.2%)	301 (1.9%)
26. Pastries/Pizza		286 (3.6%)	286 (1.8%)
27. HFSS Fish		186 (2.4%)	186 (1.2%)
28. Cereal Sugary Bars		5 (.1%)	5 (.0%)
29. Dairy Low-Fat Cheese	176 (1.9%)	60 (.8%)	236 (1.5%)

30. Frozen Vegetables		234 (3%)	234 (1.5%)
31. Dairy Sugary Milk Beverages	320 (3.4%)		320 (2.1%)
32. Pre-Fried Potatoes		134 (1.7%)	134 (.9%)
33. Vegetable Oil		78 (1%)	78 (.5%)
34. Non-Dairy Milk	123 (1.3%)	12 (.2%)	135 (.9%)
35. Sugary Fruit Drinks	93 (1%)		93 (.6%)
36. Eggs		196 (2.5%)	196 (1.3%)
37. Chips	735 (7.8%)	318 (4%)	1053 (6.8%)
38. Sugar		117 (1.5%)	117 (.8%)
39. Rice		194 (2.5%)	194 (1.2%)
40. Bottle Table Water	155 (1.6%)	101 (1.3%)	256 (1.6%)
41. Sugary Tea Beverages		132 (1.7%)	132 (.8%)
42. Dairy Milk		4 (.1%)	4 (.0%)
43. Dairy Sugary Milk Powder	16 (.2%)		16 (.1%)
44. Sugary Products	228 (2.4%)	59 (.7%)	287 (1.8%)
45. Alcohol	2 (.0%)		2 (.0%)
46. Fast Food Chains	405 (4.3%)		405 (2.6%)
47. Processed Meat for Kids	62 (.7%)		62 (.4%)
48. Soft Drinks with Sugar Substitutes	110 (1.2%)		110 (.7%)
49. Sugar free Gums	58 (.6%)		58 (.4%)
50. Sugar Substitutes	16 (.2%)		16 (.1%)
51. Sugary Cream Desserts	115 (1.2%)		115 (.7%)
52. Supermarkets	1775 (18.9%)	-----	-----
<b><u>Total</u></b>	<b><u>9415</u></b>	<b><u>7914</u></b>	<b><u>15554</u></b>

**Table 40: Frequency of all food advertisements (Single and Supermarkets) in March.**



**4.7.4 Frequency of all food advertisements (Single and Supermarkets) in April.**  
**April**

Food product	Single ads	Supermarket ads	Total
1. Red meat		581 (7.7%)	581 (4.7%)
2. Fruits		426 (5.6%)	426 (3.5%)
3. Pasta	12 (.2%)	350 (4.6%)	362 (2.9%)
4. Dairy Full Fat Cheese	203 (3.1%)	870 (11.5%)	1073 (8.7%)
5. Fish		52 (.7%)	52 (.4%)
6. Vegetables		334 (4.4%)	334 (2.7%)
7. Pulses		24 (.3%)	24 (.2%)
8. Poultry		749 (9.9%)	749 (6.1%)
9. Honey		269 (3.6%)	269 (2.2%)
10. Juice with Sugar Substitutes	124 (1.9%)		124 (1%)
11. Cereal High Fiber	251 (3.8%)	160 (2.1%)	411 (3.3%)
12. Cold Cuts		199 (2.6%)	199 (1.6%)
13. Bakery		230 (3%)	230 (1.9%)
14. Juice	432 (6.6%)	20 (.3%)	452 (3.7%)
15. Processed Meat	468 (7.1%)	28 (.4%)	496 (4%)
16. Soft Drinks	510 (7.8%)	253 (3.3%)	763 (6.2%)
17. Coffee/Tea	146 (2.2%)	230 (3%)	376 (3%)
18. HFSS Continent - (High Fat Sugar Salt)	172 (2.6%)	8 (.1%)	180 (1.5%)
19. Dairy Yogurt	160 (2.4%)	126 (1.7%)	286 (2.3%)
20. Olive Oil		99 (1.3%)	99 (.8%)
21. Cereal High Sugar	154 (2.3%)	125 (1.7%)	279 (2.3%)
22. Dairy Sugary Yogurt Dessert	202 (3.1%)	162 (2.1%)	364 (3%)
23. HFSS Meat		129 (1.7%)	129 (1%)
24. Chocolate	180 (2.7%)	271 (3.6%)	451 (3.7%)
25. Fat Spreads	32 (.5%)	278 (3.7%)	310 (2.5%)
26. Sugary Cookies	266 (4%)	193 (2.6%)	459 (3.7%)
27. Pastries/Pizza		180 (2.4%)	180 (1.5%)
28. Can Tuna		20 (.3%)	20 (.2%)
29. Cereal Sugary Bars		44 (.6%)	44 (.4%)
30. Dairy Low-Fat Cheese	10 (.2%)	187 (2.5%)	197 (1.6%)

31. Frozen Vegetables		105 (1.4%)	105 (.9%)
32. Dairy Sugary Milk Beverages	78 (1.2%)		78 (.6%)
33. Pre-Fried Potatoes		402 (5.3%)	402 (3.3%)
34. Vegetable Oil		92 (1.2%)	92 (.7%)
35. Sugary Fruit Drinks	83 (1.3%)		83 (.7%)
36. Chips	194 (2.9%)		194 (1.6%)
37. Rice		20 (.3%)	20 (.2%)
38. Bottle Table Water	106 (1.6%)	173 (2.3%)	279 (2.3%)
39. Sugary Tea Beverages		20 (.3%)	20 (.2%)
40. Dairy Milk		152 (2%)	152 (1.2%)
41. Sugary Products	114 (1.7%)		114 (.9%)
42. Alcohol	3 (.0%)		3 (.0%)
43. Fast Food Chains	474 (7.2%)		474 (3.8%)
44. Processed Meat for Kids	70 (1.1%)		70 (.6%)
45. Sugar free Gums	52 (.8%)		52 (.4%)
46. Sugary Cream Desserts	271 (4.1%)		271 (2.2%)
47. Supermarkets	1812 (27.5%)	-----	-----
<b><u>Total</u></b>	<b><u>6579</u></b>	<b><u>7561</u></b>	<b><u>12328</u></b>

**Table 41: Frequency of all food advertisements (Single and Supermarkets) in April.**

**4.7.5 Frequency of all food advertisements (Single and Supermarkets) in May.**

Food product	Single ads	Supermarket ads	Total
1. Red meat		852 (11.6%)	852 (6%)
2. Fruits		383 (5.2%)	383 (2.7%)
3. Pasta	64 (.7%)	166 (2.3%)	230 (1.6%)
4. Dairy Full Fat Cheese		403 (5.5%)	403 (2.8%)
5. Fish		514 (7%)	514 (3.6%)
6. Vegetables		237 (3.2%)	237 (1.7%)
7. Pulses		87 (1.2%)	87 (.6%)
8. Poultry		392 (5.3%)	392 (2.7%)
9. Juice with Sugar Substitutes	236 (2.7%)		236 (1.7%)
10. Cereal High Fiber	275 (3.2%)	324 (4.4%)	599 (4.2%)
11. Cold Cuts		341 (4.6%)	341 (2.4%)
12. Bakery	65 (.7%)	264 (3.6%)	329 (2.3%)
13. Juice	455 (5.2%)	129 (1.8%)	584 (4.1%)
14. Processed Meat	353 (4.1%)	9 (.1%)	362 (2.5%)
15. Soft Drinks	560 (6.5%)	178 (2.4%)	738 (5.2%)
16. Coffee/Tea	113 (1.3%)	186 (2.5%)	299 (2.1%)
17. HFSS Continent - (High Fat Sugar Salt)	13 (.1%)		13 (.1%)
18. Dairy Yogurt		295 (4%)	295 (2.1%)
19. Olive Oil		74 (1%)	74 (.5%)
20. Cereal High Sugar	215 (2.5%)	98 (1.3%)	313 (2.2%)
21. Dairy Sugary Yogurt Dessert	221 (2.5%)	103 (1.4%)	324 (2.3%)
22. HFSS Meat		2 (.0%)	2 (.0%)
23. Chocolate	356 (4.1%)	4 (.1%)	360 (2.5%)
24. Fat Spreads	405 (4.7%)	191 (2.6%)	596 (4.2%)
25. Sugary Cookies	475 (5.5%)	280 (3.8%)	755 (5.3%)
26. Dairy Full Fat Sugary Ice Cream	126 (1.5%)	67 (.9%)	193 (1.4%)
27. Pastries/Pizza		566 (7.7%)	566 (4%)
28. HFSS Fish		74 (1%)	74 (.5%)
29. Can Tuna		35 (.5%)	35 (.2%)

30. Cereal Sugary Bars		102 (1.4%)	102 (.7%)
31. Dairy Low-Fat Cheese	481 (5.5%)	25 (.3%)	506 (3.5%)
32. Frozen Vegetables		46 (.6%)	46 (.3%)
33. Dairy Sugary Milk Beverages	48 (.6%)		48 (.3%)
34. Pre-Fried Potatoes		32 (.4%)	32 (.2%)
35. Vegetable Oil		115 (1.6%)	115 (.8%)
36. Non-Dairy Milk		2 (.0%)	2 (.0%)
37. Nuts Salted		166 (2.3%)	166 (1.2%)
38. Sugary Fruit Drinks	307 (3.5%)		307 (2.1%)
39. Eggs		7 (.1%)	7 (.0%)
40. Chips	520 (6%)	2 (.0%)	522 (3.7%)
41. Rice		186 (2.5%)	186 (1.3%)
42. Bottle Table Water	177 (2%)	94 (1.3%)	271 (1.9%)
43. Sugary Tea Beverages		87 (1.2%)	87 (.6%)
44. Dairy Milk	46 (.5%)	232 (3.2%)	278 (1.9%)
45. Dairy Sugary Milk Powder	92 (1.1%)		92 (.6%)
46. Sugary Products	187 (2.2%)	5 (.1%)	192 (1.3%)
47. Alcohol	14 (.2%)	2 (.0%)	16 (.1%)
48. Fast Food Chains	725 (8.4%)		725 (5.1%)
49. Processed Meat for Kids	59 (.7%)		59 (.4%)
50. Soft Drinks with Sugar Substitutes	5 (.1%)		5 (.0%)
51. Sugar free Gums	12 (.1%)		12 (.1%)
52. Sugarless Cream Desserts	92 (1.1%)		92 (.6%)
53. Sugary Cream Desserts	233 (2.7%)		233 (1.6%)
54. Supermarkets	1739 (20.1%)	-----	-----
<b>Total</b>	<b>8669</b>	<b>7357</b>	<b>14287</b>

Table 42: Frequency of all food advertisements (Single and Supermarkets) in May.

**4.7.6 Frequency of all food advertisements (Single and Supermarkets) in June.**  
**June**

Food product	Single ads	Supermarket ads	Total
1. Red meat		795 (14.7%)	795 (6%)
2. Fruits		179 (3.3%)	179 (1.4%)
3. Pasta	19 (.2%)	222 (4.1%)	241 (1.8%)
4. Dairy Full Fat Cheese		265 (4.9%)	265 (2%)
5. Fish		109 (2%)	109 (.8%)
6. Vegetables		217 (4%)	217 (1.6%)
7. Poultry		262 (4.8%)	262 (2%)
8. Honey		32 (.6%)	32 (.2%)
9. Juice with Sugar Substitutes	15 (.2%)		15 (.1%)
10. Cereal High Fiber	81 (.9%)	123 (2.3%)	204 (1.5%)
11. Cold Cuts		135 (2.5%)	135 (1%)
12. Bakery	90 (1%)	59 (1.1%)	149 (1.1%)
13. Juice	518 (5.8%)	2 (.0%)	520 (3.9%)
14. Processed Meat	267 (3%)	53 (1%)	320 (2.4%)
15. Soft Drinks	493 (5.5%)	228 (4.2%)	721 (5.5%)
16. Coffee/Tea	447 (5%)	67 (1.2%)	514 (3.9%)
17. HFSS Continent - (High Fat Sugar Salt)	494 (5.5%)	4 (.1%)	498 (3.8%)
18. Dairy Yogurt	157 (1.7%)	139 (2.6%)	296 (2.2%)
19. Olive Oil		87 (1.6%)	87 (.7%)
20. Cereal High Sugar	90 (1%)	178 (3.3%)	268 (2%)
21. Dairy Sugary Yogurt Dessert	317 (3.5%)	76 (1.4%)	393 (3%)
22. HFSS Meat		26 (.5%)	26 (.2%)
23. Chocolate	416 (4.6%)	89 (1.6%)	505 (3.8%)
24. Fat Spreads	2 (.0%)	131 (2.4%)	133 (1%)
25. Dairy Full Fat Cream		32 (.6%)	32 (.2%)
26. Sugary Cookies	338 (3.8%)	262 (4.8%)	600 (4.5%)
27. Dairy Full Fat Sugary Ice Cream	1114 (12.4%)	115 (2.1%)	1229 (9.3%)
28. Pastries/Pizza		416 (7.7%)	416 (3.2%)
29. Can Tuna		53 (1%)	53 (.4%)
30. Sugar Free Ice Cream	87 (1%)	12 (.2%)	99 (.8%)

31. Cereal Sugary Bars		103 (1.9%)	103 (.8%)
32. Dairy Low-Fat Cheese	306 (3.4%)	17 (.3%)	323 (2.4%)
33. Frozen Vegetables		41 (.8%)	41 (.3%)
34. Dairy Sugary Milk Beverages	155 (1.7%)	6 (.1%)	161 (1.2%)
35. Pre-Fried Potatoes		22 (.4%)	22 (.2%)
36. Vegetable Oil		135 (2.5%)	135 (1%)
37. Non-Dairy Milk		92 (1.7%)	92 (.7%)
38. Nuts Salted		4 (.1%)	4 (.0%)
39. Sugary Fruit Drinks	197 (2.2%)	2 (.0%)	199 (1.5%)
40. Chips	783 (8.7%)		783 (5.9%)
41. Rice		214 (3.9%)	214 (1.6%)
42. Bottle Table Water	582 (6.5%)	142 (2.6%)	724 (5.5%)
43. Dairy Milk	88 (1%)	110 (2%)	198 (1.5%)
44. Dairy Sugary Milk Powder	2 (.0%)		2 (.0%)
45. Sugary Products	124 (1.4%)	163 (3%)	287 (2.2%)
46. Alcohol	34 (.4%)		34 (.3%)
47. Fast Food Chains	354 (3.9%)	2 (.0%)	356 (2.7%)
48. Processed Meat for Kids	78 (.9%)		78 (.6%)
49. Sugar free Gums	4 (.0%)		4 (.0%)
50. Sugary Cream Desserts	115 (1.3%)		115 (.9%)
51. Supermarkets	1218 (13.6%)	-----	-----
<b><u>Total</u></b>	<b><u>8985</u></b>	<b><u>5421</u></b>	<b><u>13188</u></b>

Table 43: Frequency of all food advertisements (Single and Supermarkets) in June.

**4.7.7 Frequency of all food advertisements (Single and Supermarkets) in July.**

Food product	Single ads	Supermarket ads	Total
1. Red meat		764 (12.5%)	764 (5.9%)
2. Fruits		311 (5.1%)	311 (2.4%)
3. Pasta		135 (2.2%)	135 (1.1%)
4. Dairy Full Fat Cheese	4 (.0%)	364 (5.9%)	368 (2.9%)
5. Fish		246 (4%)	246 (1.9%)
6. Vegetables		109 (1.8%)	109 (.8%)
7. Poultry		471 (7.7%)	471 (3.7%)
8. Honey		4 (.1%)	4 (.0%)
9. Juice with Sugar Substitutes	101 (1.2%)		101 (.8%)
10. Cereal High Fiber		59 (1%)	59 (.5%)
11. Cold Cuts		261 (4.3%)	261 (2%)
12. Bakery	89 (1.1%)	59 (1%)	148 (1.2%)
13. Juice	506 (6.2%)		506 (3.9%)
14. Processed Meat	320 (3.9%)	51 (.8%)	371 (2.9%)
15. Soft Drinks	556 (6.8%)	216 (3.5%)	772 (6%)
16. Coffee/Tea	98 (1.2%)	142 (2.3%)	240 (1.9%)
17. HFSS Continent - (High Fat Sugar Salt)	180 (2.2%)	80 (1.3%)	260 (2%)
18. Dairy Yogurt		132 (2.2%)	132 (1%)
19. Olive Oil		82 (1.3%)	82 (.6%)
20. Cereal High Sugar	170 (2.1%)	22 (.4%)	192 (1.5%)
21. Dairy Sugary Yogurt Dessert	384 (4.7%)	178 (2.9%)	562 (4.4%)
22. HFSS Meat		133 (2.2%)	133 (1%)
23. Chocolate	783 (9.6%)	199 (3.3%)	982 (7.6%)
24. Fat Spreads	5 (.1%)	74 (1.2%)	79 (.6%)
25. Dairy Full Fat Cream		47 (.8%)	47 (.4%)
26. Sugary Cookies	328 (4%)	207 (3.4%)	535 (4.2%)
27. Dairy Full Fat Sugary Ice Cream	372 (4.6%)	99 (1.6%)	471 (3.7%)
28. Pastries/Pizza		319 (5.2%)	319 (2.5%)
29. Can Tuna	155 (1.9%)	239 (3.9%)	394 (3.1%)

30. Sugar Free Ice Cream	71 (.9%)		71 (.6%)
31. Cereal Sugary Bars		133 (2.2%)	133 (1%)
32. Dairy Low-Fat Cheese		90 (1.5%)	90 (.7%)
33. Frozen Vegetables		120 (2%)	120 (.9%)
34. Dairy Sugary Milk Beverages	136 (1.7%)		136 (1.1%)
35. Pre-Fried Potatoes		92 (1.5%)	92 (.7%)
36. Vegetable Oil		176 (2.9%)	176 (1.4%)
37. Non-Dairy Milk		41 (.7%)	41 (.3%)
38. Nuts Salted		86 (1.4%)	86 (.7%)
39. Sugary Fruit Drinks	121 (1.5%)	8 (.1%)	129 (1%)
40. Eggs		2 (.0%)	2 (.0%)
41. Chips	1371 (16.8%)	12 (.2%)	1383 (10.8%)
42. Rice		44 (.7%)	44 (.3%)
43. Bottle Table Water	206 (2.5%)	132 (2.2%)	338 (2.6%)
44. Dairy Milk		37 (.6%)	37 (.3%)
45. Dairy Sugary Milk Powder	16 (.2%)		16 (.1%)
46. Sugary Products	201 (2.5%)	140 (2.3%)	341 (2.7%)
47. Alcohol	24 (.3%)	4 (.1%)	28 (.2%)
48. Fast Food Chains	334 (4.1%)		334 (2.6%)
49. Processed Meat for Kids	128 (1.6%)		128 (1%)
50. Soft Drinks with Sugar Substitutes	22 (.3%)		22 (.2%)
51. Sugary Cream Desserts	45 (.6%)		45 (.4%)
52. Supermarkets	1427 (17.5%)	-----	-----
<b><u>Total</u></b>	<b><u>8153</u></b>	<b><u>6120</u></b>	<b><u>12846</u></b>

Table 44: Frequency of all food advertisements (Single and Supermarkets) in July.



**4.7.8 Frequency of all food advertisements (Single and Supermarkets) in August.**  
**August**

Food product	Single ads	Supermarket ads	Total
1. Red meat		742 (12.4%)	742 (8.3%)
2. Fruits		385 (6.4%)	385 (4.3%)
3. Pasta		200 (3.3%)	200 (2.2%)
4. Dairy Full Fat Cheese		433 (7.2%)	433 (4.9%)
5. Fish		383 (6.4%)	383 (4.3%)
6. Vegetables		213 (3.6%)	213 (2.4%)
7. Poultry		250 (4.2%)	250 (2.8%)
8. Chocolate with Sugar Substitutes		12 (.2%)	12 (.1%)
9. Juice with Sugar Substitutes	68 (1.6%)		68 (.8%)
10. Cereal High Fiber		41 (.7%)	41 (.5%)
11. Cold Cuts		111 (1.9%)	111 (1.2%)
12. Bakery	24 (.6%)	4 (.1%)	28 (.3%)
13. Juice	416 (9.7%)		416 (4.7%)
14. Processed Meat	338 (7.9%)	2 (.0%)	340 (3.8%)
15. Soft Drinks	168 (3.9%)	173 (2.9%)	341 (3.8%)
16. Coffee/Tea	2 (.0%)	204 (3.4%)	206 (2.3%)
17. Dairy Yogurt	18 (.4%)	133 (2.2%)	151 (1.7%)
18. Cereal High Sugar	98 (2.3%)	118 (2%)	216 (2.4%)
19. Dairy Sugary Yogurt Dessert	30 (.7%)	201 (3.4%)	231 (2.6%)
20. HFSS Meat		129 (2.2%)	129 (1.5%)
21. Chocolate	291 (6.8%)	139 (2.3%)	430 (4.8%)
22. Fat Spreads	42 (1%)	10 (.2%)	52 (.6%)
23. Dairy Full Fat Cream		104 (1.7%)	104 (1.2%)
24. Sugary Cookies	253 (5.9%)	327 (5.5%)	580 (6.5%)
25. Dairy Full Fat Sugary Ice Cream	20 (.5%)		20 (.2%)
26. Pastries/Pizza		294 (4.9%)	294 (3.3%)
27. Can Tuna	121 (2.8%)	136 (2.3%)	257 (2.9%)
28. Cereal Sugary Bars		5 (.1%)	5 (.1%)
29. Dairy Low-Fat Cheese		117 (2%)	117 (1.3%)

<b>30. Frozen Vegetables</b>		81 (1.4%)	81 (.9%)
<b>31. Dairy Sugary Milk Beverages</b>	4 (.1%)	15 (.3%)	19 (.2%)
<b>32. Pre-Fried Potatoes</b>		92 (1.5%)	92 (1%)
<b>33. Vegetable Oil</b>		120 (2%)	120 (1.3%)
<b>34. Non-Dairy Milk</b>		130 (2.2%)	130 (1.5%)
<b>35. Nuts Salted</b>		42 (.7%)	42 (.5%)
<b>36. Sugary Fruit Drinks</b>	10 (.2%)	101 (1.7%)	111 (1.2%)
<b>37. Chips</b>	279 (6.5%)	4 (.1%)	283 (3.2%)
<b>38. Rice</b>		173 (2.9%)	173 (1.9%)
<b>39. Bottle Table Water</b>	128 (3%)	106 (1.8%)	234 (2.6%)
<b>40. Dairy Milk</b>		8 (.1%)	8 (.1%)
<b>41. Dairy Sugary Milk Powder</b>	6 (.1%)	23 (.4%)	29 (.3%)
<b>42. Sugary Products</b>	95 (2.2%)	210 (3.5%)	305 (3.4%)
<b>43. Alcohol</b>		2 (.0%)	2 (.0%)
<b>44. Fast Food Chains</b>	208 (4.9%)	26 (.4%)	234 (2.6%)
<b>45. Soft Drinks with Sugar Substitutes</b>	192 (4.5%)		192 (2.2%)
<b>46. Sugary Cream Desserts</b>	86 (2%)		86 (1%)
<b>47. Supermarkets</b>	1383 (32.3%)	-----	-----
<b><u>Total</u></b>	<b><u>4280</u></b>	<b><u>5999</u></b>	<b><u>8896</u></b>

**Table 45: Frequency of all food advertisements (Single and Supermarkets) in August.**

**4.7.9 Frequency of all food advertisements (Single and Supermarkets) in September.**  
**September**

Food product	Single ads	Supermarket ads	Total
1. Red meat		1245 (17.3%)	1245 (10.4%)
2. Fruits		469 (6.5%)	469 (3.9%)
3. Pasta	60 (.9%)	54 (.8%)	114 (.9%)
4. Dairy Full Fat Cheese	2 (.0%)	464 (6.5%)	466 (3.9%)
5. Fish		703 (9.8%)	703 (5.8%)
6. Vegetables		364 (5.1%)	364 (3%)
7. Poultry		325 (4.5%)	325 (2.7%)
8. Honey		84 (1.2%)	84 (.7%)
9. Juice with Sugar Substitutes	63 (1%)		63 (.5%)
10. Cereal High Fiber	44 (.7%)	70 (1%)	114 (.9%)
11. Cold Cuts		81 (1.1%)	81 (.7%)
12. Bakery		77 (1.1%)	77 (.6%)
13. Juice	371 (5.7%)	53 (.7%)	424 (3.5%)
14. Processed Meat	371 (5.7%)		371 (3.1%)
15. Soft Drinks	296 (4.5%)	57 (.8%)	353 (2.9%)
16. Coffee/Tea	92 (1.4%)	97 (1.4%)	189 (1.6%)
17. HFSS Continent - (High Fat Sugar Salt)	122 (1.9%)	351 (4.9%)	473 (3.9%)
18. Dairy Yogurt		26 (.4%)	26 (.2%)
19. Olive Oil		45 (.6%)	45 (.4%)
20. Cereal High Sugar	140 (2.1%)	149 (2.1%)	289 (2.4%)
21. Dairy Sugary Yogurt Dessert	146 (2.2%)	194 (2.7%)	340 (2.8%)
22. HFSS Meat		76 (1.1%)	76 (.6%)
23. Chocolate	384 (5.9%)	43 (.6%)	427 (3.6%)
24. Fat Spreads	571 (8.7%)	130 (1.8%)	701 (5.8%)
25. Sugary Cookies	398 (6.1%)	245 (3.4%)	643 (5.3%)
26. Pastries/Pizza		231 (3.2%)	231 (1.9%)
27. HFSS Fish		53 (.7%)	53 (.4%)
28. Can Tuna		84 (1.2%)	84 (.7%)
29. Cereal Sugary Bars		29 (.4%)	29 (.2%)

30. Dairy Low-Fat Cheese	365 (5.6%)	138 (1.9%)	503 (4.2%)
31. Frozen Vegetables		168 (2.3%)	168 (1.4%)
32. Dairy Sugary Milk Beverages	271 (4.1%)		271 (2.3%)
33. Pre-Fried Potatoes		8 (.1%)	8 (.1%)
34. Vegetable Oil		432 (6%)	432 (3.6%)
35. Nuts Salted		84 (1.2%)	84 (.7%)
36. Sugary Fruit Drinks	31 (.5%)	85 (1.2%)	116 (1%)
37. Eggs		39 (.5%)	39 (.3%)
38. Chips	364 (5.6%)	5 (.1%)	369 (3.1%)
39. Rice		14 (.2%)	14 (.1%)
40. Bottle Table Water	37 (.6%)	183 (2.6%)	220 (1.8%)
41. Sugary Tea Beverages		12 (.2%)	12 (.1%)
42. Dairy Milk		57 (.8%)	57 (.5%)
43. Dairy Sugary Milk Powder	34 (.5%)		34 (.3%)
44. Sugary Products	99 (1.5%)	152 (2.1%)	251 (2.1%)
45. Fast Food Chains	337 (5.1%)		337 (2.8%)
46. Processed Meat for Kids	246 (3.8%)		246 (2%)
47. Supermarkets	1707 (26.1%)	-----	-----
<b><u>Total</u></b>	<b><u>6551</u></b>	<b><u>7176</u></b>	<b><u>12020</u></b>

**Table 46: Frequency of all food advertisements (Single and Supermarkets) in September.**

**4.7.10 Frequency of all food advertisements (Single and Supermarkets) in October.**  
**October**

Food product	Single ads	Supermarket ads	Total
1. Red meat		730 (14.4%)	730 (6.3%)
2. Fruits		424 (8.4%)	424 (3.7%)
3. Pasta	33 (.4%)	38 (.7%)	71 (.6%)
4. Dairy Full Fat Cheese	144 (1.9%)	342 (6.7%)	486 (4.2%)
5. Fish		305 (6%)	305 (2.6%)
6. Vegetables		254 (5%)	254 (2.2%)
7. Pulses		30 (.6%)	30 (.3%)
8. Poultry		163 (3.2%)	163 (1.4%)
9. Juice with Sugar Substitutes	52 (.7%)		52 (.4%)
10. Cereal High Fiber	397 (5.1%)	122 (2.4%)	519 (4.5%)
11. Cold Cuts		91 (1.8%)	91 (.8%)
12. Juice	642 (8.3%)	66 (1.3%)	708 (6.1%)
13. Processed Meat	213 (2.8%)		213 (1.8%)
14. Soft Drinks	518 (6.7%)	183 (3.6%)	701 (6%)
15. Coffee/Tea	107 (1.4%)	64 (1.3%)	171 (1.5%)
16. HFSS Continent - (High Fat Sugar Salt)	43 (.6%)		43 (.4%)
17. Dairy Yogurt	119 (1.5%)	63 (1.2%)	182 (1.6%)
18. Olive Oil		27 (.5%)	27 (.2%)
19. Cereal High Sugar	161 (2.1%)	100 (2%)	261 (2.2%)
20. Dairy Sugary Yogurt Dessert	120 (1.6%)	102 (2%)	222 (1.9%)
21. HFSS Meat		66 (1.3%)	66 (.6%)
22. Chocolate	550 (7.1%)	152 (3%)	702 (6%)
23. Fat Spreads	965 (12.5%)	103 (2%)	1068 (9.2%)
24. Sugary Cookies	346 (4.5%)	167 (3.3%)	513 (4.4%)
25. Dairy Full Fat Sugary Ice Cream	43 (.6%)		43 (.4%)
26. Pastries/Pizza		258 (5.1%)	258 (2.2%)
27. HFSS Fish		75 (1.5%)	75 (.6%)
28. Can Tuna	94 (1.2%)	140 (2.8%)	234 (2%)
29. Cereal Sugary Bars		9 (.2%)	9 (.1%)

30. Dairy Low-Fat Cheese	265 (3.4%)	171 (3.4%)	436 (3.8%)
31. Frozen Vegetables		100 (2%)	100 (.9%)
32. Pre-Fried Potatoes		147 (3%)	147 (1.3%)
33. Vegetable Oil		37 (.7%)	37 (.3%)
34. Nuts Salted		70 (1.4%)	70 (.6%)
35. Sugary Fruit Drinks	44 (.6%)	15 (.3%)	59 (.5%)
36. Chips	797 (10.3%)	4 (.1%)	801 (6.9%)
37. Rice		36 (.7%)	36 (.3%)
38. Bottle Table Water	108 (1.4%)	252 (5%)	360 (3.1%)
39. Sugary Tea Beverages		30 (.6%)	30 (.3%)
40. Dairy Milk	237 (3.1%)		237 (2%)
41. Dairy Sugary Milk Powder	15 (.2%)		15 (.1%)
42. Sugary Products	163 (2.1%)	140 (2.8%)	303 (2.6%)
43. Fast Food Chains	60 (.8%)		60 (.5%)
44. Processed Meat for Kids	215 (2.8%)		215 (1.9%)
45. Sugar Substitutes	44 (.6%)		44 (.4%)
46. Sugary Cream Desserts	40 (.5%)		40 (.3%)
47. Supermarkets	1184 (15.3%)	-----	-----
<b><u>Total</u></b>	<b><u>7719</u></b>	<b><u>5076</u></b>	<b><u>11611</u></b>

Table 47: Frequency of all food advertisements (Single and Supermarkets) in October.

**4.7.11 Frequency of all food advertisements (Single and Supermarkets) in November.**  
**November**

<b>Food Product</b>	<b>Single ads</b>	<b>Supermarket ads</b>	<b>Total</b>
1. Pasta	6 (.1%)	71 (.6%)	77 (.4%)
2. Dairy Full Fat Cheese	26 (.3%)	486 (4.2%)	512 (2.7%)
3. Chocolate with Sugar Substitutes	150 (2%)	-----	150 (.8%)
4. Juice with Sugar Substitutes	18 (.2%)	52 (.4%)	70 (.4%)
5. Cereal High Fiber	360 (4.7%)	519 (4.5%)	879 (4.6%)
6. Bakery	10 (.1%)	-----	10 (.1%)
7. Juice	219 (2.9%)	708 (6.1%)	927 (4.8%)
8. Processed Meat	604 (7.9%)	213 (1.8%)	817 (4.2%)
9. Soft Drinks	361 (4.7%)	701 (6%)	1062 (5.5%)
10. Coffee/Tea	620 (8.1%)	171 (1.5%)	791 (4.1%)
11. HFSS Continent - (High Fat Sugar Salt)	485 (6.3%)	43 (.4%)	528 (2.7%)
12. Dairy Yogurt	659 (8.6%)	182 (1.6%)	841 (4.4%)
13. Cereal High Sugar	94 (1.2%)	261 (2.2%)	355 (1.8%)
14. Dairy Sugary Yogurt Dessert	209 (2.7%)	222 (1.9%)	431 (2.2%)
15. Chocolate	147 (1.9%)	702 (6%)	849 (4.4%)
16. Fat Spreads	463 (6.1%)	1068 (9.2%)	1531 (8%)
17. Sugary Cookies	419 (5.5%)	513 (4.4%)	932 (5.5%)
18. Dairy Low-Fat Cheese	371 (4.9%)	436 (3.8%)	807 (4.2%)
19. Non-Dairy Milk	29 (.4%)	-----	29 (.2%)
20. Sugary Fruit Drinks	84 (1.1%)	59 (.5%)	143 (.7%)
21. Chips	794 (10.4%)	801 (6.9%)	1595 (8.3%)
22. Bottle Table Water	105 (1.4%)	360 (3.1%)	465 (2.4%)
23. Dairy Milk	94 (1.2%)	237 (2%)	331 (1.7%)
24. Sugary Products	102 (1.3%)	-----	102 (1.3%)
25. Alcohol	19 (.2%)	-----	19 (.1%)
26. Fast Food Chains	736 (9.6%)	60 (.5%)	796 (4.1%)
27. Processed Meat for Kids	240 (3.1%)	215 (1.9%)	455 (2.4%)
28. Sugar free Gums	26 (.3%)	-----	26 (.1%)
29. Sugar Substitutes	78 (1%)	44 (.4%)	122 (.6%)

<b>30. Sugary Cream Desserts</b>	111 (1.5%)	40 (.3%)	151 (.8%)
<b>31. Red meat</b>	-----	730 (6.3%)	730 (3.8%)
<b>32. Fruits</b>	-----	424 (3.7%)	424 (2.2%)
<b>33. Fish</b>	-----	305 (2.6%)	305 (1.6%)
<b>34. Sugary Products</b>	102 (1.3%)	303 (2.6%)	405 (2.1%)
<b>35. Pastries/Pizza</b>	-----	258 (2.2%)	258 (1.3%)
<b>36. Vegetables</b>	-----	254 (2.2%)	254 (1.3%)
<b>37. Can Tuna</b>	-----	234 (2%)	234 (1.2%)
<b>38. Poultry</b>	-----	163 (1.4%)	163 (.8%)
<b>39. Pre-Fried Potatoes</b>	-----	147 (1.3%)	147 (.8%)
<b>40. Frozen Vegetables</b>	-----	100 (.9%)	100 (.5%)
<b>41. Cold Cuts</b>	-----	91 (.8%)	91 (.5%)
<b>42. HFSS Fish</b>	-----	75 (.6%)	75 (.4%)
<b>43. Nuts Salted</b>	-----	70 (.6%)	70 (.4%)
<b>44. HFSS Meat</b>	-----	66 (.6%)	66 (.3%)
<b>45. Dairy Full Fat Sugary Ice Cream</b>	-----	43 (.4%)	43 (.2%)
<b>46. Vegetable Oil</b>	-----	37 (.3%)	37 (.2%)
<b>47. Rice</b>	-----	36 (.3%)	36 (.2%)
<b>48. Pulses</b>	-----	30 (.3%)	30 (.2%)
<b>49. Sugary Tea Beverages</b>	-----	30 (.3%)	30 (.2%)
<b>50. Olive Oil</b>	-----	27 (.2%)	27 (.1%)
<b>51. Dairy Sugary Milk Powder</b>	-----	15 (.1%)	15 (.1%)
<b>52. Cereal Sugary Bars</b>	-----	9 (.1%)	9 (.0)
<b><u>Total</u></b>	<b><u>7639</u></b>	<b><u>11611</u></b>	<b><u>19250</u></b>

**Table 48: Frequency of all food advertisements (Single and Supermarkets) in November.**



**4.7.12 Frequency of all food advertisements (Single and Supermarkets) in December.**  
**December**

Food product	Single ads	Supermarket ads	Total
1. Red meat		1664 (17.1%)	1664 (9.6%)
2. Fruits		335 (3.5%)	335 (1.9%)
3. Pasta		542 (5.6%)	542 (3.1%)
4. Dairy Full Fat Cheese	146 (1.5%)	443 (4.6%)	589 (3.4%)
5. Fish		414 (4.3%)	414 (2.4%)
6. Vegetables		298 (3.1%)	298 (1.7%)
7. Pulses		93 (1%)	93 (.5%)
8. Poultry		646 (6.7%)	646 (3.7%)
9. Honey		22 (.2%)	22 (.1%)
10. Juice with Sugar Substitutes	13 (.1%)		13 (.1%)
11. Cereal High Fiber	237 (2.5%)		237 (1.4%)
12. Cold Cuts		99 (1%)	99 (.6%)
13. Juice	274 (2.8%)	85 (.9%)	359 (2.1%)
14. Processed Meat	501 (5.2%)	131 (1.3%)	632 (3.7%)
15. Soft Drinks	387 (4%)	469 (4.8%)	856 (4.9%)
16. Coffee/Tea	1023 (10.6%)	259 (2.7%)	1282 (7.4%)
17. HFSS Continent - (High Fat Sugar Salt)	865 (9%)		865 (5%)
18. Dairy Yogurt	51 (.5%)	269 (2.8%)	320 (1.8%)
19. Olive Oil		63 (.6%)	63 (.4%)
20. Cereal High Sugar	109 (1.1%)	208 (2.1%)	317 (1.8%)
21. Dairy Sugary Yogurt Dessert	417 (4.3%)	191 (2%)	608 (3.5%)
22. Chocolate	384 (4%)	310 (3.2%)	694 (4%)
23. Fat Spreads	326 (3.4%)	179 (1.8%)	505 (2.9%)
24. Dairy Full Fat Cream		35 (.4%)	35 (.2%)
25. Sugary Cookies	433 (4.5%)	80 (.8%)	513 (3%)
26. Pastries/Pizza		155 (1.6%)	155 (.9%)
27. HFSS Fish		6 (.1%)	6 (.0%)
28. Can Tuna		127 (1.3%)	127 (.7%)
29. Cereal Sugary Bars		62 (.6%)	62 (.4%)

<b>30. Dairy Low-Fat Cheese</b>		253 (2.6%)	253 (1.5%)
<b>31. Frozen Vegetables</b>		248 (2.6%)	248 (1.4%)
<b>32. Pre-Fried Potatoes</b>		343 (3.5%)	343 (2%)
<b>33. Vegetable Oil</b>		324 (3.3%)	324 (1.9%)
<b>34. Non-Dairy Milk</b>		30 (.3%)	30 (.2%)
<b>35. Sugary Fruit Drinks</b>	396 (4.1%)	110 (1.1%)	506 (2.9%)
<b>36. Eggs</b>		4 (.0%)	4 (.0%)
<b>37. Chips</b>	523 (5.4%)	191 (2%)	714 (4.1%)
<b>38. Sugar</b>		36 (.4%)	36 (.2%)
<b>39. Rice</b>		366 (3.8%)	366 (2.1%)
<b>40. Bottle Table Water</b>	175 (1.8%)	339 (3.5%)	514 (3%)
<b>41. Sugary Tea Beverages</b>		67 (.7%)	67 (.4%)
<b>42. Dairy Milk</b>	44 (.5%)	28 (.3%)	72 (.4%)
<b>43. Dairy Sugary Milk Powder</b>	8 (.1%)		8 (.0%)
<b>44. Sugary Products</b>	97 (1%)	178 (1.8%)	275 (1.6%)
<b>45. Alcohol</b>	41 (.4%)	3 (.0%)	44 (.3%)
<b>46. Fast Food Chains</b>	575 (6%)		575 (3.3%)
<b>47. Processed Meat for Kids</b>	342 (3.5%)		342 (2%)
<b>48. Sugar free Gums</b>	47 (.5%)		47 (.3%)
<b>49. Sugar Substitutes</b>	38 (.4%)		38 (.2%)
<b>50. Sugary Cream Desserts</b>	149 (1.5%)		149 (.9%)
<b>51. Supermarkets</b>	2056 (21.3%)	-----	-----
<b>Total</b>	<b>9657</b>	<b>9705</b>	<b>17306</b>

**Table 49: Frequency of all food advertisements (Single and Supermarkets) in December.**

#### **4.8 Frequency of all food advertisements (Single and Supermarkets) per year trimester.**

The following tables present the frequency for food promotion separate for supermarket advertisements, single food advertisements and the sum of both, per year trimester.

##### **4.8.1 Frequency of all food advertisements (Single and Supermarkets) in 1st trimester: January-February-March**

<b>Food product</b>	<b>Single ads</b>	<b>Supermarket ads</b>	<b>Total</b>
1. Red meat		2681 (12.1%)	2681 (6.7%)
2. Fruits		1035 (4.7%)	1035 (2.5%)
3. Pasta	77 (.3%)	711 (3.2%)	788 (1.9%)
4. Dairy Full Fat Cheese	298 (1.3%)	1531 (6.9%)	1829 (4.5%)
5. Fish		966 (4.3%)	966 (2.4%)
6. Vegetables		980 (4.4%)	980 (2.4%)
7. Pulses	25 (.1%)	252 (1.1%)	277 (.7%)
8. Poultry		817 (3.7%)	817 (2%)
9. Honey		47 (.2%)	47 (.1%)
10. Juice with Sugar Substitutes	192 (.8%)		192 (.5%)
11. Cereal High Fiber	328 (1.4%)	150 (.7%)	478 (1.2%)
12. Cold Cuts		809 (3.6%)	809 (2%)
13. Bakery	166 (.7%)	14 (.1%)	180 (.4%)
14. Juice	331 (1.4%)	436 (2%)	767 (1.9%)
15. Processed Meat	1204 (5.1%)	652 (2.9%)	1856 (4.6%)
16. Soft Drinks	924 (3.9%)	849 (3.8%)	1773 (4.4%)
17. Coffee/Tea	1271 (5.4%)	291 (1.3%)	1562 (3.8%)
18. HFSS Continent - (High Fat Sugar Salt)	2175 (9.2%)	160 (.7%)	2335 (5.8%)
19. Dairy Yogurt	65 (.3%)	916 (4.1%)	981 (2.4%)
20. Olive Oil		247 (1.1%)	247 (.6%)
21. Cereal High Sugar	503 (2.1%)	497 (2.2%)	1000 (2.5%)
22. Dairy Sugary Yogurt Dessert	842 (3.6%)	98 (.4%)	940 (2.3%)
23. HFSS Meat		21 (.1%)	21 (.1%)
24. Chocolate	1459 (6.2%)	753 (3.4%)	2212 (5.4%)
25. Fat Spreads	820 (3.5%)	431 (1.9%)	1251 (3.1%)
26. Dairy Full Fat Cream		7 (.0%)	7 (.0%)
27. Sugary Cookies	1090 (4.6%)	111 (.5%)	1201 (3%)
28. Pastries/Pizza		938 (4.2%)	938 (2.3%)
29. HFSS Fish		219 (1%)	219 (.5%)
30. Can Tuna		239 (1.1%)	239 (.6%)
31. Cereal Sugary Bars		230 (1%)	230 (.6%)

32. Dairy Low-Fat Cheese	568 (2.4%)	183 (.8%)	751 (1.8%)
33. Frozen Vegetables		591 (2.7%)	591 (1.5%)
34. Dairy Sugary Milk Beverages	396 (1.7%)		396 (1%)
35. Pre-Fried Potatoes		443 (2%)	443 (1.1%)
36. Vegetable Oil		606 (2.7%)	606 (1.5%)
37. Non-Dairy Milk	123 (.5%)	68 (.3%)	191 (.5%)
38. Nuts Salted		72 (.3%)	72 (.2%)
39. Sugary Fruit Drinks	93 (.4%)	75 (.3%)	168 (.4%)
40. Eggs		416 (1.9%)	416 (1%)
41. Chips	1393 (5.9%)	637 (2.9%)	2030 (5%)
42. Sugar		186 (.8%)	186 (.5%)
43. Rice		506 (2.3%)	506 (1.2%)
44. Bottle Table Water	348 (1.5%)	390 (1.8%)	738 (1.8%)
45. Sugary Tea Beverages		221 (1%)	221 (.5%)
46. Dairy Milk	472 (2%)	320 (1.4%)	792 (2%)
47. Dairy Sugary Milk Powder	218 (.9%)	38 (.2%)	256 (.6%)
48. Sugary Products	504 (2.1%)	355 (1.6%)	859 (2.1%)
49. Alcohol	4 (.0%)	14 (.1%)	18 (.0%)
50. Fast Food Chains	1261 (5.4%)		1261 (3.1%)
51. Processed Meat for Kids	696 (3%)		696 (1.7%)
52. Soft Drinks with Sugar Substitutes	110 (.5%)		110 (.3%)
53. Sugar free Gums	203 (.9%)		203 (.5%)
54. Sugar Substitutes	16 (.1%)		16 (.0%)
55. Sugarless Cream Desserts	90 (.4%)		90 (.2%)
56. Sugary Cream Desserts	125 (.5%)		125 (.3%)
57. Supermarkets	5125 (21.8%)	-----	-----
<b>Total</b>	<b>23515</b>	<b>22209</b>	<b>40599</b>

**Table 50: Frequency of all food advertisements (Single and Supermarkets) in 1<sup>st</sup> trimester: January-February-March.**

**4.8.2 Frequency of all food advertisements (Single and Supermarkets) in 2nd trimester:  
April-May-June.**

Food product	Single ads	Supermarket ads	Total
1. Red meat		2228 (11%)	2228 (5.6%)
2. Fruits		988 (4.9%)	988 (2.5%)
3. Pasta	95 (.4%)	738 (3.6%)	833 (2.1%)
4. Dairy Full Fat Cheese	203 (.8%)	1538 (7.6%)	1741 (4.4%)
5. Fish		675 (3.3%)	675 (1.7%)
6. Vegetables		788 (3.9%)	788 (2%)
7. Pulses		111 (.5%)	111 (.3%)
8. Poultry		1403 (6.9%)	1403 (3.5%)
9. Honey		301 (1.5%)	301 (.8%)
10. Juice with Sugar Substitutes	375 (1.5%)		375 (.9%)
11. Cereal High Fiber	607 (2.5%)	607 (3%)	1214 (3.1%)
12. Cold Cuts		675 (3.3%)	675 (1.7%)
13. Bakery	155 (.6%)	553 (2.7%)	708 (1.8%)
14. Juice	1405 (5.8%)	151 (.7%)	1556 (3.9%)
15. Processed Meat	1088 (4.5%)	90 (.4%)	1178 (3%)
16. Soft Drinks	1563 (6.4%)	659 (3.2%)	2222 (5.6%)
17. Coffee/Tea	706 (2.9%)	483 (2.4%)	1189 (3%)
18. HFSS Continent - (High Fat Sugar Salt)	679 (2.8%)	12 (.1%)	691 (1.7%)
19. Dairy Yogurt	317 (1.3%)	560 (2.8%)	877 (2.2%)
20. Olive Oil		260 (1.3%)	260 (.7%)
21. Cereal High Sugar	459 (1.9%)	401 (2%)	860 (2.2%)
22. Dairy Sugary Yogurt Dessert	740 (3.1%)	341 (1.7%)	1081 (2.7%)
23. HFSS Meat		157 (.8%)	157 (.4%)
24. Chocolate	952 (3.9%)	364 (1.8%)	1316 (3.3%)
25. Fat Spreads	439 (1.8%)	600 (2.9%)	1039 (2.6%)
26. Dairy Full Fat Cream		32 (.2%)	32 (.1%)
27. Sugary Cookies	1079 (4.5%)	735 (3.6%)	1814 (4.6%)
28. Dairy Full Fat Sugary Ice Cream	1240 (5.1%)	182 (.9%)	1422 (3.6%)
29. Pastries/Pizza		1162 (5.7%)	1162 (2.9%)
30. HFSS Fish		74 (.4%)	74 (.2%)
31. Can Tuna		108 (.5%)	108 (.3%)
32. Sugar Free Ice Cream	87 (.4%)	12 (.1%)	99 (.2%)
33. Cereal Sugary Bars		249 (1.2%)	249 (.6%)
34. Dairy Low-Fat Cheese	797 (3.3%)	229 (1.1%)	1026 (2.6%)
35. Frozen Vegetables		192 (.9%)	192 (.5%)

36. Dairy Sugary Milk Beverages	281 (1.2%)	6 (.0%)	287 (.7%)
37. Pre-Fried Potatoes		456 (2.2%)	456 (1.1%)
38. Vegetable Oil		342 (1.7%)	342 (.9%)
39. Non-Dairy Milk		94 (.5%)	94 (.2%)
40. Nuts Salted		170 (.8%)	170 (.4%)
41. Sugary Fruit Drinks	587 (2.4%)	2 (.0%)	589 (1.5%)
42. Eggs		7 (.0%)	7 (.0%)
43. Chips	1497 (6.2%)	2 (.0%)	1499 (3.8%)
44. Rice		420 (2.1%)	420 (1.1%)
45. Bottle Table Water	865 (3.6%)	409 (2%)	1274 (3.2%)
46. Sugary Tea Beverages		107 (.5%)	107 (.3%)
47. Dairy Milk	134 (.6%)	494 (2.4%)	628 (1.6%)
48. Dairy Sugary Milk Powder	94 (.4%)		94 (.2%)
49. Sugary Products	425 (1.8%)	168 (.8%)	593 (1.5%)
50. Alcohol	51 (.2%)	2 (.0%)	53 (.1%)
51. Fast Food Chains	1553 (6.4%)	2 (.0%)	1555 (3.9%)
52. Processed Meat for Kids	207 (.9%)		207 (.5%)
53. Soft Drinks with Sugar Substitutes	5 (.0%)		5 (.0%)
54. Sugar free Gums	68 (.3%)		68 (.2%)
55. Sugarless Cream Desserts	92 (.4%)		92 (.2%)
56. Sugary Cream Desserts	619 (2.6%)		619 (1.6%)
57. Supermarkets	4769 (19.7%)	-----	-----
<b>Total</b>	<b>24233</b>	<b>20339</b>	<b>39803</b>

**Table 51: Frequency of all food advertisements (Single and Supermarkets) in 1<sup>st</sup> trimester: January-February-March.**

**4.8.3 Frequency of all food advertisements (Single and Supermarkets) in 3rd trimester:  
July-August-September.**

Food product	Single ads	Supermarket ads	Total
1. Red meat		2751 (14.3%)	2751 (8.1%)
2. Fruits		1165 (6%)	1165 (3.5%)
3. Pasta	60 (.3%)	389 (2%)	449 (1.3%)
4. Dairy Full Fat Cheese	6 (.0%)	1261 (6.5%)	1267 (3.8%)
5. Fish		1332 (6.9%)	1332 (3.9%)
6. Vegetables		686 (3.6%)	686 (2%)
7. Poultry		1046 (5.4%)	1046 (3.1%)
8. Chocolate with Sugar Substitutes		12 (.1%)	12 (.0%)
9. Honey		88 (.5%)	88 (.3%)
10. Juice with Sugar Substitutes	232 (1.2%)		232 (.7%)
11. Cereal High Fiber	44 (.2%)	170 (.9%)	214 (.6%)
12. Cold Cuts		453 (2.3%)	453 (1.3%)
13. Bakery	113 (.6%)	140 (.7%)	253 (.7%)
14. Juice	1293 (6.8%)	53 (.3%)	1346 (4%)
15. Processed Meat	1029 (5.4%)	53 (.3%)	1082 (3.2%)
16. Soft Drinks	1020 (5.4%)	446 (2.3%)	1466 (4.3%)
17. Coffee/Tea	192 (1%)	443 (2.3%)	635 (1.9%)
18. HFSS Continent - (High Fat Sugar Salt)	302 (1.6%)	431 (2.2%)	733 (2.2%)
19. Dairy Yogurt	18 (.1%)	291 (1.5%)	309 (.9%)
20. Olive Oil		127 (.7%)	127 (.4%)
21. Cereal High Sugar	408 (2.1%)	289 (1.5%)	697 (2.1%)
22. Dairy Sugary Yogurt Dessert	560 (2.9%)	573 (3%)	1133 (3.4%)
23. HFSS Meat		338 (1.8%)	338 (1%)
24. Chocolate	1458 (7.7%)	381 (2%)	1839 (5.4%)
25. Fat Spreads	618 (3.3%)	214 (1.1%)	832 (2.5%)
26. Dairy Full Fat Cream		151 (.8%)	151 (.4%)
27. Sugary Cookies	979 (5.2%)	779 (4%)	1758 (5.2%)
28. Dairy Full Fat Sugary Ice Cream	392 (2.1%)	99 (.5%)	491 (1.5%)
29. Pastries/Pizza		844 (4.4%)	844 (2.5%)
30. HFSS Fish		53 (.3%)	53 (.2%)
31. Can Tuna	276 (1.5%)	459 (2.4%)	735 (2.2%)
32. Sugar Free Ice Cream	71 (.4%)		71 (.2%)
33. Cereal Sugary Bars		167 (.9%)	167 (.5%)
34. Dairy Low-Fat Cheese	365 (1.9%)	345 (1.8%)	710 (2.1%)
35. Frozen Vegetables		369 (1.9%)	369 (1.1%)

36. Dairy Sugary Milk Beverages	411 (2.2%)	15 (.1%)	426 (1.3%)
37. Pre-Fried Potatoes		192 (1%)	192 (.6%)
38. Vegetable Oil		728 (3.8%)	728 (2.2%)
39. Non-Dairy Milk		171 (.9%)	171 (.5%)
40. Nuts Salted		212 (1.1%)	212 (.6%)
41. Sugary Fruit Drinks	162 (.9%)	194 (1%)	356 (1.1%)
42. Eggs		41 (.2%)	41 (.1%)
43. Chips	2014 (10.6%)	21 (.1%)	2035 (6%)
44. Rice		231 (1.2%)	231 (.7%)
45. Bottle Table Water	371 (2%)	421 (2.2%)	792 (2.3%)
46. Sugary Tea Beverages		12 (.1%)	12 (.0%)
47. Dairy Milk		102 (.5%)	102 (.3%)
48. Dairy Sugary Milk Powder	56 (.3%)	23 (.1%)	79 (.2%)
49. Sugary Products	395 (2.1%)	502 (2.6%)	897 (2.7%)
50. Alcohol	24 (.1%)	6 (.0%)	30 (.1%)
51. Fast Food Chains	879 (4.6%)	26 (.1%)	905 (2.7%)
52. Processed Meat for Kids	374 (2%)		374 (1.1%)
53. Soft Drinks with Sugar Substitutes	214 (1.1%)		214 (.6%)
54. Sugary Cream Desserts	131 (.7%)		131 (.4%)
55. Supermarkets	4517 (23.8%)	-----	-----
<b>Total</b>	<b>18984</b>	<b>19295</b>	<b>33762</b>

**Table 52: Frequency of all food advertisements (Single and Supermarkets) in 3rd trimester: July-August-September.**



**4.8.4 Frequency of all food advertisements (Single and Supermarkets) in 4th trimester:  
October-November-December.**

Food product	Single ads	Supermarket ads	Total
1. Red meat		2394 (16.2%)	2394 (6.5%)
2. Fruits		759 (5.1%)	759 (2.1%)
3. Pasta	39 (.2%)	580 (3.9%)	619 (1.7%)
4. Dairy Full Fat Cheese	316 (1.3%)	785 (5.3%)	1101 (3%)
5. Fish		719 (4.9%)	719 (2%)
6. Vegetables		552 (3.7%)	552 (1.5%)
7. Pulses		123 (.8%)	123 (.3%)
8. Poultry		809 (5.5%)	809 (2.2%)
9. Chocolate with Sugar Substitutes	150 (.6%)		150 (.4%)
10. Honey		22 (.1%)	22 (.1%)
11. Juice with Sugar Substitutes	83 (.3%)		83 (.2%)
12. Cereal High Fiber	994 (4%)	122 (.8%)	1116 (3.1%)
13. Cold Cuts		190 (1.3%)	190 (.5%)
14. Bakery	10 (.0%)		10 (.0%)
15. Juice	1135 (4.5%)	151 (1%)	1286 (3.5%)
16. Processed Meat	1318 (5.3%)	131 (.9%)	1449 (4%)
17. Soft Drinks	1266 (5.1%)	652 (4.4%)	1918 (5.2%)
18. Coffee/Tea	1750 (7%)	323 (2.2%)	2073 (5.7%)
19. HFSS Continent - (High Fat Sugar Salt)	1393 (5.6%)		1393 (3.8%)
20. Dairy Yogurt	829 (3.3%)	332 (2.2%)	1161 (3.2%)
21. Olive Oil		90 (.6%)	90 (.2%)
22. Cereal High Sugar	364 (1.5%)	308 (2.1%)	672 (1.8%)
23. Dairy Sugary Yogurt Dessert	746 (3%)	293 (2%)	1039 (2.8%)
24. HFSS Meat		66 (.4%)	66 (.2%)
25. Chocolate	1081 (4.3%)	462 (3.1%)	1543 (4.2%)
26. Fat Spreads	1754 (7%)	282 (1.9%)	2036 (5.6%)
27. Dairy Full Fat Cream		35 (.2%)	35 (.1%)
28. Sugary Cookies	1198 (4.8%)	247 (1.7%)	1445 (4%)
29. Dairy Full Fat Sugary Ice Cream	43 (.2%)		43 (.1%)
30. Pastries/Pizza		413 (2.8%)	413 (1.1%)
31. HFSS Fish		81 (.5%)	81 (.2%)
32. Can Tuna	94 (.4%)	267 (1.8%)	361 (1%)
33. Cereal Sugary Bars		71 (.5%)	71 (.2%)
34. Dairy Low-Fat Cheese	636 (2.5%)	424 (2.9%)	1060 (2.9%)
35. Frozen Vegetables		348 (2.4%)	348 (1%)

36. Pre-Fried Potatoes		490 (3.3%)	490 (1.3%)
37. Vegetable Oil		361 (2.4%)	361 (1%)
38. Non-Dairy Milk	29 (.1%)	30 (.2%)	59 (.2%)
39. Nuts Salted		70 (.5%)	70 (.2%)
40. Sugary Fruit Drinks	524 (2.1%)	125 (.8%)	649 (1.8%)
41. Eggs		4 (.0%)	4 (.0%)
42. Chips	2114 (8.5%)	195 (1.3%)	2309 (6.3%)
43. Sugar		36 (.2%)	36 (.1%)
44. Rice		402 (2.7%)	402 (1.1%)
45. Bottle Table Water	388 (1.6%)	591 (4%)	979 (2.7%)
46. Sugary Tea Beverages		97 (.7%)	97 (.3%)
47. Dairy Milk	375 (1.5%)	28 (.2%)	403 (1.1%)
48. Dairy Sugary Milk Powder	23 (.1%)		23 (.1%)
49. Sugary Products	362 (1.4%)	318 (2.2%)	680 (1.9%)
50. Alcohol	60 (.2%)	3 (.0%)	63 (.2%)
51. Fast Food Chains	1371 (5.5%)		1371 (3.8%)
52. Processed Meat for Kids	797 (3.2%)		797 (2.2%)
53. Sugar free Gums	73 (.3%)		73 (.2%)
54. Sugar Substitutes	160 (.6%)		160 (.4%)
55. Sugary Cream Desserts	300 (1.2%)		300 (.8%)
56. Supermarkets	3240 (13%)	-----	-----
<b>Total</b>	<b>25015</b>	<b>14781</b>	<b>36556</b>

**Table 53: Frequency of all food advertisements (Single and Supermarkets) in 4th trimester: October-November-December.**

## **4.9 Study Part 3: Focus Group and Results of Test Validation.**

Results of tests validity: validation was done with the input of expert health professionals in nutrition/dietetics who evaluated every test separately. With the permission of the experts their names are presented here (Dr Eleni Andreou, Prof. Demetris Papandreou, Dr Christiana Philippou). The validation was done through the pilot study. The sample of the pilot study (n=40) for the usage of both questionnaires and tests were included in the total participants sample (n=1088). The researcher considered minimal changes needed to be done for the tests.

Validity of Test 1: Product Recognition Test was done with the input of expert health professionals in nutrition/dietetics (Dr Eleni Andreou, Prof. Demetris Papandreou, Dr Christiana Philippou), where they approved the developed tool and the modifications that were made in order to be adjusted to the Cypriot culture and use. This tool was also approved since the professionals ensured that it was designed in such a way that will not expose children to any physical or emotional danger and that is suitable for their age to understand and be able to participate.

Validity of Test 2: Brand logo recall-recognition measurement Test was done with the input of expert health professionals in nutrition/dietetics (Dr Eleni Andreou, Prof. Demetris Papandreou, Dr Christiana Philippou), where they approved the developed tool and the modifications that were made in order to be adjusted to the Cypriot culture and use. This tool was also approved since the professionals ensured that it was designed in such a way that will not expose children to any physical or emotional danger and that is suitable for their age to understand and be able to participate.

Validity of Test 3: Food preference Test was done with the input of expert health professionals in nutrition/dietetics (Dr Eleni Andreou, Prof. Demetris Papandreou, Dr Christiana Philippou), where they approved the developed tool and the modifications that were made in order to be adjusted to the Cypriot culture and use. This tool was also approved since the professionals ensured that it was designed in such a way that will not expose children to any physical or emotional danger and that is suitable for their age to understand and be able to participate.

Validity of Test 4: Food preference using branded and unbranded products Test was done with the input of expert health professionals in nutrition/dietetics (Dr Eleni Andreou, Prof. Demetris Papandreou, Dr Christiana Philippou), where they approved the developed tool and the modifications that were made in order to be adjusted to the Cypriot culture and use. This tool was also approved since the professionals ensured that it was designed in such a way that will not expose children to any physical or emotional danger and that is suitable for their age to understand and be able to participate.

Validity of Test 5: Food knowledge (relatively healthy/ relatively unhealthy)Test was done with the input of expert health professionals in nutrition/dietetics (Dr Eleni Andreou, Prof. Demetris Papandreou, Dr Christiana Philippou), where they approved the developed tool and the modifications that were made in order to be adjusted to the Cypriot culture and use. This tool was also approved since the professionals ensured that it was designed in such a way that will not expose children to any physical or emotional danger and that is suitable for their age to understand and be able to participate.

#### **4.9.1 Focus group demographics.**

In a later stage of the study, 71 students were interviewed, specifically 39 boys (54.9%) and 32 girls (45.1%). 2 children were 6 years old (2.8%), 8 children were 6.5 years old (11.3%), 6 children were 7 years old (8.5%), 8 children were 7.5 years old (11.3%), 6 children were 8 years old (8.5%), 5 children were 8.5 years old (7%), 3 children were 9 years old (4.2%), 2 children were 9.5 years old (2.8%), 13 children were 10 years old (18.3%), 13 children were 11 years old (18.3%) and 5 children were 12 years old (7%).

BMI was measured as weight (kg)/height (m<sup>2</sup>), from measured height and weight. The main researcher weight to the nearest 0,1kg while the children were wearing clothing and no shoes. Also, height was measured according to standard procedures (no shoes) to the nearest 0,5cm. was also calculated whether the children were underweight, normal weight, overweight/obese by using the BMI.

According to the analysis 19 students were “*Overweight/Obese*” (5 girls – 26.3%, 14 boys – 73.7%). Their ages were as follows: 1 child, 6 years old (5.3%), 2 children, 6.5 years old (10.5%), 2 children, 7.5 years old (10.5%), 2 children, 8 years old (10.5%), 1 child, 8.5 years old (5.3%), 1 child, 9.5 years old (5.3%), 4 children, 10 years old (21.1%), 4 children, 11 years old (21.1%) and 2 children, 12 years old (10.5%).

As to the grade of the students, 14 came from 1<sup>st</sup> grade (19.7%), 13 from 2<sup>nd</sup> grade (18.3%), 12 from 3<sup>rd</sup> grade (16.9%), 10 from 4<sup>th</sup> grade (14.1%), 14 from 5<sup>th</sup> grade (19.7%) and 8 from 6<sup>th</sup> grade (11.3%).

As to the grade of “*Overweight/Obese*” students, 3 were from 1<sup>st</sup> grade (15.8%), 2 from 2<sup>nd</sup> grade (10.5%), 4 from 3<sup>rd</sup> grade (21.1%), 4 from 4<sup>th</sup> grade (21.1%), 3 from 5<sup>th</sup> grade (15.8%) and 3 from 6<sup>th</sup> grade (15.8%).

Based on the Body Mass Index for each child, the following results have been obtained (n=71).

#### **Frequencies by BMI Categorization**

<b>BMI Categorization</b>	<b>Frequency (Percent)</b>
Underweight (UW)	----
Healthy weight (HW)	52 (73.2%)
Overweight/ Obese (OW/OB)	19 (26.8%)

**Table 54: Frequencies by BMI Categorization.**

On average, boys had a higher mean BMI ( $\bar{x} = 18.37$ ,  $SD = 2.97$ ) than girls ( $\bar{x} = 16.66$ ,  $SD = 2.54$ ). The use of a two-tailed t-test for independent samples has shown that this was a statistically significant difference at a level of  $\alpha = .05$  ( $t = -2.574$ ,  $df = 69$ ,  $p = .01$ ).

“*Overweight/Obese*” boys had a higher BMI average ( $\bar{x} = 21.75$ ,  $SD = 1.60$ ) than “*Overweight/Obese*” girls ( $\bar{x} = 20.90$ ,  $SD = 2.93$ ).

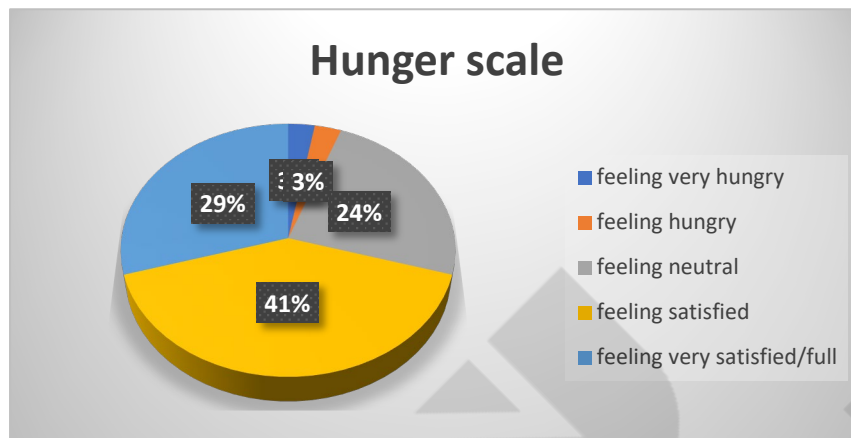
The use of a two-tailed t-test for independent samples has shown that this was not a statistically significant difference at a level of  $\alpha = .05$  ( $t = -.818$ ,  $df = 17$ ,  $p = .4$ ).

The analysis intended to find a relation between the “*Overweight/Obese*” student percentage and their grades (1<sup>st</sup> to 6<sup>th</sup>) cannot be carried out due to the fact that the smallest expected frequency is less than 5.

#### **4.9.2 Hunger Scale results.**

As to the “*Hunger scale*”, the following answers were given: 2 children answered “*Very hungry*” (2.8%) and an additional 2 children chose “*Hungry*” (2.8%).

Also, 17 students reported “*I’m not feeling hungry or full, I’m feeling neutral*” (24%), 29 students “*I’m not feeling hungry, I’m felling satisfy*” (40.8%) and 21 students “*I’m feeling very satisfied, I’m feeling full*” (29.6%).



**Figure 34: Scale showing the extent of the students’ hunger.**

“*Overweight/Obese*” students answered: “*Feeling very hungry*” (2 children– 10.5%), “*Feeling hunger*” (4 children – 21.1%), “*Feeling neutral*” (5 children – 26.3%) and “*Feeling satisfied*” (8 children – 42.1%).

Students were asked when was the last time they ate and gave the following answers: The majority reported to have eaten one hour ago, while most of the obese/overweight children had eaten the previous night.

Time since last meal	Frequency [*]
5 minutes ago	3 (4.2%) [1, 5.3%]
10 minutes ago	1 (1.4%)
15 minutes ago	1 (1.4%) [1, 5.3%]
20 minutes ago	4 (5.6%)
30 minutes ago	8 (11.3%) [1, 5.3%]
40 minutes ago	1 (1.4%) [1, 5.3%]
45 minutes ago	2 (2.8%) [1, 5.3%]
1 hour ago	19 (26.8%) [3, 15.8%]
1:30 hour ago	6 (8.5%) [3, 15.8%]
2 hours ago	5 (7%) [1, 5.3%]
2:30 hours ago	3 (4.2%)
3 hours ago	6 (8.5%) [1, 5.3%]
Since last night	12 (16.9%) [6, 31.3%]

\* Shown in brackets are the answers of obese/overweight students.

**Table 55: Time since last meal.**

Taking into consideration the results of the hunger scale only 4 children reported that were feeling “Very hungry” and “Hungry” (5,6%). 17 of the children reported that were feeling like, “*I’m not feeling hungry or full, I’m feeling neutral*” (24%) and all the others, 50 children reported that were feeling “Full” or “Satisfied” (70,4%).

For the OW/OB children only 2 children reported that were feeling “*Hungry*”, (10.5%), 4 children “*I’m not feeling hungry or full, I’m feeling neutral*” (21.1%), “Feeling neutral” and “Feeling satisfied” (13 children – 68,4%).

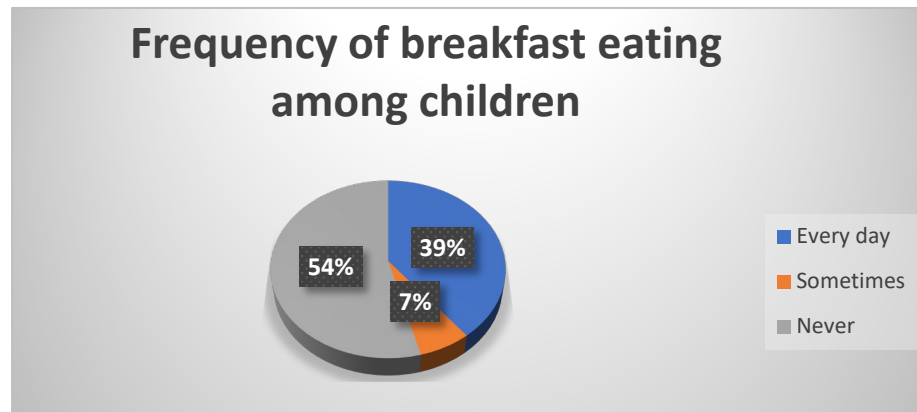
More specifically, 45 children had their last meal up to 1h.30 minutes before the tests and 11 of these were OW/OB.

14 children had their last meal from 1h.30-3h before the tests and 2 of these were OW/OB.

12 children had their last meal the night before (at least more than 8 hours before the tests) and 6 of them were OW/OB.

#### **4.9.2.1 Focus Group Eating Habits- (breakfast habits).**

As far as eating breakfast is concerned, 24 students report they do, everyday (33.8%). Also, 14 students report having breakfast sometimes (19.7%) and 33 report they never have breakfast (46.5%).

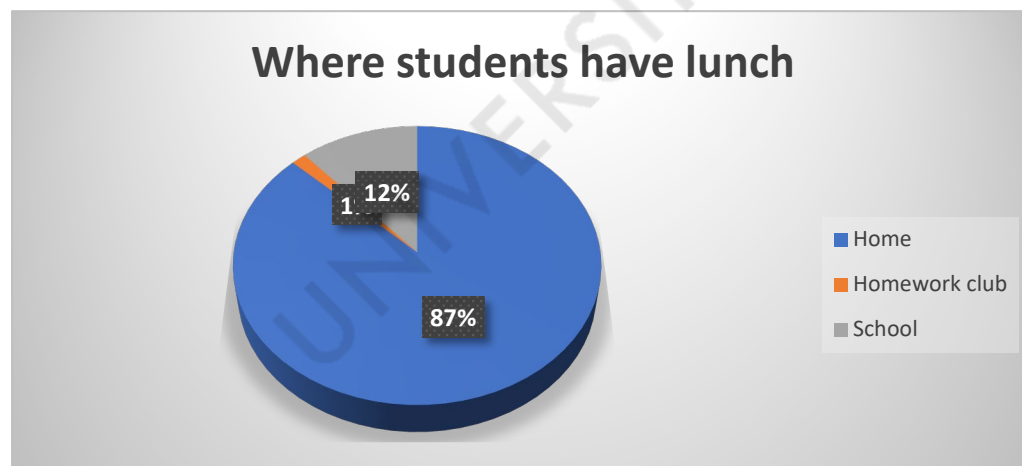


**Figure 35: Frequency of breakfast eating among students.**

Obese/overweight students gave the following answers: “Everyday” (1 child – 5.3%), “Sometimes” (3 children – 15.8%) and “Never” (15 children – 78.9%). As to whether students have a TV in their bedroom, 9 give a positive answer (13%) and 61 a negative answer (87%). 5 Obese/overweight students give a positive answer (26.3%) and 14 give a negative answer (73.7%).

#### **4.9.2.2 Focus Group Eating Habits- (lunch habits).**

To the question: “Where do you have lunch?” 61 students reported they eat “at home” (87.1%), 1 student said he eats at “homework club” (1.4%) and 8 students eat at “school” (11.5%).



**Figure 36: Where students have lunch.**

“Overweight/Obese” students gave the following answers: “home” (14 children – 73.6%), “private homework club” (1 child – 5.3%) and “school” (4 children – 21.1%).

### **4.9.3 Test 1: Brand Logo Recognition Test.**

In the first test, students were asked to identify the food item without its logo. The following table shows the number of children who identified each food category. Preparation, steps taken before, during and after the test are explained in Chapter 3 (section 3.5.3, 3.5.4, 3.5.5).

Details regarding the test are explained in Chapter 3 (Section 3,6).

### **Frequency of Brand Logo Recognition.**

<b>Food Item</b>	<b>Frequency of Recognition [*]</b>
<b>Chips</b>	(a) 70 (98.6%) [19, 100%] (b) 42 (59.2%) [10, 52.6%] (c) 29 (40.8%) [7, 36.8%] (d) 28 (39.4%) [7, 36.8%]
<b>Cereal high sugar</b>	48 (67.6%) [13, 68.4%]
<b>Dairy sugary milk powder</b>	53 (74.6%) [14, 73.7%]
<b>Sugary cookies</b>	(a) 55 (77.5%) [16, 84.2%] (b) 42 (59.2%) [12, 63.2%] (c) 65 (91.5%) [18, 94.7%] (d) 39 (54.9%) [12, 63.2%]
<b>Fast food chains</b>	(a) 61 (85.9%) [19, 100%] (b) 66 (93%) [19, 100%] (c) 64 (90.1%) [19, 100%]
<b>Chocolate</b>	68 (95.8%) [19, 100%]
<b>Sugary products</b>	45 (63.4%) [13, 68.4%]
<b>Dairy sugary milk beverage</b>	56 (78.9%) [19, 100%]
<b>Cereal high fibre</b>	10 (14.1%) [6, 31.6%]
<b>Processed meat for kids</b>	55 (77.5%) [16, 84.2%]
<b>Dairy sugary yogurt dessert</b>	65 (91.5%) [18, 94.7%]
<b>Soft drinks</b>	67 (94.4%) [19, 100%]
<b>Sugary Fruit drink</b>	67 (94.4%) [18, 94.7%]
<b>Non-dairy milk</b>	18 (25.4%) [5, 26.3%]

**\* Answers of obese/overweight children are shown in brackets.**

**Table 56: Frequency of Brand Logo Recognition.**



According to the results all children in the focus group (n=71) identified all 22 food products with their brand name. This test was designed in order to include the most popular food/drink products based on the review of commonly advertised food products aired during children and family zone (07.00am-21.30pm during weekdays and weekends for a whole year) (Study Part 2). The test included a variety of food products like salted and sugary products, dairy and non-dairy products, fast food products, soft and sugary drinks.

The logos of the food products were processed using professional Photoshop technique so that the pictures were exactly the same as the original product apart from the logo that was missing. All colours, and graphics of the products remained unattached. The Photoshop technique was applied by a professional photographer so that the result would be as professional and realistic as possible.

This test included 4 different branded chips and all children recognised the brands. Especially 1 of the 4 branded chips was recognised by 70 out of 71 children (98,6%) and of all the OW/OB children in the focus group (n=19) (100%). That specific brand is the one that uses the licenced character in the advertisements. The other 3 branded chips are also popular using several other marketing techniques to attract children.

It is also important to note that “Chips” is the first food product in rank in single product advertisements and the 20<sup>th</sup> in rank in supermarket advertisements. Also “Chips” is the most popular product during 6 out of the 15 time slots of single product advertisements documentation. More specifically “Chips” were the most popular single advertisement during (07.00-08.00), (13.00-14.00), (15.00-16.00), (16.00-17.00), (17.00-18.00), (18.00-19.00) every day for 365 days of study.

Furthermore, when the frequency of food advertisements was documented “Chips” were the most popular single advertisement from all television channels air on not one but three days in week, more specifically on Tuesday, Friday (along with fast food advertisements) and Saturday “Chips”.

Pleasure during eating, taste and crunchy sound, the use of famous football player and teens, children, adults and cartoon characters were the most common techniques for “Chips” advertisements. Characters dancing, having fun, partying, children tricking adults was used in “Chips” and “Fast food” ads.

Statements like “Give taste to movie nights”, or “Pleasure goes wherever you go”, “Perfect taste in every bite”, “Snacks that everybody loves”, “New flavours, take them all”, “Bigger package, bigger pleasure”, “Having fun with friends”, “Try them all”, were used as closures for “Chips” advertisements. Gifts, offers (usually free soft drink) was part of the promotions for both “Chips” and “Fast food”.

The brand of “Morning cereal high in sugar” was one very popular advertised product especially familiar with children. 48 (67,6%) out of 71 children recognised the product and 13 (69,4%) out of the 19 OW/OB children also.

In general, these advertisements (“Morning cereal high in sugar”) uses animation, bright colours, happy faces, cartoons having fun with children during breakfast, adventure scenery, and taste were the most used techniques. Mother is feeling and looking satisfied when children eat happily breakfast with these cereals. Nutrition information like “Rich in vitamins and

iron” and statement used by mother was “*We nourish our children’s abilities*”, “*Start your child’s day with these*”, “*Children grow up only once*”, “*Choose these for better physical defence, for stronger bones and better brain function*”.

The brand of “*Dairy sugary milk powder*” was recognised by 53 (74,6%) of children and by 14 of the 19 (73,7%) of OW/OB children in the focus group.

For the “*Sugary cookies*” 4 items were selected and were 7<sup>th</sup> in rank in single product advertisements and the 13<sup>th</sup> in rank in supermarket advertisements.

In general, these advertisements (“*Sugary cookies*”), include music, animation, fantasy world, adventure, taste, fun, happiness, sound of crunch in the mouth, “cool” themes and athletes, teen boys and girls, family scenery, were used. “*When the whole life is enclosed in this pleasure*”, “*Everybody in the family takes with them their favourite pleasure*”, “*Mini size, maxi pleasure*”, “*New package that goes everywhere*”, “*New reduced price*”, “*Even athletes choose them*” were some of the verbal and written slogans used.

This test included 4 different branded sugary cookies and a high percentage of children recognised all the brands. Especially 1 of the 4 branded sugary cookies was recognised by 65 out of 71 children (91,5%) and of 18 of the OW/OB children in the focus group (n=19) (94,7%).

For the branded “*Fast food chains*”, 3 most popular fast food chains advertised on television.

Branded “*Fast food advertisements*” were the most popular single advertisements of a specific television channel throughout the study year (Channel:08). Also branded “*Fast food advertisements*” were the most popular aired television single advertisements at a specific time slot (12.00-13.00) of all single advertisements, and of all television channels.

Furthermore, when the frequency of food advertisements was documented “*Fast food advertisements*” were the second most popular single advertisement from all television channels. Also “*fast food advertisements*” were the most single advertised food product air on three days of the week (Wednesday, Thursday) and along with “*Chips*” on Friday.

It was impressive that all “*Fast food chains*” brands were recognised by all the OW/OB children (100%). Also, all the 3 “*Fast food chains*” brands had almost the same level of recognition among all children (n=71) (85,9%-90,1%).

In general, these advertisements (“*Fast food chains*”), used quantity vs price, taste and happy feeling, discounts for take away and offers if you order more or bigger size. “*Fine day*”, “*Fulfilling pleasure*”, “*Its finger licking good*”, “*From our place to yours*” were some of the promotional quotes used for fast food ads. Statements- slogans were verbal and written as well.

Another important finding was the brand of “*Chocolate*” was recognised by all the OW/OB children (100%). Also 65 out of 71 children (95,8%) recognised the brand of the chocolate product.

In general, these advertisements (“*Chocolates*”), used animations, songs (some of them known for more than 20 years in Cyprus), family scenery, child tricking parent, turning a bad situation into a good one when eating a chocolate, fun and happy feelings, sounds of chocolate breaking in the mouth, taste that brings back happy memories and nostalgia, children’s adventure themes and competitiveness over a chocolate. “*Who stole my chocolate*”, “*Chocolate is for everyone*

*all the times, anywhere*", *"Have a break have a chocolate"*, *"The sweetest piece of your life"*, *"Big temptation"*. *"Share them with your friends"*, *"Chocolate drops of pleasure"* are some of the promotional slogans used. Slogans were verbal and written as well. Some chocolates were promoted in bigger boxes with extra free pieces and in large quantities suitable for treats like birthdays.

Branded "*Chocolate*" advertisements were the most popular single advertisement of a specific television channel throughout the study year (Channel: 05). Also "*Chocolate*" advertisements were the most popular aired television single advertisements at two specific time slots (08.00-09.00) and (10.00-11.00) of all single advertisements, and of all television channels.

Furthermore, when the frequency of food advertisements was documented chocolate advertisements were the third most popular single advertisement from all television channels and were the 10<sup>th</sup> most popular supermarket advertisements.

Furthermore, the brand of "*Sugary products*" was recognised by 45 of 71 children (63,4%) and of 13 of the 19 OW/OB children (68,4%).

Adding to these, the brand of "*Dairy sugary milk beverage*" was recognised by all the OW/OB (100%) and by 56 of 71 of all children (78,9%). When the frequency of food advertisements was documented "*Dairy sugary milk beverage*" advertisements were in 22<sup>th</sup> rank of 39 single food advertisements.

Another important finding is that the brand of "*Cereal high in fibre*" was the only product that was recognised the less. Only 10 out of 71 children and only 6 out of 19 OW/OB children recognised the brand.

It is important to note that branded advertisements like "*Cereal high in fibre*" involved only adults, plain scenery without fun characteristics and playful music and focus their messages on constipation, good taste and calories. *"Rich in fibres that regulate the function of the digestive system"*, *"Let's try this to feel the difference"*, *"Would you trust your figure in cereal that contain more than 15% of sugar, or the real light cereal with 0% added sugar and 0% added fat"*. These statements were used as verbal and written as well.

One possible explanation for this result is that these advertisements were not as much attractive to children because of the lack of features, animations and interesting themes as the previous products.

Another expected result was the brand of "*Processed meat for kids*" that was recognised by 55 out of 71 children (77,5) and by 16 of 19 OW/OB children (84,2%).

It is worth to mention that this advertisement was as parents reported the commercial jingle their children sang the most (food commercial jingle) (28%) followed by popular soft drink (35%).

It is important to note once again that branded "*Processed meat for kid's*" product is very popular advertisement especially during kids- cartoon commercials and has the longest duration (27,7seconds) from all the TV food advertisements. Also, the branded processed meat for kid's product is the most promoted single advertisement of a particular television channel that broadcasts several kids-cartoon programs. "*Soft drink*" commercial rank 3<sup>rd</sup> in popularity

from all the food/drink single product advertisements and is the most popular advertisement for not one but for two television channels throughout the study year.

In “*Processed meat for kid’s advertisements*”, superheroes and cartoon princess were the main characteristics. Superheroes especially designed for boys with action, excitement and stickers giveaway were part of the commercials. Graphics were blue for boys’ and pink for girls’ ads. Cartoon princesses with pink background, fairy tale music was used. Statements used, “*Get in to the magical world of taste with superhero/ princess ham*”, “*Made with love and care for our little superheroes/ princesses*”, “*The magical world of taste*”. Both boys and girls were part of these ads eating and enjoying these products saying with a smile “*Made for me*”. Other cartoon characters were used for other processed meat products and statements used were “*Have fun in the magical world of taste with these delicious products made with love and care for our little friends*”.

Processed meat for children advertisements were the most popular single advertisement of a specific television channel throughout the study year (Channel: 09).

Furthermore, when the frequency of food advertisements was documented processed meat for children advertisements were 13<sup>th</sup> most popular single advertisement from all television channels.

The brand for “*Dairy sugary yogurt dessert*” was recognised by 65 children (91,5%) and by 18 of the 19 OW/OB children (94,7%).

Is important to note that the brand “*Dairy sugary yogurt dessert*” was the most popular advertisement of a particular channel (Channel: 02) and also was the most advertised product in a particular time zone (09.00am-10.11am) of all single advertisements of all channels.

The brand for “*Soft drink*” was recognised by 67 of 71 children (94,4%) and by all OW/OB children (100%).

It is important to note that for the brand “*Soft drinks*” the use of “*Refresh your social life*”, or “*Great taste, no calories*”, the sound of the soft drink when the tin opens, feelings of happiness, free spirit, socialization and confidence were used.

“*Soft drinks*” advertisements were the most popular single advertisement of a specific television channel throughout the study year (Channel: 04). Also, soft drinks advertisements were the most popular aired television single advertisements at two specific time slots (19.00-20.00) and (20.00-21.00) of all single advertisements, and of all television channels.

Furthermore, when the frequency of food advertisements was documented “*Soft drinks*” advertisements were the fourth most popular single advertisement from all television channels.

Also, results from (Study Part 1) showed that the second commercial jingle children sang the most (food commercial jingle) was a branded popular soft drink (35%).

The brand for “*Sugary fruit drink*” was recognised by 67 out of 71 children (94.4%) and by 18 out of 19 OW/OB children (94,7%). Furthermore, when the frequency of food advertisements was documented “*Sugary fruit drink*” advertisements ranked in 19<sup>th</sup> place of 39 categories of single advertisement from all television channels.

Finally, the brand for “*Non-dairy milk*” was recognised by only by 18 out of 71 children (25,4%) and by 5 out of the 19 OW/OB children (26,3%).

Study didn’t find any significant correlations between brand logo recognition ability and gender.

#### **4.9.3.1 First place that children can recall/obtain these tests products.**

To the question “What is the first place that comes to your mind regarding where you see-find these products”?

As to the first place that students bring to mind in order to obtain the above-mentioned food items, the following answers are given: 52 children report “*I see them on TV*” (73,2%), 13 children report “*at the supermarket*” (18%) and 6 children report “*we have them at home*” (8,4%).

The answers of the obese/overweight students are as follows: 9 children report “*at the supermarket*” (47,3%), 4 children report “*we have them at home*” (21%) and 6 child reports “*I see them on the TV*” (31,5%).



#### **4.9.4 Test 2: Brand logo recall- recognition measurement test.**

In the second test, students were asked to remember food items presented to them in sequence (with their logo). The following table shows the number of students who recalled every food category. Preparation, steps taken before, during and after the test are explained in chapter 3 (section 3.5.3, 3.5.4, 3.5.5).

Details regarding the test are explained in Chapter 3 (Section 3,7)

#### **Frequency of Students' Recall of Advertised Food Products.**

<b>Food Item</b>	<b>Recall frequency [*]</b>
<b>Chips</b>	(a) 66 (93%) [18, 94.7%] (b) 32 (45.1%) [9, 47.4%] (c) 18 (25.4%) [1, 5.3%] (d) 11 (15.5%) [2, 10.5%]
<b>Cereal high sugar</b>	31 (43.7%) [10, 52.6%]
<b>Dairy sugary milk powder</b>	40 (56.3%) [11, 57.9%]
<b>Sugary cookies</b>	(a) 51 (71.8%) [14, 73.7%] (b) 35 (49.3%) [9, 47.4%] (c) 47 (66.2%) [14, 73.7%] (d) 37 (52.1%) [13, 68.4%]
<b>Fast food chain</b>	(a) 55 (77.5%) [18, 94.7%] (b) 59 (83.1%) [18, 94.7%] (c) 60 (84.5%) [17, 89.5%]
<b>Chocolate</b>	51 (71.8%) [16, 84.2%]
<b>Sugary products</b>	41 (57.7%) [17, 89.5%]
<b>Dairy sugary milk beverage</b>	66 (93%) [17, 89.5%]
<b>Cereal high fibre</b>	10 (14.1%) [4, 21.1%]
<b>Processed meat for kids</b>	51 (71.8%) [17, 89.5%]
<b>Dairy sugary yogurt dessert</b>	26 (36.6%) [5, 26.3%]
<b>Soft drinks</b>	56 (78.9%) [16, 84.2%]
<b>Sugary Fruit drink</b>	49 (69%) [13, 68.4%]
<b>Non-Dairy milk</b>	26 (36.6%) [5, 26.3%]

**\* Answers of obese/overweight children are shown in brackets**

**Table 57: Frequency of Students' Recall of Advertised Food Products.**

According to the results, one of the “*Chips*” (the most popular) was recalled by 66 children (93%) and by 18 out of 19 OW/OB children (94,7%).

Also, the other 3 “*Chips*” were recalled by children but with lower percentages.

“*Cereal high in sugar*” was recalled by 31 children (43,7%) and 10 of the OW/OB (52,6%).

The “*Dairy sugary milk powder*” was recalled by 40 children (56,3%) and 11 of the OW/OB (57,9%).

Of the “*Sugary cookies*” one of them was recalled by 51 children (71,8%) a 14 of the OW/OB (73,7%).

Also, the other 3 “*Sugary cookies*” were recalled by children but with slightly lower percentages.

All three “*Fast food chains*” were recalled by almost all children with highest recall 84,5% and of the OW/OB (94,7%).

The “*Chocolate*” was recalled by 51 children (71,8%) and 16 of the OW/OB children (84,2%).

The “*Sugary products*” was recalled by 41 children (57,7%) and 7 of the OW/OB children (36,8%).

The “*Dairy sugary milk beverage*” was recalled by 66 children (93%) and 17 of the OW/OB children (89,5%).

The “*Cereal high in fibre*” was recalled by 10 children and 4 of the OW/OB children (21,1%).

The “*Processed meat for kids*” was recalled by 51 children (71,8%) and by 17 of the OW/OB children (89,5%).

The “*Dairy sugary yogurt dessert*” was recalled by 26 children (36,6%) and by 5 of the OW/OB children (26,3%).

The “*Soft drink*” was recalled by 56 (78,9%) and by 15 of the OW/OB children (78,9%).

The “*Sugary fruit drink*” was recalled by 49 children (69%) and by 13 of the OW/OB children (68,4%).

Finally, the “*Non-dairy milk*” was recalled by 26 children (36,6%) and by 5 of the OW/OB children (26,3%).

#### **4.9.4.1 Instant food preference for intake.**

After the test 2 was finished the main researcher asked children the following question “From all the products that you saw, what would you choose for yourself to eat right now”?

As to the food item each student chose, the results are shown in the following table.

#### **Instant food preference for intake.**

<b>Food item</b>	<b>Selection Frequency [*]</b>
<b>Chips</b>	(a) 51 (71.8%) [17, 89,5%] (b) 4 (5.6%) [1, 5.3%] (c) 1 (1.4%) (d) -----
<b>Cereal high sugar</b>	6 (8.5%) [3, 15.8%]
<b>Dairy sugary milk powder</b>	1 (1.4%) [1, 5.3%]
<b>Sugary cookies</b>	(a) 4 (5.6%) [2, 10.5%] (b) 3 (4.2%) [18, 94,7%] (c) 4 (5.6%) [2, 10.5%] (d) 3 (4.2%)
<b>Fast food chain</b>	(a) 55 (77,5%) [18, 94,7%] (b) ----- (c) -----
<b>Chocolate</b>	3 (4.2%)
<b>Sugary products</b>	4 (5.6%)
<b>Dairy sugary milk beverage</b>	14 (19.7%) [1, 5.3%]
<b>Cereal high fibre</b>	3 (4.2%)
<b>Processed meat for kids</b>	-----
<b>Dairy sugary yogurt desert</b>	1 (1.4%)
<b>Soft drinks</b>	41 (57,7%) [15, 78,9%]
<b>Sugary Fruit drink</b>	8 (11.3%) [2, 10.5%]
<b>Non-dairy milk</b>	1 (1.4%)

**\* Shown in brackets are the answers of obese/overweight students.**

**Table 58: Instant food preference for intake.**



According to the results children chose a wide variety of food and drink. All food/drinks were chosen and all children used the product's brand names.

The most popular food/drink choices were "*Chips*" and more specifically the most popular brand (between the 4 chips brands in the test).

The brand of "*Chips*" that was children's first choice was the same brand that was recognised by children in Test 1 (brand product recognition test) and also was the same brand that children recalled the most.

The second most popular choice was the "*Fast food*". The "*Fast food*" category (3 brands of fast food) was almost equally recognised by all children and especially by all OW/OB children in Test 1 (brand recognition test) and was recalled by more than 80% of children and OW/OB children as well.

The third most popular product choice was the brand of "*Dairy sugary milk beverage*". The brand of "*Dairy sugary milk beverage*" was recognised by almost 80% of children and by all OW/OB children in Test 1 (brand recognition test) and was recalled by more than 93% of children and 17 of the 19 OW/OB children as well.

The last most popular choice was the "*Sugary fruit drink*". The brand of "*Sugary fruit drink*" was recognised by almost 94,4% of children and by 18 of the 19 OW/OB children in Test 1 (brand recognition test) and was recalled by 69% of children and 13 of the 19 OW/OB children as well.

Although food products that were in top rank of advertisements, and in recognition test like processed meat for kids, chocolate, soft drink, sugary cookies were almost not part of children's choices to eat at that time.

Finally, all the other products have been in children's choices as shown in table 58.

#### **4.9.5 Test 3: Food Preference Test (Relatively Healthy Unbranded vs Relatively Unhealthy Unbranded food products).**

In the third test, the students were presented with paired food items where only the name of the product was indicated, and were asked to choose only one item from each pair. The following table shows the frequency of food selection per pair.

Preparation, steps taken before, during and after the test are explained in chapter 3 (section 3.5.3, 3.5.4, 3.5.5.).

Details regarding the test are explained in Chapter 3 (Section 3,8)

#### **Frequency of Students' Food Preference Per Pair.**

Frequency of preference [*]	
Relatively Healthy Unbranded	Relatively Unhealthy Unbranded
<b>Orange fruit in plate</b>	<b>Fruit juice in glass</b>
– 21 (29.6%)	– 50 (70.4%)
--[3, 15.8%]	-[16, 84.2%]
<b>Water in glass</b>	<b>Coca cola in glass</b>
– 13 (18.3%)	– 58 (81.7%)
- [4, 21.1%]	-[15, 78.9%]
<b>Strawberry fruit in bowl</b>	<b>Fruity strawberry flavoured lollipop</b>
– 50 (70.4%)	– 21 (29.6%)
- [11, 57.9%]	-[8, 42.1%]
<b>Whole grain breakfast cereal in bowl</b>	<b>Sugary breakfast cereal in bowl</b>
– 26 (36.6%)	– 45 (63.4%)
- [8, 42.1%]	- [11, 57.9%]
<b>Cereal bar</b>	<b>Milk chocolate bar</b>
– 36 (50.7%)	– 35 (49.3%)
- [10, 52.6%]	- [9, 47.4%]
<b>Jacket potato in plate</b>	<b>French fries in plate</b>
– 21 (29.6%)	– 50 (70.4%)
- [1, 5.3%]	- [18, 94.7%]
<b>Ham, cheese, tomato sandwich in plate</b>	<b>Ham, cheese and tomato pizza in plate</b>
– 36 (50.7%)	– 35 (49.3%)
-[7, 36.8%]	- [12, 63.2%]

<b>Roast chicken in plate</b>	<b>Chicken nuggets in plate</b>
– 28 (39.4%)	– 43 (60.6%)
–[5, 26.3%]	–[14, 73.7%]
<b>Yogurt with fresh strawberries in bowl</b>	<b>Strawberry flavoured yogurt in bowl</b>
– 32 (45.1%)	– 39 (54.9%)
- [9, 47.4%]	-[10, 52.6%]
<b>Pasta napolitana in plate</b>	<b>Pasta carbonara in plate</b>
– 19 (26.8%)	– 52 (73.2%)
-[6, 31.6%]	- [13, 68.4%]

\* Shown in brackets are the answers of obese/overweight students

**Table 59: Frequency of Students' Food Preference Per Pair.**

Results showed that when the children had the chance to select between pairs of food, they prefer spontaneously what they liked at that moment the most.

More specifically between the pair "*Fruit juice in a glass and Orange fruit in plate*" children preferred the first (50 children-70,4% and of them 16 OW/OB) in relation to orange fruit that was selected by 21 children and of them 3 OW/OB.

Interesting results were also showed in the second pair "*Water in glass vs Coca cola in glass*". 58 Children 81,7% (of which 15 OW/OB) preferred coca cola vs 13 children (of which 4 OW/OB) that preferred water.

The "*Strawberry fruit in bowl*" was preferred by 50 children 70,4% (11OW/OB) vs "*Fruity strawberry flavored lollipop*" (21 children-8OW/OB).

When children had to point their preference between "*Whole grain breakfast cereal and sugary breakfast cereal*" children preferred most the second. More specifically 45 children (63,4%) (11OW/OB) preferred the "*Sugary breakfast cereal*" vs 26 children (36,6%) (8 OW/OB) that preferred the "*Whole grain breakfast cereal*".

Preferences between "*Cereal bar vs milk chocolate bar*" were almost equal 36 vs 35 children, 10 OW/OB vs 9 OW/OB.

Similar were the results between "*Ham, cheese, tomato sandwich vs ham, cheese and tomato pizza*", (36 vs 35 children, 7 vs 12 OW/OB).

When children showed their preference between "*Jacket potato vs French fries*" results showed that 50 children preferred the "*French fries*" (18 OW/OB 94,7%) vs 21 children (1 OW/OB 5,3%) that preferred the "*Jacket potato*".

Preferences between “*Roast chicken vs chicken nuggets*” showed that children preferred “*Chicken nuggets*” (43 children and 14 of them OW/OB) vs “*Roast chicken*” (28 children and 5 of them OW/OB).

When children had to point their preferences between “*Yogurt with fresh strawberries vs strawberry flavored yogurt*” 39 children (10 of them OW/OB) preferred the “*Strawberry flavored yogurt*” vs 32 children (9 of them OW/OB) who preferred the “*Yogurt with fresh strawberries*”.

Finally, 52 children (13 of them OW/OB) preferred the “*Pasta carbonara*” vs 19 children (6 of them OW/OB) who preferred the “*Pasta napolitana*”.

Boys had a higher mean in the selection of “*Coca cola vs Water*” ( $\bar{x} = .28$ ,  $SD = .46$ ) than girls ( $\bar{x} = .06$ ,  $SD = .25$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .05$  ( $t = -2.584$ ,  $df = 60.42$ ,  $p = .01$ ).

Boys had a higher mean in the selection of “*Fruity strawberry flavoured lollipop vs Strawberry fruit*” ( $\bar{x} = .41$ ,  $SD = .50$ ) than girls ( $\bar{x} = .16$ ,  $SD = .37$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .05$  ( $t = -2.465$ ,  $df = 68.342$ ,  $p = .02$ ).

Boys had a higher mean in the selection of “*Sugary breakfast cereal vs Whole grain breakfast cereal*” ( $\bar{x} = .49$ ,  $SD = .51$ ) than girls ( $\bar{x} = .22$ ,  $SD = .42$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .05$  ( $t = -2.442$ ,  $df = 68.987$ ,  $p = .02$ ).

Boys had a higher mean in the selection of “*French fries vs Jacket potato*” ( $\bar{x} = .82$ ,  $SD = .39$ ) than girls ( $\bar{x} = .56$ ,  $SD = .50$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .05$  ( $t = -2.374$ ,  $df = 57.481$ ,  $p = .02$ ).

Boys had a higher mean in the selection of “*French fries*” as a healthier option than “*Jacket potato*” ( $\bar{x} = .13$ ,  $SD = .34$ ) than girls ( $\bar{x} = .00$ ,  $SD = .00$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .05$  ( $t = -2.364$ ,  $df = 38$ ,  $p = .02$ ).

As for finding associations between students’ answers in tests 3, 4 and 5 and their grades (1<sup>st</sup> to 6<sup>th</sup>), the use of Chi Square test has not indicated statistically significant associations.

#### **4.9.6 Test 4: Food Preference using Branded and Unbranded food products.**

In the fourth test, students were presented with the same paired food items, both in their original package (branded) and without logo and distinct features (unbranded). Also, two fake products were created in pairs – branded and unbranded. Students had to choose one product per pair. The following table shows the frequency of product selection per pair. Preparation, steps taken before, during and after the test are explained in chapter 3 (section 3.5.3, 3.5.4, 3.5.5, 3,6). Details regarding the test are explained in Chapter 3 (Section 3,9).

#### **Frequency of children's' Product Preference per Pair.**

##### **Frequency of food selection per pair [\*]**

<b>Branded Products</b>	<b>Unbranded Products</b>
<b>McDonalds French Fries</b>	<b>Regular-Unbranded</b>
– 50 (70.4%) [18, 94.7%]	– 21 (29.6%) [1, 5.3%]
<b>Lays Chips</b>	<b>Regular-Unbranded</b>
– 54 (76.1%) [15, 78.9%]	– 17 (23.9%) [4, 21.1%]
<b>Mc Donald's baby carrots (FAKE-presented as original product)</b>	<b>Regular-Unbranded</b>
– 52 (73.2%) [13, 68.4%]	– 19 (26.8%) [6, 31.6%]
<b>Oreo cookies</b>	<b>Regular-Unbranded</b>
– 60 (84.5%) [18, 94.7%]	– 11 (15.5%) [1, 5.3%]
<b>JUNIOR yogurt with FRESH FRUIT ON TOP (FAKE-presented as original product)</b>	<b>Regular-Fake-Unbranded</b>
– 54 (76.1%) [17, 89.5%]	– 17 (23.9%) [2, 10.5%]
<b>Gregoriou kids (Processed meat for kids)</b>	<b>Regular-Unbranded</b>
– 60 (84,5%) [18, 94,7%]	– 11 (15.5%) [1, 5.3%]
<b>Pizza Hut</b>	<b>Regular-Unbranded</b>
– 58 (81.7%) [17, 89.5%]	– 13 (18.3%) [2, 10.5%]
<b>Mc Donald's fresh apple slices (FAKE-presented as original product)</b>	<b>Regular-Fake-Unbranded</b>
-50 (70.4%) [16, 84.2%]	– 21 (29.6%) [3, 15.8%]
<b>Caprice</b>	<b>Regular-Unbranded</b>
– 56 (78.9%) [16, 84.2%]	– 15 (21.1%) [3, 15.8%]

\* Shown in brackets are the answers of obese/overweight students.

**Table 60: Frequency of children's' Product Preference per Pair.**

When children had to point their preference between “*Mc Donald’s French fries vs Unbranded French fries*”, 50 children (70,4%) (18 of them OW/OB 94,7%) preferred the Branded “*Mc Donald’s French fries*” vs 21 children (29,6%) (1 of them OW/OB 5,3%) who preferred the “*Unbranded French fries*”.

Between the “*Branded Lays chips vs Unbranded chips*”, 54 children (76,1%) (15 of them OW/OB 78,9%) preferred the “*Branded Lays chips*” vs 17 children (23,9%) (4 of them OW/OB 21,1%) who preferred the “*Unbranded chips*”.

Between two Fake products, the “*Mc Donald’s baby carrots vs Unbranded baby carrots*” 52 children (73,2%) (13 of them OW/OB 68,4%) preferred the “*Branded Mc Donald’s baby carrots*” vs 19 children (26,8%) (6 of them OW/OB 31,6%) who preferred the “*Unbranded baby carrots*”.

Between “*Branded Oreo cookies vs Unbranded Oreo cookies*”, 60 children (84,5%) (18 of them OW/OB 94,7%), preferred the “*Branded Oreo cookies*” vs 11 children (15,55%) (1 of them OW/OB 5,3%) who preferred the “*Unbranded Oreo cookies*”.

Between two fake products, the “*Junior yogurt with fresh fruit on top vs Unbranded yogurt with fruit on top*”, 54 children (76,1%) (17 of them OW/OB 89,5%), preferred the “*Junior yogurt with fresh fruit on top*” vs 17 children (23,9%) (2 of them OW/OB 10,5%) who preferred the “*Unbranded yogurt with fresh fruit on top*”.

Between the “*Branded Gregoriou kids vs Unbranded processed meat product*”, 60 children (84,5%) (18 of them OW/OB 94,7%) preferred the “*Branded Gregoriou kids*” vs 11 children (15,5%) (1 of them OW/OB 5,3%) that preferred the “*Unbranded processed meat*”.

Between the “*Branded Pizza Hut vs Unbranded pizza*”, 58 children (81,7%) (17 of them OW/OB 89,5%) preferred the “*Branded Pizza Hut*” vs 13 children (18,3%) (2 of them OW/OB 10,5%) who preferred the “*Unbranded pizza*”.

Between the third pair of fake products the “*Branded Mc Donald’s fresh apple slices vs Unbranded fresh apple slices*”. 50 children (70,4%) (16 of them OW/OB 84,2%) preferred the “*Branded Mc Donald’s fresh apple*” vs 21 children (29,6%) (3 of them OW/OB 15,8%) that preferred the “*Unbranded fresh apple slices*”.

Finally, between the “*Branded Caprice vs Unbranded chocolate wafer*”, 56 children (78,9%) (16 of them OW/OB 84,2%) preferred the “*Branded Caprice*” vs 15 children (21,1%) (3 of them OW/OB 15,8%) who preferred the “*Unbranded chocolate wafer*”.

Girls had a higher mean in the selection of Unbranded products for the pair “*Mc Donald’s baby carrots (FAKE- presented as original product) vs Regular*” ( $\bar{x} = .50$ ,  $SD = .51$ ) than boys ( $\bar{x} = .26$ ,  $SD = .44$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .05$  ( $t = 2.130$ ,  $df = 61.997$ ,  $p = .04$ ).

Girls had a higher mean in the selection of Unbranded products for the pair “*JUNIOR yogurt with FRESH FRUIT ON TOP (FAKE-presented as original product) vs Regular*” ( $\bar{x} = .38$ ,  $SD = .49$ ) than boys ( $\bar{x} = .13$ ,  $SD = .34$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .05$  ( $t = 2.408$ ,  $df = 53.239$ ,  $p = .02$ ).

Girls had a higher mean in the selection of Unbranded products for the pair “*Pizza Hut vs Regular*” ( $\bar{x} = .31$ ,  $SD = .47$ ) than boys ( $\bar{x} = .08$ ,  $SD = .27$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .05$  ( $t = 2.511$ ,  $df = 47.172$ ,  $p = .02$ ).

Girls had a higher mean in the selection of Unbranded products for the pair “*Mc Donald’s fresh apple slices (FAKE-presented as original product) vs Regular*” ( $\bar{x} = .81$ ,  $SD = .40$ ) than boys ( $\bar{x} = .41$ ,  $SD = .50$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .01$  ( $t = 3.787$ ,  $df = 68.948$ ,  $p = .001$ ).

Girls had a higher mean in the selection of Unbranded products for the pair “*Caprice vs Regular*” ( $\bar{x} = .38$ ,  $SD = .49$ ) than boys ( $\bar{x} = .08$ ,  $SD = .27$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .01$  ( $t = 3.070$ ,  $df = 45.928$ ,  $p = .004$ ).

As for finding associations between students’ answers in tests 3, 4 and 5 and their grades (1<sup>st</sup> to 6<sup>th</sup>), the use of Chi Square test has not indicated statistically significant associations.

#### **4.9.7 Test 5: Food Knowledge (healthy/unhealthy) Test.**

In the fifth test, students were presented with food items in pairs, indicating only the name of the product, and were asked to choose the healthiest one (the same as test 3). The following table shows the frequency of healthy food selection per pair.

Preparation, steps taken before, during and after the test are explained in Chapter 3 (section 3.5.3, 3.5.4, 3.5.5).

Details regarding the test are explained in Chapter 3 (Section 3.10)

#### **Frequency of Students' Preference of Healthy Food per Pair.**

Frequency of food selection per pair [*]	
<b>Orange juice</b>	<b>Orange</b>
– 20 (28.2%) [9, 47.4%]	– 51 (71.8%) [10, 52.6%]
<b>Water</b>	<b>Coca cola</b>
– 71 (100%) [19, 100%]	– 0 (0%) [0, 0%]
<b>Strawberry fruit</b>	<b>Fruity strawberry flavoured lollipop</b>
– 70 (98.6%) [18, 94.7%]	– 1 (1.4%) [1, 5.3%]
<b>Whole grain breakfast cereal</b>	<b>Sugary breakfast cereal</b>
– 66 (93%) [18, 94.7%]	– 5 (7%) [1, 5.3%]
<b>Cereal bar</b>	<b>Milk chocolate bar</b>
– 70 (98.6%) [18, 94.7%]	– 1 (1.4%) [1, 5.3%]
<b>Jacket potato</b>	<b>French fries</b>
– 66 (93%) [18, 94.7%]	– 5 (7%) [1, 5.3%]
<b>Ham, cheese, tomato sandwich</b>	<b>Ham, cheese and tomato pizza</b>
– 66 (93%) [16, 84.2%]	– 5 (7%) [3, 15.8%]
<b>Roast chicken</b>	<b>Chicken nuggets</b>
– 62 (87.3%) [18, 94.7%]	– 9 (12.7%) [1, 5.3%]
<b>Yogurt with fresh strawberries</b>	<b>Strawberry flavoured yogurt</b>
– 58 (81.7%) [16, 84.2%]	– 13 (18.3%) [3, 15.8%]
<b>Pasta napolitana</b>	<b>Pasta carbonara</b>
– 45 (63.4%) [10, 52.6%]	– 26 (36.6%) [9, 47.4%]

\* Shown in brackets are the answers of obese/overweight students

**Table 61: Frequency of Students' Preference of Healthy Food per Pair.**



According to the results, for the first pair “*Orange juice vs Orange fruit*”, 51 children (71.8%) (10 of them OW/OB 52,6%) identified the orange fruit as a healthier choice.

All children 100% identifies the “*Water*” as a healthier choice vs “*Coca cola*”.

70 children (98,6%) (18 of them OW/OB 94,7%) identified the “*Strawberry fruit*” as a healthier choice than “*Fruity strawberry flavoured lollipop*” that was identified as a healthier choice by 1 child (1,4%) that was OW/OB as well.

The “*Whole grain breakfast cereal*” was identified by 66 children (93%) (18 of them OW/OB 94,7%) as a healthier choice than “*Sugary breakfast cereal*” that was identified by 5 children (7%) (1 of them OW/OB 5,3%).

The “*Cereal bar*” was identified by 70 children (98,6%) (18 of them OW/OB 94,7%) as a healthier choice than “*Milk chocolate bar*” that was identified by 1 child (1,4%) as a healthier choice.

The “*Jacket potato*” was identified by 66 children (93%) (18 of them OW/OB 94,7%) as a healthier choice than “*French fries*” that was identified by 5 children (7%) (1 of them OW/OB 5,3%) as a healthier choice.

The “*Ham, cheese, tomato sandwich*” was identified by 66 children (93%) (16 of them OW/OB 84,2%) as a healthier choice than “*Ham, cheese and tomato pizza*” that was identified by 5 children (7%) (3 of them OW/OB 15,8%) as a healthier choice.

The “*Roast chicken*” was identified by 62 children (87,3%) (18 of them OW/OB 94,7%) as a healthier choice than “*Chicken nuggets*” that was identified by 9 children (12,7%) (1 of them OW/OB 5,3%) as a healthier choice.

The “*Yogurt with fresh strawberries*” was identified by 58 children (81,7%) (16 of them OW/OB 84,2%) as a healthier choice than “*Strawberry flavoured yogurt*” that was identified by 13 children (18,3%) (3 of them OW/OB 15,8%) as a healthier choice.

The “*Pasta napolitana*” was identified by 45 children (63,4%) (10 of them OW/OB 52,6%) as healthier choice than “*Pasta carbonara*” that was identified by 26 children (36,6%) (9 of them OW/OB 47,4%) as a healthier choice.

As for finding associations between students’ answers in tests 3, 4 and 5 and their grades (1<sup>st</sup> to 6<sup>th</sup>), the use of Chi Square test has not indicated statistically significant associations.

#### **4.9.7.1. Children's shopping behavior and purchase requests.**

After the test students were asked to answer three questions:

- The first question was: "Can you describe what the ideal school canteen would be like for you? What food/drink products would you like for it to have?"

The following table shows the children's answers.

#### **4.9.7.1.(a) Frequency of Children's' Shopping Requests at "ideal school canteen".**

<b>Food/Drink Product</b>	<b>Frequency of Products Requests [*]</b>
<b>Sugary cookies/chocolates</b>	30 (42.3%) [10, 52.6%]
<b>Fresh juice</b>	15 (21.1%) [4, 21.1%]
<b>Chips</b>	16 (22.5%) [3, 15.8%]
<b>Fresh fruit</b>	8 (11.3%) [1, 5.3%]
<b>Fast food</b>	8 (11.3%) [1, 5.3%]
<b>Dairy sugary milk beverage</b>	8 (11.3%)
<b>Soft drinks</b>	6 (8.5%) [1, 5.3%]
<b>Vegetables</b>	2 (2.8%)
<b>Sugary fruit drink</b>	1 (1.4%)

**\* Shown in brackets are the answers of obese/overweight children.**

**Table 62: Frequency of Children's' Shopping Requests at "Ideal school canteen".**

According to the results children's ideal school canteen is the one that can have for sale "Sugary cookies" as a first choice, "Chips", "Fast food", "Dairy sugary milk beverage", "Soft drinks" and "Sugary fruit drink". Furthermore, there were some other requests like "Fresh juice", "Fresh fruit" and "Vegetables".

- The next question was “Imagine you are at the supermarket right now, what would you like to buy? You may choose anything you like, money is not an issue, because everything is for free”.

The following table shows the students’ answers.

**4.9.7.1.(b) Frequency of Shopping intention at the Supermarkets.**

<b>Food/Drink Product</b>	<b>Frequency of Product Requests [*]</b>
<b>Chips</b>	(a) 15 (21.1%) [1, 5.3%] (b) 2 (2.8%) [2, 10.5%] (c) 3 (4.2%) [2, 10.5%] (d) 1 (1.4%) [1, 5.3%]
<b>Cereal high sugar</b>	6 (8.5%) [1, 5.3%]
<b>Dairy sugary milk powder</b>	-----
<b>Sugary cookies</b>	(a) 4 (5.6%) [2, 10.5%] (b) 4 (5.6%) [1, 5.3%] (c) 2 (2.8%) [1, 5.3%] (d) 4 (5.6%) [2, 10.5%]
<b>Fast food chain</b>	(a) 15 (21.1%) [3, 15.8%] (b) ----- (c) -----
<b>Chocolate</b>	10 (14.1%)
<b>Sugary products</b>	2 (2.8%)
<b>Dairy sugary milk beverage</b>	14 (19.7%) [1, 5.3%]
<b>Cereal high fibre</b>	-----
<b>Processed meat for kids</b>	-----
<b>Dairy sugary yogurt desert</b>	4 (5.6%) [1, 5.3%]
<b>Soft drinks</b>	1 (1.4%) [1, 5.3%]
<b>Sugary Fruit drink</b>	3 (4.2%)
<b>Non-dairy milk</b>	2 (2.8%) [1, 5.3%]
<b>Fresh juice</b>	1 (1.4%)
<b>Fresh fruit</b>	2 (2.8%) [1, 5.3%]

\* Shown in brackets are the answers of obese/overweight children.

**Table 63: Frequency of Shopping intention at the Supermarkets.**

According to children's answers the most popular food/drink products that they would have from the "free supermarket" was "Chips", "Fast food" and "Dairy sugary milk beverage" followed by "Sugary cookies" and "Chocolate". Other product had less requests and other had none.

- Last, the question "What is your usual food/drink request from your parents when you go to the supermarket?"  
The following table shows the students' answers.

**4.9.7.1.(c). Frequency of Food Requests from Parents at the Supermarket.**

Food/Drink Product	Requests frequency [*]
<b>Chips</b>	(a) 55 (77.5%) [16, 84.2%] (b) ---- (c) ---- (d) ----
<b>Cereal high sugar</b>	32 (45,1%) [9, 47.4%]
<b>Dairy sugary milk powder</b>	1 (1.4%) [1, 5.3%]
<b>Sugary cookies</b>	(a) 47 (66.2%) [14, 73.8%] (b) ---- (c) 1 (1.4%) (d) 3 (4.2%) [2, 10.5%]
<b>Fast food chain</b>	(a) 2 (2.8%) [1, 5.3%] (b) ---- (c) ----
<b>Chocolate</b>	40 (56.3%) [11, 57.9%]
<b>Sugary products</b>	35 (49.3%) [9, 47.4%]
<b>Dairy sugary milk beverage</b>	51 (71.8%) [14, 73.7%]
<b>Cereal high fibre</b>	----
<b>Processed meat for kids</b>	35(49.3%) [9, 47.4%]
<b>Dairy sugary yogurt desert</b>	32 (55.1%) [9, 47.4%]
<b>Soft drinks</b>	18 (25.4%) [1, 5.3%]
<b>Sugary Fruit drink</b>	37 (52.1%) [13, 68.4%]
<b>Non-dairy milk</b>	1 (1.4%)
<b>Fresh fruit</b>	8 (11.3%)

\* Shown in brackets are the answers of obese/overweight students

**Table 64: Frequency of Food Requests from Parents at the Supermarket.**

### **Frequency of Food Requests from Parents at the Supermarket.**

According to the results, children's most requested food/drink products were "*Chips*", (more specifically the most popular brand), "*Dairy sugary milk beverage*", "*Sugary cookies*", (more specifically the most popular brand), "*Chocolate*", "*Soft drink*", "*Processed meat for kids*", "*Sugary products*", "*Cereal high in sugar*" and "*Dairy sugary yogurt dessert*".

None of the children reported that within its requests are the cereal high in fibre. Also, only eight children reported that fruits do belong in their list of requests at the supermarket.



## **Chapter V**

### **Discussion of Research Findings**

#### **Chapter Contents.**

5.1 Introduction

5.2 Findings with regard to the research questions.

5.2.1 Research Question 1: What is the composition of the television food advertising scenery in Cyprus?

5.2.2 Research Question 2: What are the responses of parents and children (age 6-12) towards television food advertising, children's eating habits and preferences in Cyprus?

5.2.3 Research Question 3: What are the responses of children (age 6-12) towards television food advertising regarding brand logo recognition and brand logo recall ability?

5.2.4 Research Question 4: What are the responses-preferences of children (age 6-12) towards unbranded food products and branded vs unbranded products?

5.2.5 Research Question 5: What is the level of food knowledge of children (age 6-12) towards relatively healthy and relatively unhealthy food products?

5.3 Focus group's eating habits, instant food preferences for intake.

5.4 Policies regarding television food advertising.

5.5 Limitations of research and further recommendations for Cyprus.

## **5.1 Introduction**

This chapter reflects to the principle findings of the research in terms of its contribution with regard to the research questions.

This chapter is devoted to providing a critical discussion of main findings and analysis, when set against the existing literature as presented in Chapter II.

The overall aim of this innovative project was to examine the effect of television food advertising on children's eating behaviour and by this the main researcher refers to food preferences, food knowledge, purchase requests of children age 6-12 in Cyprus. Food intake measurement was not one of the study's objectives.

As noted in Chapter II, there is a wide body of literature which already exists, that demonstrates the powerful influence of television food advertisements on children's eating behaviour, food preferences, food knowledge and purchase requests.

As noted in the literature review every day children are exposed to the persuading messages of food advertisements via television. Even from the late 70's (Vaughn, 1980) literature supports that advertising industry has been challenged to explain how and why advertising impacts and not if it impacts. These views are shared by several researchers (Gorn, Goldberg, Linn, S. E., Campbell, Machin & Walters, Story, French, Aktas Arnas, Dubois et al., Boyland, Emma J. et al., Halford et al., Keller, Schulz, Powell, R. M., Gross, Folta et al., Bolton, Lobstein, Dibb, Borzekowski, Robinson, 2001) who demonstrated through their papers, that in the new era of expanded media options children are immersed in advertising media and advertising have singled out children as a targeted audience.(Campbell, Machin & Walters)

This chapter discuss in details the content of television food advertisements for 365 days for all television channels (9) that broadcast in Cyprus and how these interlinked with parents responses through the use of questionnaire regarding television food advertisements and also children's responses through knowledge tests.

Furthermore, the strengths and limitations of this thesis are considered and this chapter concludes with recommendations to stakeholders and regulators.

## **5.2 Discussion of principle findings with regard to the research questions.**

### **5.2.1 Research Question 1: “What is the composition of the television food advertising scenery in Cyprus (Study Part 2)?”**

According to the literature, content analysis for television food advertisements started in the 70's. Television is considered to be the largest single media source of advertising messages related to food. According to research (Coon et al., 2001) branded food manufacturers invest greatly on food advertising.

According to literature (Brody et al., 1981, Bolton, 1983, Dietz, Gortmaker, 1985, Kunkel, Gantz, 1992, Coon et al., 2001, Linn, Susan, 2006, Wiecha et al., 2006, Foltz et al., 2006, Halford et al., 2007, Halford, Boyland, Cooper et al., 2008, Anschutz, Engels & Van Strien, 2009, Boyland, E. J., Harrold, Kirkham & Halford, 2011, Goris et al., 2010, Keller, Schulz, 2011, Kelly et al., 2010, Boyland, E. J., Halford, 2013, Reisch et al., 2013, Boyland, E. J. et al., 2013, Lioutas, Tzimitra-Kalogianni, 2015, Jenkin et al., 2014, Kim et al., 2016, Galst, White, 1976) the biggest proportion of advertisements targeted children are related to calorically dense foods, sugared foods, sugared cereals, baked goods, candies, carbonated beverages and soft drinks.

Literature (Folkvord, Frans et al., 2016) states that food advertising refers to “*any form of communication that is designed to increase the recognition, appeal, and/or consumption of particular food products, brands, and services*”.

Researchers from the early 70's observed that advertisements related to sugary food products were almost 80% (Galst, White, 1976, Gussow, 1972, Barcus, Action, 1971).

These references were included since studies conducted in the 70's-80's was the cornerstone in investigating and documenting the content of television food advertising. Similar and additional results were found in newer studies that were included in this part of the study and in literature review chapter as well.

These food products that are commonly advertised on television (FACT) are heavily advertised during children's programming. The compositions of these food products are typically high in saturated fat, cholesterol, refined and processed sugar.

As a result, the heavy advertising of highly appetizing, high caloric convenience food is not compatible with inter(national) dietary guidelines. There is also an increase in the number of food related TV advertisements viewed by children, (Cornwell, McAlister, 2011).

Further research agrees that the content of television food advertising to children is dominated by unhealthy food product choices, promoting the intake of energy-dense nutrient poor foods (Folkvord, F. et al., 2014, Folkvord, Frans et al., 2016, Gatou et al., 2016, Harris, Jennifer L., Kalnova, 2018).

On the other hand, the advertising of more healthy food choices like fruits, vegetables, and further nutritious options still stay rare or even non-existent in some studies.



Similar results of content analysis were presented in USA and in European studies as well. Taking into consideration that the content of most of the advertisements are related to the “big five”- sugared breakfast cereals, soft drinks, confectionary, savoury snacks and fast food products we can understand that the majority of advertisements develop an unhealthy scenery.

According to content analysis of advertisements in Switzerland (Keller, Schulz, 2011) a distorted food pyramid based on just food advertisements was developed.

The food pyramid was presented with inversed layers with respect to the recommended food pyramid.(Walter, Infanger & Mühlemann, 2007). Similar results were found in Austria. (Missbach et al., 2015)

According to research (Jenkin et al., 2014) *“television remains the key avenue through which food marketing reaches children and it is not surprising that food promotion is a hot topic globally”*.

Taking into consideration the previous studies and content analysis results, we do wonder if Cyprus is part of the whole picture.

Results of the current study (Study Part 2) which examined the content of television food advertisements for 365 days for all television channels (9) that broadcast in Cyprus shows that television channel’s most popular advertising products were products high in sugar/fat and or salt (HFSS food products) (Chapter 4, Section 4.5, 4.5.4).

Each television channel was examined the same way (documentation and analysis) and the results present a totally unhealthy scenery (Chapter 4, Section 4.5, 4.5.1, 4.5.7).

A step further when food advertisements were analysed per day the frequency of advertised food products were dominated by chips, chocolates, fast food restaurants and HFSS products (Chapter 4, Section 4.5, 4.5.8).

More detailed analysis showing the relationship between advertised products and time slots (this analysis covered 365 days from 07.00am-21.30pm for all the television channels broadcast in Cyprus) showed that whenever a child decides to watch TV, morning or afternoon, weekday or weekend, its viewing will be dominated by the HFSS category (Chapter 4, Section 4.5.9).

Television advertising in Cyprus consists of two different types of advertisements. Single product advertisement that promotes only one product and supermarket advertisements that promotes an average 3-5 products per advertisement.

Another difference according to the results is that supermarket advertisements were strictly informative regarding the supermarket offers with no marketing features, persuasion techniques and characteristics as the single advertisements had.

Current study’s results come in total agreement with research (Harrison, Marske, 2005, Halford, Boyland, Cooper et al., 2008) who reported that a “2000-cal/day diet composed of most advertised foods would undersupply many nutrients and oversupply others”.

In Chapter 4, (Section 4.5.3) is obvious that the majority of advertisements are broadcasting during the 4<sup>th</sup> trimester of the study year.

One possible explanation for this result is that Christmas period is part of the 4<sup>th</sup> trimester of the study year. Christmas is an observance of faith in Cyprus and the tables will be set of foods that have become tradition passed from generation to generation. Food plays a major role in the holiday season.

The culture in Cyprus suggests extensive family/friends' lunch and/or dinner celebrations which implies extensive food product purchases. Christmas period official celebrations start on around 20 of December and ends around 6 of January.

This period covers Christmas, New Year and Epiphany. Like anywhere else Christmas period is synonymous with excellent taste cuisine. There is a culinary system and dining rituals which could be described as "Cypriot". Consequently, wherever anyone goes in Cyprus can find a cuisine and gastronomic ritual which is always familiar.

Advertising industry is well aware of this culture phenomenon and uses heavy advertising through the largest source of advertisement (television) to promote food products and offers.

Fundamental element of the traditional Cyprus culture during Christmas period lunch/dinner is red meat.

The main Christmas meal is often lamb, pork, goat, roasted or cooked in a traditional Cypriot way on charcoal grill or other ways. Pasta, potatoes and salads are cooked in several ways and are part of every gathering.

During this period most households make traditional Christmas cakes and other sweet treats. Christmas sweets in Cyprus can be a tradition to the whole island, and some are limited to some villages only.

The common parameter thought is that they bring us back and reminds us of our childhood memories. The most common ingredient is sugar, vegetable oil and flour. Housewives make or otherwise they buy these ready products either from bakeries, confectionary shops or even supermarkets that especially periods like this are promoting such products.

Each lunch or dinner during this period is constitute of a wide variety of meat plates and carbohydrate-based plates as well. Usually sugary desserts can satisfy anyone because of the wide variety that usually exists.

The second most popular period for heavy advertising was the 2<sup>nd</sup> trimester of the year. At that particular year (November 2016-October 2017), the Easter holidays were during May.

Similar explanation can be aroused since Easter holidays is the second religion-wise period during the year that Cypriots celebrate and enjoy with friends and family for more than a week. This period is shorter in celebrations in regards to the Christmas period.

In Easter holidays in Cyprus the preparations and customs including traditional food and large feasts, remain an important part of modern Cypriot life. The Easter table all over the island mirrors the culture and religion together.

In Cyprus Easter and Christmas food and tradition are well connected together. Roast lamb, boiled and coloured eggs (for Easter) are some of the Cypriot ways to honouring these holidays.

The period that had the smaller number of advertisements was the 3<sup>rd</sup> trimester of the year. During this trimester most of the working people in Cyprus usually go on vacations.

It is the period that most of the people don't stay at home a lot, since schools are on holidays as well. It is important to mention that since Cyprus is a small island and 4 out of 5 cities are seaside with easy access to the beach, most of the families spend time out of the house. This might be the reason that the number of advertisements is the lowest throughout the year.

After examining the television food advertisements, single product and supermarket product as a total (Chapter 4, Section 4.5.4, Section 4.5.10, Section 4.6.3), it is obvious that red meat, chips, soft drinks, chocolate, sugary cookies, dairy full fat cheese and processed meat are in top place.

Food products like these are rich in fat, cholesterol, sugar, salt (HFSS food products). This top ranking for products with this substance is considered problematic, therefore the consumption is likely to have negative consequences for children's health being.

Furthermore researchers (Story, French, 2004, Linn, S. E., 2004) reported that food marketers and advertisers promote HFSS food products in such a heavy way that can be viewed as exploitative due to the fact that children below the age of 8 do not possess the cognitive ability to understand and process the marketing messages of the advertisements.

Research (Folkvord, Frans et al., 2016) shows that the composition of these food products provide satisfaction which is a great parameter that drives children to eat much more than they actually need. Furthermore, food promotions like these, encourages the actual intake of these food products.

According to current study's results fruits and vegetables were only part of the supermarket advertisements. During documentation it wasn't found any fruit or vegetable advertisement to be broadcast as a single product advertisement.

Fruits and vegetables were only part of supermarket promotions always along with other products. (Chapter 4, Section 4.6.3).

Even when analysing the frequency of supermarket food advertisements alone, "Red meat" was in first place followed by "Dairy full fat cheese". "Fruits" came in 3<sup>rd</sup> place followed by "Poultry", "Fish", "Pastries", "Cereal high in sugar" and finally "Vegetables" in 9<sup>th</sup> place. (Chapter 4, Section 4.6.3).

According to the advertisement analysis supermarket advertisements consist of almost 20% (19,2%) of all the food advertisements on television (58% services/OTC products, 22.8% single advertisements). (Chapter 4, Section 4.5, 4.5.4, 4.5.10)

A possible explanation for this ranking is that supermarket advertisements target mostly households and more specifically the person responsible for the weekly grocery shopping. That person mother or father (or both) usually plan ahead what the house-hold needs for the next week or during the weekend.

This is probably the reason behind the "Weekly offers" and "Weekend offers" of supermarket advertisements.

Mother or father (or both) are usually responsible for grocery shopping and usually have a weekly/ monthly grocery budget. Supermarket offers provide choices either to attract new customers or to retain their existing customers.

Competing with offers and/or price supermarkets use advertisements to attract shoppers. Also offers focus on combining low price with quality.

Supermarkets are constantly vying for consumer's attention and they do spend significant amount of money on advertisement campaigns.

After analysing each month's frequency for all food advertisements (single product and supermarket products), (Chapter 4, Section 4.7, Section 4.7.1-4.7.12), we can see that during Easter period (May 2017) "Red meat" was still in the first place followed by "Sugary cookies", "Soft drinks" and "Fast food chains".

Similar results were found during Christmas period (December 2016) where "Red meat" was always in the first place with even higher representation than during Easter period, followed by "Tea/Coffee", "HFSS condiment" and "Soft drinks". (Chapter 4, Section 4.7, Section 4.7.12).

Finally, during summer period (3<sup>rd</sup> trimester of the year), frequency of all food advertisements (single products and supermarkets products) showed a slight differentiation. In this case since vacation period could not be defined with accuracy the whole trimester was examined. As results showed "Red meat" was still in first place followed by "Chocolate" and "Sugary cookies", "Soft drinks", "Fish", "Dairy full fat cheese", "Fruits" (in 7<sup>th</sup> place) and "Vegetables" in 10<sup>th</sup> place (Chapter 4, Section 4.8, 4.8.3).

Since "Fruits", "Vegetables" and other healthier choices like "Cereal high in fibre" or "Low fat dairy products" do have small representation in television advertisements per month, analysis per trimester showed that during the 1<sup>st</sup> trimester of the year (single product and supermarket product advertisements) none of these healthy options were in the 10 top positions. (Chapter 4, Section 4.8, 4.8.1).

More specifically the 10 top positions were dominated by "Red meat", "HFSS condiment", "Chocolate", "Processed meat", "Dairy full fat cheese", "Soft drinks", "Fat spreads", "Fast food chains" and "Sugary cookies" (Chapter 4, Section 4.8, Section 4.8.1). It was clear that the 10 top positions were dominated by non-core food products.

Similar findings were shown in 2<sup>nd</sup> trimester of the year where the top 10 positions were dominated by "Red meat", "Soft drinks", "Sugary cookies", "Dairy full fat cheese", "Fast food chains", "Juice", "Chips", "Poultry", "Chocolate", "Bottle table water". Once again with the exceptions of two core food products ("Poultry", "Water") all the other food products can be considered as non- core (Chapter 4, Section 4.8, 4.8.2).

Third trimester was discussed above, leaving for last the 4<sup>th</sup> trimester of the year that demonstrated unfortunately the same disappointing results with the previous trimesters.

The last trimester was once again dominated by "Red meat" in the first place, followed by "Chips", "Coffee/Tea", "Fat spreads", "Soft drinks", "Chocolate", "Sugary cookies", "HFSS condiment", "Fast food chains" and "Juice" in the 10<sup>th</sup> position. (Chapter 4, Section 4.8, 4.8.4).

According to Australian guide to healthy eating (Kelleth, Schmerlaib, 1999) as core are defined only the 5 basic food groups (vegetables, fruits, grains, lean meats and poultry and dairy products) as should make the core of the diet.

Core foods are considered those foods/drinks that are required to meet nutrient requirements, and on the other hand non-core foods/drinks are those that provide nutrients and/or energy in excess of daily requirements.

All other products that do not fit into the five core food groups and are not essential part of the nutrition are considered as non-core. (Kelly et al., 2010, Boyland, E. J., Harrold, Kirkham & Halford, 2011, Kelleth, Schmerlaib, 1999)

Study's results showed that during year single product and supermarket product advertisements promoted more non-core products 54% vs 46% respectively (Chapter 4, Section 4.6, 4.6.4, 4.6.5).

Even after examining each month separately it was clear that most of the non-core food product advertisements comes from both single product advertisements and supermarket advertisements as well.

Although the frequency analysis of supermarket food products showed that "Fruits" rank in 3<sup>rd</sup> place, supermarket advertisements as a total showed that promote more non-core than core food products. (Chapter 4, Section 4.6, 4.6.3).

On the other hand, Cyprus is an island that cultivates a wide variety of fruits, so it was expected that the promotion of fruits to be part of the supermarket advertisements.

Study's results agree with previous research (Kunkel, Gantz, 1992, Harrison, Marske, 2005, Halford, Boyland, Hughes et al., 2008, Boyland, E. J., Harrold, Kirkham & Halford, 2011) that supports that the majority of food advertisements in children's programming were for energy-dense, HFSS foods and more specifically of the 10 most advertised products, six were non-core (fast food, unhealthy breakfast cereals, chocolate/confectionary.

High fat/sugar/salt spreads and snack foods) with only one core food featuring in this list (low fat dairy items).

In a further step of the study all food/beverage advertisements that a child is exposed to during family zone formed a pyramid that represents all the broadcast food/beverage advertisements.

Food Pyramid was used for the break-down of the food groups. The percentage allocated for each food group in the food pyramid were those in the "Eat Well Plate" (33% Bread & Cereal, 33% Fruits & Vegetables, 12% Dairy, 15% Meat, 7% Fat & Sugar) (Food Standard Agency) (Volders, 2018).

There was an attempt to build a pyramid of advertisements in Cyprus with the basis of the pyramid the food group consumed-promoted the most using a hierarchy order (Chapter 4, Section 4.6.6) and correlate the results with the "Eat Well Plate" recommendations. (Chapter 4, Section 4.6.6).

Finally, the formed pyramid of advertisements in Cyprus was totally inconsistent in relation to the food pyramid recommended by the "Eat Well Plate" (EWP).

Products high in fat and sugar were advertised almost 35% more than EWP recommends. Fruits/vegetables and bread/cereals were almost 25% less promoted than EWP recommends respectively. Meat along with its processed products and dairy were almost 5% more and 3% less promoted respectively. (Chapter 4, Section 4.6.6).

This misrepresentation of food groups in inverted food pyramid agrees with research that television food advertisements promote an unhealthy “food plate” and unhealthy eating habits among children and family. (Missbach et al., 2015, Montagnese et al., 2015, Pellai et al., 2012)

Taking this into consideration we can strongly believe that advertisements related regulations and nutrition criteria should be formed in Cyprus (and closely monitored how they are applied) that will not only regulate the content of each advertisement but also the frequency and the time of its promotion.

Health educators and marketers can work together to formulate messages and persuasive techniques for more nutritious food choices and through media to enhance awareness that pleasure, happy feelings, great taste can be associated with healthier food choices.

The above suggestion emerges in order to improve the nutritional landscape of television food advertisements and especially those that are targeting children since rates of obesity to children are escalated and several health issues are related to this.

These results imply that children are being under the marketing influence of food industry, marketers and advertisers towards unhealthy, low nutrition food choices since these choices dominate the food advertising environment in Cyprus television.

Study's results showed that food marketers use several persuasion techniques, themes and characteristics for the most popular food advertisements that dominate Cyprus television scenery.

Pleasure during eating, taste and crunchy sound, the use of famous football player and teens, children, adults and cartoon characters were the most common techniques for “Chips” advertisements. Characters dancing, having fun, partying, children tricking adults was used in “Chips” and “Fast food” ads.

Statements like “*Give taste to movie nights*”, or “*Pleasure goes wherever you go*”, “*Perfect taste in every bite*”, “*Snacks that everybody loves*”, “*New flavours, take them all*”, “*Bigger package, bigger pleasure*”, “*Having fun with friends*”, “*Try them all*”, were used as closures for “Chips” advertisements. Gifts, offers (usually free soft drink) was part of the promotions for both “Chips” and “Fast food”.

A marketing strategy used for “Chips” advertisements was the use of licence characters’ usually football players. Research suggests (Roberto et al., 2010, Robinson et al., 2007) that licenced characters (LC) is a marketing strategy through which food companies uses the image of a popular character in the advertisement.

Advertisers prefer also spokes characters since they are able to create favourable brand attitudes towards advertised products. Also, key parameters for success are the trust and familiarity with the spokes-characters. The more established and recognizable the spokes character is, the more effective it is in promoting the associated products. Marketers choose these types of characters

because they are popular among children because of their frequent appearance in television programs, advertisements or movies.

Research (Boyland, E. J. et al., 2013) supports that *“celebrity endorser influence extends beyond the celebrity’s involvement in commercials and strengthens the associations that children develop between celebrity and branded products”*.

It is also important to note that “Chips” is the first food product in rank in single product advertisements and the 20<sup>th</sup> in rank in supermarket advertisements. (Chapter 4, Section 4.5, 4.5.10, 4.6, 4.6.3)

Also “Chips” is the most popular product during 6 out of the 15 time slots of single product advertisements documentation. More specifically “Chips” were the most popular single advertisement during (07.00-08.00), (13.00-14.00), (15.00-16.00), (16.00-17.00), (17.00-18.00), (18.00-19.00) every day for 365 days of study. (Chapter 4, Section 4.5, 4.5.9)

Furthermore, when the frequency of food advertisements was documented “Chips” were the most popular single advertisement from all television channels air on not one but three days in week, more specifically on Tuesday, Friday (along with “Fast food” advertisements) and Saturday “Chips”. (Chapter 4, Section 4.5, 4.5.8)

Quantity vs price, taste and happy feelings, discounts for take away and offers if you order more or bigger size. *“Fine day”, “Fulfilling pleasure”, “Its finger licking good”, “From our place to yours”* were some of the promotional quotes used for “Fast food” ads. Statements-slogans were verbal and written as well.

“Fast food” advertisements were the most popular single advertisements of a specific television channel throughout the study year (Channel:08) (Chapter 4, Section 4.5, 4.5.7).

Also “Fast food” advertisements were the most popular aired television single advertisements at a specific time slot (12.00-13.00) of all single advertisements, and of all television channels. (Chapter 4, Section 4.5, 4.5.9)

Furthermore, when the frequency of food advertisements was documented “Fast food” advertisements were the 2<sup>nd</sup> most popular single advertisement from all television channels.

Also “Fast food” advertisements were the most single advertised food product air on three days of the week (Wednesday, Thursday) and along with “Chips” on Friday. (Chapter 4, Section 4.5, 4.5.7, 4.5.8, 4.5.10)

“Chocolates”, used animations, songs (some of them known for more than 20 years in Cyprus), family scenery, child tricking parent, turning a bad situation into a good one when eating a chocolate, fun and happy feelings, sounds of chocolate breaking in the mouth, taste that brings back happy memories and nostalgia, children’s adventure themes and competitiveness over a chocolate.

*“Who stole my chocolate”, “Chocolate is for everyone all the times, anywhere”, “Have a break have a chocolate”, “The sweetest piece of your life”, “Big temptation”. “Share them with your friends”, “Chocolate drops of pleasure”* were some of the promotional slogans used. Slogans were verbal and written as well. Some “Chocolates” were promoted in bigger boxes with extra free pieces and in large quantities suitable for treats like birthdays.

“Chocolate” advertisements were the most popular single advertisement of a specific television channel throughout the study year (Channel:05). Also “Chocolate” advertisements were the most popular aired television single advertisements at two specific time slots (08.00-09.00) and (10.00-11.00) of all single advertisements, and of all television channels. (Chapter 4, Section 4.5, 4.5.7, 4.5.8, 4.5.9, 4.5.10)

Furthermore, when the frequency of food advertisements was documented “Chocolate” advertisements were the 3<sup>rd</sup> most popular single advertisement from all television channels and were the 10<sup>th</sup> most popular supermarket advertisements. (Chapter 4, 4.5.10, 4.6.3)

For “Soft drinks” the use of “*Refresh your social life*”, or “*Great taste, no calories*”, the sound of the “Soft drink” when the tin opens, feelings of happiness, free spirit, socialization and confidence themes were used.

“Soft drinks” advertisements were the most popular single advertisement of a specific television channel throughout the study year (Channel:04). Also “Soft drinks” advertisements were the most popular aired television single advertisements at two specific time slots (19.00-20.00) and (20.00-21.00) of all single advertisements, and of all television channels. (Chapter 4, 4.5.7, 4.5.9).

Furthermore, when the frequency of food advertisements was documented soft drinks advertisements were the 4<sup>th</sup> most popular single advertisement from all television channels. (Chapter 4, 4.5.10)

In “Sugary cookies” advertisements, music, animation, fantasy world, adventure, taste, fun, happiness, sound of crunch in the mouth, “cool” themes and athletes, teen boys and girls, family scenery, were used.

*“When the whole life is enclosed in this pleasure”, “Everybody in the family takes with them their favourite pleasure”, “Mini size, maxi pleasure”, “New package that goes everywhere”, “New reduced price”, “Even athletes choose them”* were some of the verbal and written slogans used.

In “Cereal high in sugar” advertisements, the use of animation was intense, and also the use of bright colours, happy faces, cartoons having fun with children during breakfast, adventure scenery, and taste were the most used techniques.

Happy mothers feeling and looking satisfied when children eat happily breakfast with cereals. Nutrition information like *“Rich in vitamins and iron”* were verbal and written. Statements used by children were *“Your favourite cereal now with wonderful chocolate caramels”* and *“Discover now the new flavours”*.

Statements used by mother were *“We nourish our children’s abilities”, “For happy kids choose these”, “Start your child’s day with these”, “Children grow up only once”, “Choose these for better physical defence, for stronger bones and better brain function”, “Pleasure that makes you feel like a hero”, “Wild pleasure”*. Statement like *“Pleasure that makes you look like a hero”* was used in a cereal advertisement where by eating the particular product a child’s performance ability would be enhanced.

In “Sugary products” advertisements, adventure, animation, use of cartoons, fun, feelings of happiness were used. Children and members of family were also enrolled. Music, songs and



bright colours were part of every advertisement. Happy family eating sweets, children tricking their parents to get more and more sweets, feeling more connected as a family when sharing a package of sweets were some of the techniques used. Statements used were *“With sweets the world is full of joy and games”*, *“Sweet caramels in many different packages”*, *“Find inside your favourite heroes to complete your own collection”*, *“Try all the flavours”*, *“Sweets for you to smile”*, *“Sweets give joy to adults and children”*.

In “Processed meat for children” advertisements, superheroes and cartoon princesses were the main characteristics. Superheroes especially designed for boys with action, excitement and stickers giveaway were part of the commercials.

Graphics were blue for boys’ and pink for girls’ ads. Cartoon princesses with pink background, fairy tale music was used. Statements used, *“Get in to the magical world of taste with superhero/ princess ham”*, *“Made with love and care for our little superheroes/ princesses”*, *“The magical world of taste”*. Both boys and girls were part of these ads eating and enjoying these products saying with a smile *“Made for me”*.

Other cartoon characters were used for other processed meat products and statements used were *“Have fun in the magical world of taste with these delicious products made with love and care for our little friends”*.

“Processed meat for children” advertisements were the most popular single advertisement of a specific television channel throughout the study year (Channel:09). (Chapter 4, Section 4.5, 4.5.7).

Furthermore, when the frequency of food advertisements was documented “Processed meat for children” advertisements were 13<sup>th</sup> most popular single advertisement from all television channels and was the most popular aired television single advertisements at a specific time slot (20.00-21.00) of all single advertisements, and of all television channels. (Chapter 4, Section 4.5, 4.5.9, 4.5.10)

“Dairy sugary yogurt dessert” ads, involved children’s voices, cartoon characters, fun, happiness and great taste. Statements used *“Find in all yogurt cups the stickers of the puzzle and compose an exciting adventure with these delicious and nutritious products”*, *“6 flavours rich in calcium, vitamins B and phosphorus”*. *“Ask for this cup every time”*.

“Dairy sugary yogurt desserts” advertisements were the most popular single advertisement of a specific television channel throughout the study year (Channel:02).

Also “Dairy sugary yogurt desert” advertisements were the most popular aired television single advertisements at a specific time slot (09.00-10.00) of all single advertisements, and of all television channels and was the most frequent advertised product of a particular day. (Chapter 4, Section 4.5, 4.5.7, 4.5.8, 4.5.9)

Furthermore, when the frequency of food advertisements was documented “Dairy sugary yogurt dessert” advertisements were the 11<sup>th</sup> most popular single advertisement from all television channels. (Chapter 4, 4.5.10)

In contrast advertisements like “Whole wheat cereal” involved only adults, plain scenery without fun characteristics and playful music and focus their messages on constipation, good taste and calories. *“Rich in fibres that regulate the function of your digestive system”*, *“Let’s*

*try this to feel the difference”, “Would you trust your figure in cereal that contain more than 15% of sugar, or the real light cereal with 0% added sugar and 0% added fat?”. These statements were used as verbal and written as well.*

According to research (Rose, Merchant & Bakir, 2012, Kim et al., 2016) these are known as nutritional claims. Nutrition claims can play an important role for consumers in processing food commercials by encouraging consumers to engage in better nutritional practices and healthy diet.

(Whalen et al., 2018) Research reported that in 2010 the majority of food advertisements featuring health and nutrition claims were for non-core foods (58,3%), like “part of a balanced breakfast”, or “contains all essential nutrients”, or “rich in vitamins”.

Research (Boyland, E. J., Halford, 2013, Dixon et al., 2007) suggests that advertisements for healthier food choices, promote positive attitudes and beliefs concerning these foods.

Current study’s results agree with research that (Vilaro et al., 2017, Kelly et al., 2010, Kotler, Schiffman & Hanson, 2012, Anonymous, 2010, Connor, 2006, Kim et al., 2016) persuasive techniques (PT) are frequently used to market food to children.

Food advertisements often include techniques such as emphasizing fun, using sound effects, fast moving images, cartoon characters, special effects to attract the attention of children.

As research states *“among the cues in food advertising fun/happiness and fantasy/imagination are of the most prominent peripheral cues that advertisers use to describe fantasy as a concept that derives from the Greek work “Phantasia”, which relates to the human capacity for imagining”*. (Woodside, A.G. ( 1,3 ), Sood, S. ( 2,4 ) & Miller, K.E. ( 2,5 ), 2008)

This cue that was identified in study being part of several advertisements targeted children is typically used to associate the advertised product with happiness and fun rather than any actual product quality or benefit. (Folta et al., 2006, Connor, 2006, Rose, Merchant & Bakir, 2012) Researchers also suggests that cues like these offer positive feelings with consumption (Kim et al., 2016, Krishna, Cian & Sokolova, 2016, Jenkin et al., 2014) and that such appeals may encourage children to accept the food advertisements without much cognitive effort.

Research (Woodside, A.G. ( 1,3 ), Sood, S. ( 2,4 ) & Miller, K.E. ( 2,5 ), 2008) stated that *“fantasies and stories increase consumer involvement, and often convey ideas more effectively than mere effects. Most stories begin with a problem, an obstacle, or an unbalanced state drawing child into action and encouraging identification with the protagonist, depict actions to achieve resolution and contain a lesson learned. Also animated characters, animals, superheroes help to create an imagined or mythical world”*.

According to research (Kunkel, Gantz, 1992) the visual format used the most in children’s advertisements is animation.

Research (Barcus, Action, 1971) stated that *“once children are exposed to these cues they may not be able to distinguish the difference between marketing strategy and realism in commercials because they have not fully developed their cognitive capability to critically interpret advertising messages”*.

Marketing techniques are considered persuasive because children are not able to understand the marketing intent of advertisement until the age of 8 years old which makes them vulnerable

to techniques like these. Children around the age of 12 years or even older are able to evaluate and understand the persuasive intent of advertisements.

Marketers and advertisers use persuasive techniques that are designed as strategies. The purpose behind that is to increase children's brand loyalty, recall of advertisements, purchase requests, preferences and consumption of advertised foods.

Research (Kelly et al., 2010, Pine, Nash, 2003, Lawrence, 2003, Gatou et al., 2016) showed that promotional characters, offers, gifts and premiums are used to attract children's attention and persuade them to requests these products from their parents or buy them.

These techniques according to research (Linn, Susan, 2006) continually remind children of brands throughout the day.

This detailed analysis of the Cyprus's television scenery and the similarities with results of previous research leads us to realise once again that food comprises a large portion of what is marketed to children and food marketing occurs in the context of a myriad of other messages. Television remains the primary electronic medium with which young children and youth engage, despite of the growing popularity of internet and computer games.(Linn, S. E., 2004).

The impact of television advertising to children has been under investigation and research from the late 70's. As research suggests a single advertisement can be notable in the mind of children and in viewers in general. (Gorn, Goldberg, 1982)

Since television is considered as a sedentary activity can have an effect on viewers and especially on children's energy intake and, energy output since with this sedentary activity children and viewers in general spend less energy while they are watching television.

Research supports that energy dense food advertisements and marketing messages does have an impact on children's food consuming behaviour and purchase requests.(Story, French, 2004, Aktas Arnas, 2006, Powell, L. M., Schermbeck & Chaloupka, 2013).

Children that are exposed to television food advertising are more likely to select and prefer advertised food products or make more requests for advertised products. According to research children are been both receptive and responsive to advertisements. (Kopelman, Roberts & Adab, 2007, TABECK, BANERJEE, 2016, Powell, L. M., Schermbeck & Chaloupka, 2013, Kaur et al., 2003, Lobstein, Dobb, 2005)

Researchers critique television food advertising for its potential role in promoting less healthy, energy dense dietary habits among children.(Dixon et al., 2007, Lobstein, Dobb, 2005). (FRECHETTE, 2016)

Researchers recognise the powerful effects that television advertisements have on children's eating habits and food consumption patterns. Parent's perceptions, knowledge, views and approaches are considered important in order to mediate the influence of advertisements on their children.

After analysing this part of the study, the main researcher would suggest that a food frequency intake for children ages 6-12 and for adults would be of great value for future research since the documentation of television food advertisements is already available.

Furthermore, further research regarding actual family buying habits (product frequency per week)- not just requests or beliefs will be of great value, since so far, we do have the results of what is advertised, and would be an important piece of the puzzle to have the family's "weekly shopping list".

Having documented and analysed the television food advertising for 365 days for all TV channels in Cyprus it will be of great value to find connections between this content analysis and children's and parent's perceptions regarding television food advertising and possible impact of TV marketing on children's and parent's behaviour and perceptions.



### **5.2.2 Research Question 2: “What are the responses of parents and children (age 6-12) towards television food advertising, children’s eating behaviour, television habits and advertised product preferences in Cyprus (Study part 1)”?**

According to research children’s eating habits were associated with their actual television food advertising exposure, according to parental reports. (Chernin, 2008). Even older research agrees that there is an association between children’s exposure to television food advertising and purchase requests towards parents. (Bolton, 1983). Literature as old as these were considered as cornerstone in the field of investigating the impact of television food advertising on children’s eating behaviour and newer results were also found that comes in total agreement.

One of researcher’s great concern was how parents experience the impact of television food advertising on their children’s food choices. (Ip, Mehta & Coveney, 2007)

Television-viewing habits, eating habits are primarily learned from parents. Parental decisions related to the use of television during meals, is one parameter that may be associated with children’s food preferences and choices and also purchase requests. (Coon et al., 2001)

According to study’s results 60% of the parents (n=1088) reported that they cook every day for their families and only 1% reported that they don’t cook at all (Chapter 4, Section D, 4.4.4, 4.4.4.1). Furthermore, 42,8% of parents rated their eating habits as a family as “*Good*” and only 2,5% as “*Excellent*”. This result comes to an agreement with the frequency that families visit fast food restaurants in a month. 43% of parents reported that they visit fast food restaurants “*Less than once in a month*” and only 8% “*Once a week*” (Chapter 4, Section D, 4.4.4, 4.4.4.2).

Although results from (Study Part 3) showed that focus group children (n=71) (46,5%) provided the answer to the main researcher that they “*Never*” have breakfast, something that is not consisted with healthy eating habits. (Chapter 4, Section 4.9, 4.9.2.1). Even overweight/obese children of the focus group provided the answer to the main researcher that they “*Never*” have breakfast, (78,9%). This result is once again inconsistent with “*Satisfactory*” family eating habits reported by parents (Chapter 4, Section E, 4.4.5, 4.4.5.5).

Research (Dixon et al., 2007, Birch, 1999) suggests that children’s eating behaviour is complicated and set on by several factors/influences like, psychological, environmental, cultural and parental.

Literature (Gatou et al., 2016) showed that eating habits can be considered as a major lifestyle factors that can have an impact on children’s health and therefore on their quality of life. Healthy eating habits and eating behaviour is a recognised common factor for several health issues and obesity as well. Since food preferences are established in early childhood, they are able to have a major influence on both food choices and preferences throughout a person’s lifespan. Genetics is one parameter that develops both food preferences and eating habits, but other factors can influence this aspect.

Furthermore, 25% of parents reported that “*Complex daily routine*” is one of the main reasons that usually prevent their children to have better eating habits. (Chapter 4, Section E, 4.4.5, 4.4.5.4).

In order to investigate whether there were any differences to the level of parent's knowledge regarding healthy eating habits in relation to their educational background analysis of variance of two independent variables was calculated.

Results showed that mother's educational background was significant. On the other hand, father's educational background was not significant. Furthermore, post-hoc analysis showed that significant differences existed only between mothers who were "*Lyceum graduates*" and mothers who were "*University graduates*", as well as mothers who were "*Lyceum graduates*" and mothers with "*Master's degree*". (Chapter 4, Section A, 4.4.1.5, Section E, 4.4.5.1, 4.4.5.2).

According to this result it is reasonable to say that mother's educational background is of great value regarding the development of family healthy eating habits.

Eating habits showed that children's most preferred breakfast choice was "*Milk with branded cereals*" followed by "*Cheese Toast*", and "*Homemade sandwich*" was the most popular answer regarding what children eat at school during break.

Although results from (Study Part 3) showed that focus's group children (46,5%) never have breakfast.

Adding to these results, parents reported that they "*Do have considerable influence*" 53,8% on their child in terms of what he/she should choose to eat. (Chapter 4, Section E, 4.4.5.6) On the other hand, parents consider "*Average*" (29,2%) the level of education school provides to children regarding healthy eating. Only 2,1% of the parents consider the level of education "*Excellent*". (Chapter 4, Section E, 4.4.5.5)

This outcome will lead us to another result suggesting that parents consider school (school seminars) as the most suitable way to educate children regarding healthy eating habits.

Interesting findings were shown in regards to the frequency that TV was on during meals. Results showed that TV was on during "*Dinner*" time at 47% (Chapter 4, Section C, 4.4.3.6). Dinner time in Cyprus is mostly the time of day that family comes together around the table. It's the time that children have finished homework and other after school activities, parents are back home from work and since television is part of our daily life is usually on during this meal.

Results from research showed that television was mostly on during breakfast followed by dinner and last at lunch (Dubois et al., 2008, Matheson et al., 2004). Although that study refers to pre-schoolers. On the other hand, this study refers to children ages 6-12 that go to school and this is probably the reason that breakfast has the lowest percentage. Another explanation is that school in Cyprus starts at 07.45am meaning that children should wake up early enough to get ready for school something that makes the morning routine as fast as possible. This also can possibly explain the most popular breakfast choice which was milk with breakfast cereal, because this is a quick choice very accessible, easy to prepare even for the smallest age group of children in the study (6 years old).

Research (Coon et al., 2001) reported that "*the presence of television during meals is part of a cluster of attributes, which includes attachment to meat-base meal patterns and poor understanding of relationships between diet and disease, and that this cluster is more likely to*

*characterize households in which the parents have lower rather than higher educational attainment”.*

Adding to these, according to Coon, *“the association between family television use and children’s food intake patterns may also be affected by ways that television itself shapes a family’s expectations of what constitutes a normal diet”.*

Since television advertising mainly promotes and model the use of ready to eat sugary branded cereals, sugary snacks, convenience, rewarding foods and fast foods (Study Part 2), it makes sense that there would definitely be a relationship between the extent to which children’s food consumption patterns have shifted in directions promoted and modelled by television food advertising and the extent to which television has become an active part of their families’ food routines.

On the other hand, *“families who turn the television off during meals are separating the act of eating from the world contained inside the television set, and to that extent there is a boundary between private family food culture and the food culture promoted on television. In contrast, a television that is on in the presence of family members while they are eating is implicitly part of the family’s commensal unit, and the boundary between private family food culture and the food culture promoted on television is reduced”.* (Coon, Tucker, 2002)

The presence or the absence of the television may be a factor that impacts different aspects related to behaviours like linking television viewing, or/and children’s food consumption patterns.

Study also investigated the relationship between the mother’s educational level and the presence of a TV in the child’s bedroom. According to the response parents provided through the questionnaire, of the mothers who are *“Lyceum graduates”*, 26% keep a TV in their child’s bedroom.

Also, of the mothers who are *“University graduates”*, 17% keep a TV in their child’s bedroom whilst of the mothers with a *“Postgraduate degree”* only 10% keep a TV in their child’s bedroom.

Furthermore, the relation between the father’s education level and the presence of a TV in the child’s bedroom was investigated.

Results showed that of the fathers who are *“Lyceum graduates”*, 26% keep a TV in their child’s bedroom. Fathers’ who were *“University graduates”*, 15% keep a TV in their child’s bedroom and finally fathers’ who have a *“Postgraduate degree”*, only 12% keep a TV in their child’s bedroom. (Chapter 4, Section F, 4.4.6.5)

Furthermore, results from (Study Part 3) showed that the focus group children (n=71), *“Don’t have a television set in their bedroom”* (78,9%), also the overweight/ obese focus group children reported to the main researcher that they *“Don’t have a TV in their bedroom”* as well (73,7%). (Chapter 4, 4.9, 4.9.2.1)

Once again according to the results, the mother’s level of education is of great importance to shape this habit of having a television set in the bedroom. At this point father’s level of educational seems to have a great input in regards to this issue as well.

It is of great importance to state that whether to place a television set in a child's bedroom or not can be seen as a family decision regardless the educational background of each parent.

Research (Adachi-Mejia et al., 2007) showed that almost half of all children 48,2% had a TV in their bedroom. Parents having a high school diploma or less and also having low household income was one of the predictors of having a TV in the child's bedroom.

On the other hand, research (Chamberlain, Wang & Robinson, 2006) reported that having TV in the bedroom was not significantly correlated with purchase requests for advertised foods. On the other hand, an additional hour per day of television viewing was associated with extra purchase requests for advertised food products.

Studies have documented a positive association correlation among the number of hours of television viewed by children and their requests for advertised products.(Coon et al., 2001).

According to study's results 74% of children (6-12 years old) watch television during "Weekdays around 1 to 2- or 2-hours daily". There is a 10% of children that watch television for "More than 2 hours" and this percentage is more than double during weekends (24%). Most of the children watch television around 1 to 2- or 2-hours during weekends too (50%) (Chapter 4, Section B, 4.4.3.2).

A reasonable explanation for this result is that children during weekdays are engaged with several after school activities (English lessons, etc.) leaving them limited time for television viewing. Since their daily routine is demanding even from the age of 6, children usually return home in the afternoon or even late afternoon. On the other hand, during weekend they have more free time to spend watching television specifically.

Similar results were showed in research (Manios et al., 2009) where preschool children's viewing time was around 1h/day on weekdays and on weekends time was more than 2 hours.

Research results (Aktas Arnas, 2006) showed that preschool children spend approximately 19hours/week watching television.

Research (Lowry et al., 2002) reported that 42,8% of children (high school students) watched television more than 2 hours on an average weekday.

Similar results were presented in research (Manios et al., 2009) suggesting that one additional hour per day of television watching was associated with 12% higher probability of being obese. Research (Goris et al., 2010) presented similar results suggesting that children's exposure (age 6-11) to television advertising has a detectable effect on the prevalence of overweight and obesity in 6 countries.(Lobstein, Dobb, 2005, Robinson, 1999, Gortmaker et al., ) Research suggests that there is a "*strong dose-response relationship*" between hours of television viewing and the prevalence of overweight and obesity.

According to research (Dubois et al., 2008, Matheson et al., 2004) the total number of hours of television viewing was associated with eating meals and snacks while watching television. (Goris et al., 2010, Chamberlain, Wang & Robinson, 2006, Halford et al., 2004, Borzekowski, Robinson, 2001) Research supported that exposure to TV food advertising significantly influences children's food preferences, choices, purchase requests and food intake.



According to research (Halford et al., 2004) children who eat their meals in front of the TV tend to consume more unhealthy items per day (Coon et al., 2001, Marquis, Filion & Dagenais, 2005, Galst, White, 1976).

Research (Dixon et al., 2007) reported that television use is associated with snacking, which may not occur if the child is engaged in other activities.

Research (Chamberlain, Wang & Robinson, 2006) showed that school age children who watch more than 10 hours of TV per week made nearly 1 request per week for advertised food/drink. Results of that study showed that television exposure was associated with children's requests for advertised products and furthermore as a risk factor for future food/drink requests.

Further research (Brody et al., 1981, Dietz, Gortmaker, 1985) provided similar results suggesting that children's exposure to television advertisements can have a major impact on influencing their parents toward buying advertised branded products.

When parents were involved in research, they reported that *"children's nagging them to buy a particular product can be seen as another way in which food advertisements mediate children's influence"* (Ip, Mehta & Coveney, 2007).

In study parents reported that advertised products most persistently asked by children was *"Branded chips"*, followed by *"Branded chocolates"* and *"Branded sugary cereal"*. It is worth to mention that among the sample population (n=1088) only one child reported (through the parent) plain unbranded *"Fruit"* product as a request. All products were reported using their brand names (Chapter 4, Section F, 4.4.6.6).

Research (Matheson et al., 2004) showed that the consumption of fruits and vegetables during television viewing was significantly lower than other times during the day.

Further and extensive research is required to identify the relationship between the frequency of consumption of fruits during the day and during viewing time.

This result comes in total disagreement with what study showed as to what children choose to eat between meals. Taking into consideration the previous results it came as a surprise to see according to the results that the first food product children eat between meals was *"Fruit"* (Chapter 4, Section C, 4.4.3.6).

Possible explanations are that *"Fruits"* might be the only choice available in the house, or this is the only choice parents agree for their children to have as a snack between meals.

On the other hand, the results regarding what children ask from their parents, can be explained as food requests that main researcher was not possible to know if they ended up being purchases after all. Sometimes requests remain requests depending on parent's decisions.

Further research is required to identify what percentage of requests ends up to be actual purchases and with what frequency and what products requests remain as requests and with what frequency as well.

It is important to acknowledge that product requests to the parents were associated with the top advertised products that target children (Chapter 4, Section, 4.5, 4.5.4).

Research (Brody et al., 1981, Gussow, 1972, Kunkel, Gantz, 1992, Gorn, Goldberg, 1982, Chamberlain, Wang & Robinson, 2006, Aktas Arnas, 2006) indicated that *“the current level of television food commercials aimed at children competes with nutrition education and steers children’s preferences away from foods that provide nutrients and towards sugared, non-nutritious products. Also changes their preferences for advertised products”*.

According to study’s results parents (n=1079) reported that their children ask for advertised food snacks while watching TV (49,7%) (Chapter 4, Section C, 4.4.3.12). This result is not consistent with what parents reported as far as to what level they believe their children are influenced by commercials. At this part, parents (n=1077) reported that their children are *“Not at all”* or *“Rarely”* influenced by commercials (70,5%) (Chapter 4, Section C, 4.4.3.13).

On the other hand, in order to overcome these results is important to mention that requests for branded products can be considered as influence by the advertising and marketing techniques.

Research (Boyland, E. J., Harrold, Kirkham, Corker et al., 2011) showed that children not only enjoy but also, they engage with television food advertisements.

Parents involved in research suggests (Ip, Mehta & Coveney, 2007, Aktas Arnas, 2006) that television food advertising is able to impact the way young children think about specific branded products, also, to induce their appetite when they are not feeling hungry and finally to create parent-conflict situations. Also, parent’s reported in research that *“they feel the need to give in to “pester power” on some occasions even when they consider the food unsuitable”*.

Research (Bolton, 1983) indicates that *“parental television viewing patterns will influence children’s television viewing pattern’s and parent’s diets will influence children’s diets”*.

Research (Linn, Susan, 2006) suggests that parents view the enormous amount of television food marketing as stressful for them and their families as well.

Further research is required to identify what proportion of children’s requests end up as purchases just because of the child’s pester power and what proportion because the parent consider the food product as a suitable choice for the child.

Adding to these, research (Pettigrew et al., 2017) indicated that *“the child-customer socialization literature notes the importance of parent’s attitudes to children’s television viewing, their beliefs about the effects of advertising on children, and their attitudes to particular products in determining consumption-related parenting practices”*.

Research (Aktas Arnas, 2006) shows that parent’s reactions towards their children’s shopping requests may affect the children’s future shopping demands.

In order to understand better the previous mixed message result, other answers were evaluated as well. Parents (n=1078) reported that their children do sing commercial jingles (44,9%) (Chapter 4, Section C, 4.4.3.14). Also, parents (n=1074) reported that advertisements with music, colours, action, heroes, famous actors, football players and kid’s participation attract their children’s attention (>50%) (Chapter 4, Section C, 4.4.3.15). Research (Ip, Mehta & Coveney, 2007) reported that *“parents consider that fun and happy themes together with visual impact are key elements that attract children’s attention”*.

Furthermore, another interesting outcome is that parents reported that the commercial jingle their children sang the most (food commercial jingle) was a *“Branded processed meat product*

*especially designed for kids*” -(package design) (28%) followed by a popular “*Soft drink*” (35%) (Chapter 4, Section F, 4.4.6.7).

It is important to note that “*Branded processed meat for kid’s product*” is very popular advertisement especially during kids- cartoon commercials and has the longest duration (27,7seconds) of all the TV food advertisements. Also, the “*Branded processed meat for kid’s product*” is the most promoted single advertisement of a particular television channel that broadcasts several kids-cartoon programs. “*Soft drink*” commercial rank 3<sup>rd</sup> in popularity from all the food/drink single product advertisements and was the most popular advertisement for not one but for two television channels throughout the study year. (Chapter 4, Section 4.5, 4.5.5, 4.5.7, 4.5.10). (Borzekowski, Robinson, 2001) reported that “*one 30second commercial can affect the brand choices of children as young as age 2 and repeated exposure has even greater impact*”.

Also, parents reported that children’s favourite commercial hero was almost equally divided between “*Cartoon/Princess*” (38%), “*Super heroes*” (32%) and “*Football players*” (30%) (Chapter 4, Section F, 4.4.6.8).

Is important to note that “*Cartoon/Princess*” and “*Super heroes*” are the marketing themes used for the “*Branded processed meat for kid’s product*” commercial that children sing the most.

According to the study’s results parents (n=1087) do believe that “*Food industry uses children as a mean to achieve sales*” (65,9%). Again, this result is not consisted with what parents (n=1077) reported suggesting that their children are “*Not at all*” or “*Rarely*” influenced by commercials (70,5%) (Chapter 4, Section E, 4.4.5.7).

Research (Story, French, 2004, Linn, S. E., 2004) suggests that “*children are a major market force and food marketers are interested in children as consumers because of their spending power, their purchasing influence and as a future adult consumers. The heavy marketing towards children appears to be driven largely by the desire to develop and build brand awareness/ recognition, brand preference and brand loyalty. Research supports that brand preference begins before purchase behaviour does*”.

Adding to these, it was found that there were differences in the level of influence exerted by male and female “*Standards-Role models*” promoted on TV food advertising. Study’s results showed that children’s gender was found statistically significant. On the other hand, age of children was not significant, nor the interaction between gender and age. Further analysis showed a higher mean for girls in terms of the extent of the influence of “*Role models*” on them than for boys. Such difference was statistically significant (Chapter 4 Section F, 4.4.6.1.).

Research (Anschutz, Engels & Van Strien, 2009) reported that “*Role models*” dominate the content of food commercials.

Research (Ip, Mehta & Coveney, 2007) showed that parents consider television advertising a major influence in which their children found about food products. Study’s results showed that parents (70%) believe that their children are “*Never*” or “*Rarely*” influenced by the advertisements and also, as parents they have “*Considerable*” influence (53,8%) on their children in regards to what their children should choose to eat (Chapter 4, Section C, 4.4.3.13, Section E, 4.4.5.6.).

Study also showed that gender was found statistically significant in regards to the level to which children understand the differences between advertisements and the rest of the TV program. On the other hand, age was not statistically significant and the interaction between gender and age was also not significant (Chapter 4, Section F, 4.4.6.1).

Further analysis indicated that the level in which children understand the difference between advertisements and the rest of the TV program was significantly higher for boys rather for the girls. This difference was statistically significant ( $p < 0.5$ ).

The level to which advertisements attract the attention of children depending on their gender and age (1<sup>st</sup> to 6<sup>th</sup> elementary school grade) was also investigated and the effect of age was statistically significant. (Chapter 4, Section F, 4.4.6.3).

However, gender was not statistically significant. On the other hand, the interaction between gender and age was statistically significant.

Further analysis showed statistically significant differences between 2<sup>nd</sup> grade girls and 6<sup>th</sup> grade girls. There were also differences between 6<sup>th</sup> grade girls and 2<sup>nd</sup> grade boys.

Differences were also noted between 6<sup>th</sup> grade girls and 3<sup>rd</sup> grade girls. These differences were statistically significant at a level of  $\alpha = .05$ .

Adding to these, children's perspective and attitudes was viewed so far. Valuable input should be the parent's perspective regarding buying and shopping habits in combination with children's views.

In general, research (Linn, S. E., 2004, Story, French, 2004) suggests that young children below the age of 8 do not possess the cognitive ability to process advertisements, ages 8-10 do possess the cognitive ability but do not necessarily do so and from early adolescence (11-12 years) children's thinking becomes more multidimensional.

Study showed that parents ( $n=1088$ ) are "*Not influenced by the advertisements*" and "*Influenced at a minimum level*" (63,2%), and they have a "*Good knowledge in regards to if the food request by their child is an advertised product*" ( $n=1072$ ), (53%) (Chapter 4, Section G, 4.4.7.1, 4.4.7.2).

These results come to an agreement with the following outcome that suggests that parents ( $n=1079$ ) "*Rarely*" buy a food item after its promotion on television (40%) (Chapter 4, Section 4.). (Chapter 4, Section G, 4.4.7.3).

On the other hand, study shows that children "*Often*" encourage parents to buy an advertised food product at home during or after the advertisement (80%). Furthermore, children continue to encourage parents to buy an advertised product at supermarket as well (71%) (Chapter 4, Section G). (Chapter 4, Section G, 4.4.7.4, 4.4.7.5).

The persuasion techniques do have an impact on children pester power during the advertisement duration and also during visit at the supermarket.

Research (Pettigrew et al., 2017) mentioned that 65% of parents reported that their children of age range 5-12 years asked them "*Always*" for advertised food products. Also, (Kelly et al., 2010) research reports that children requested at least one food product during a visit to the supermarket. (Galst, White, 1976) Research suggests that there was a significant association

between the time spend watching television viewing per week and purchase-influencing attempts. (Chamberlain, Wang & Robinson, 2006, Jeffrey, McLellarn & Fox, 1982, Robinson, 1999, Coon, Tucker, 2002) Research supports that the more children watch television and television food advertisements the more food/drink products requests by their parents.

Research (Aktas Arnas, 2006) supports that preschool children would be more persist in relation to older children to buy an advertised food product. When children are getting older demands and requests decrease. This can be explained by the increase in their cognitive understanding of the advertisements. (Rose, Merchant & Bakir, 2012, Weilbacher, 2003) Research suggests that children of age 8-10 years old do possess the cognitive ability to evaluate and understand the marketing messages and the persuasive intent of advertisers and marketers, but most of the times they fail to demonstrate a relationship between this understanding and their evaluations and preferences of specific branded products and advertisements.

Research (Halford et al., 2007) suggests that the types of food advertised and promoted on television on one hand and children's purchase requests that are translated into purchases and actual eating on the other, this could lead to having a negative impact on children's eating habits and weight status.

Further research is required to investigate the relationship between age, gender and food product requests during time starting from preschool age until 10-12 years old where children do possess the cognitive ability to understand (theoretically) the persuasive intent of advertisements.

The Academy of Paediatrics describes young children as "defenceless against advertising" and associates this with children's heavy exposure to television food advertising and as a result for high caloric intake and consumption.

Research (Aktas Arnas, 2006) indicates that *"the most important effect of television on children is not the effect that it will cause but the things that will prohibit. "Defenceless against advertising" as was referred earlier is because the television takes away the children's playtime"*.

Research (Reisch et al., 2013) mentions that television food advertising exposes children to an environment that provides or even eliminates opportunities for physical activity.

Previous research (Lowry et al., 2002) showed that school children that watch television more than 2 hours per day were associated with being overweight and also, they did not participated in a physical activity.

Similar research (Adachi-Mejia et al., 2007) indicated that children who take part in any type of physical activity for 4 or more days per week were significantly less likely to be overweight. Similar results were documented by (Manios et al., 2009) regarding preschool children.

Research (Jago et al., 2005) also stated that *"television viewing was positively associated with sedentary behaviour and negatively associated with physical activity"*.

Previous results suggest that reducing the time spent watching television may result in increasing physical activity.

Study's results showed that children in Cyprus are "*Always*" engage with physical activity (n=1076) (46,6%) (Chapter 4, Section H, 4.4.8.1)

Also, parents of overweight/obese children reported that almost 50% of them "*Always*" engage in sports/physical activity.

Adding to these 29% of the parents reported that the main reason that might prevent their children to engage in sports/ physical activity is the "*Complex daily routine*". This is the same answer that parents provided regarding the reason that prevents their children to have better eating habits. (Chapter 4, Section H, 4.4.8.2)

Further research is required to define the exact level of physical activity that children are in engaged the most and examine if this physical activity is capable to raise children's heart rate and improve any physical performance.

Children in Cyprus are engaged in several after school activities even from preschool age. After school activities (extra curriculum activities) in Cyprus applies to a wide range of activities that usually support child's development, like English lessons, ballet, robotics, tennis, football, art, computer lessons are some of the most popular after school activities.

Since public school recess at 13.05 every day (Monday-Friday) usually after school activities start around 15.00, and have an average duration 60 minutes each. Based on this study, children in Cyprus are "Always" engaged in after school activities (46.6%) and in addition to the study time needed for the homework (at home or study places) their free time at home is limited. (Chapter 4, Section H, 4.4.8.1)

According to the study's demographics' sample was consisted of 541 boys (49.7%) and 547 girls (50.3%) from 1<sup>st</sup> to 6<sup>th</sup> grade. Using independent t-test the correlation of the Body Mass Index of boys and girls was calculated. Analysis showed that boys have a higher BMI than girls but this difference was not statistically significant. Adding to these, analyses showed an association between overweight/obese parents and overweight/obese children. Specifically, of the children with an overweight/obese father, 9.8% are underweight, 51% have a normal weight and 39.2% are overweight/obese. Also, of the children with an overweight/obese mother, 8.9% are underweight, 49.4% have a normal weight and 41.8% are overweight/obese. (Chapter 4, Section A, 4.4.1.9)

Of the children with both parents being overweight/obese, 6.2% are underweight, 48.4% have a normal weight and 45.3% are overweight/obese.

This concludes and supports the literature review that the parent's weight status can be a predictor for child's weight status (Andriani, Chu-Yung Liao & Hsien-Wen Kuo, 2015)

Last, of the children who's neither the father nor the mother is overweight/obese, 11.6% are underweight, 63.1% have a normal weight and 25.4% are overweight/obese.

As far as the grade and BMI was an association between the children's grade (age-wise) and whether they are overweight/obese.

More specifically, among underweight children, 33.9% go to 1<sup>st</sup> grade; 21.7% go to 2<sup>nd</sup> grade; 13.9% go to 3<sup>rd</sup> grade; 11.3% go to 4<sup>th</sup> grade; 7% go to 5<sup>th</sup> grade and 12.2% go to 6<sup>th</sup> grade.

Also, among children with a normal weight, 15.6% go to 1<sup>st</sup> grade; 18.3% go to 2<sup>nd</sup> grade; 12.2% go to 3<sup>rd</sup> grade; 19.1% go to 4<sup>th</sup> grade; 16.7% go to 5<sup>th</sup> grade and 18.1% go to 6<sup>th</sup> grade.

Last, among overweight/obese children, 14.5% go to 1<sup>st</sup> grade; 17.6% go to 2<sup>nd</sup> grade; 16% go to 3<sup>rd</sup> grade; 17.9% go to 4<sup>th</sup> grade; 15.4% go to 5<sup>th</sup> grade and 18.6% go to 6<sup>th</sup> grade.

Study showed that 1 out of 3 schoolchildren is overweight/ obese. This result agrees with research. (Langeheine et al., 2018)

Research (Jago et al., 2005) states that *“obesity results from an energy imbalance whereby caloric consumption exceeds energy expenditure. Physical activity, sedentary behaviour and time spend watching television have been associated with increased adiposity”*.

Additional research (Vilaro et al., 2017) suggest that children being overweight at early age are at an elevated risk for obesity in later childhood and adulthood. Taking into consideration research findings that support that about two-thirds of obese children are possible to remain obese into adulthood and can be considered as a life-long health issue since is associated with numerous comorbidities including metabolic syndrome and cardiovascular disease.

Research (Lobstein, Dobb, 2005, Lowry et al., 2002, Epstein et al., 2008, Robinson, 1999, Altenburg, Holthe & Chinapaw, 2016, Nestle, 2006, Crespo et al., 2001, Viner, Cole, 2005) showed that there is a dose response relationship between hours of television viewing and the prevalence of overweight and reduction in television viewing can reduce or prevent obesity among youth.

Research (Robinson, 1999, Dietz, Gortmaker, 1985, Viner, Cole, 2005) mentioned that *“there are two primary mechanisms by television viewing contributes to obesity: reduced energy expenditure from displacement of physical activity and increased dietary energy intake during viewing or as a result of food advertising”*.

Literature (Halford et al., 2007, Crespo et al., 2001, Jago et al., 2005, Viner, Cole, 2005, Lowry et al., 2002) showed that since television viewing is associated with overweight and obesity, obese and overweight children may request more foods merely because of increased advert exposure.

Although the contribution of food advertising to childhood obesity is difficult to examine directly since other factors like controlling for viewing time, physical activity, parental influences, non-related sedentary time and other factors are also involved.

Research (Robinson, 1999, Epstein et al., 2008, Jago et al., 2005, Viner, Cole, 2005) showed that reducing television may be a promising approach to prevent childhood obesity.

Even though the scenario to limit the television viewing to zero is not realistic, any decrease of the television viewing will lead to increase the physical activity of children. Of course, the sedentary activity (tv viewing) can unfortunately and might be replaced by another sedentary activity.

Research (Jago et al., 2005) suggest that TV viewing was positively associated with sedentary behaviour and negatively associated with physical activity and suggests that by reducing the time spent watching television may result in increasing physical activity.

Research (Crespo et al., 2001) suggests that television viewing increases energy intake (especially for energy dense high caloric and low in nutrients foods) and at the end of the day the total caloric increase is possible to contribute to a positive energy balance. Taking this into consideration we can assume that television viewing is associated with poor overall diet quality.

Research (World, 2003) suggests that the types of food products most advertised on television do reflect a specific dietary pattern that can be associated with increased risk of obesity, furthermore, the types of the most advertised food products are not in line with recommended nutritional guidelines.

Further research is required to identify (for children in Cyprus) any associations between limits in television viewing (ban or controlled) and level of physical activity.

Research (Harris, J. L., Bargh & Brownell, 2009) shows that high rates of childhood overweight and obesity are related to reductions in physical activity and also to overconsumption of the most advertised foods that are typically high in fat and sugar. Health specialists believe that the marketing messages that are transferred through food advertisements to children is a leading cause of unhealthy eating habits and misperceptions about food and healthy nutrition.

Research (Halford, Boyland, Hughes et al., 2008, Halford et al., 2007) showed that overweight and obese children are more responsive to food promotion (television food advertising leads to significant increase in total caloric intake especially to obese children) and that television food advertising is responsible to increase prompt eating especially for energy-dense snacks.

Research (Robinson, 1999) showed that specific restrictions on television viewing among school children aged 8-9 can lead to several beneficial effects including reductions in BMI.

The “Bolton scenario” and “Delphi scenario” estimated that a weekly increase of 25 minutes of TV food advertising exposure would increase energy intake by 1,4%-3,5% (Goris et al., 2010, Veerman et al., 2009, Bolton, 1983).

Research (Kotler, Schiffman & Hanson, 2012, Lobstein, Dobb, 2005, Keller, Schulz, 2011) suggest that the advertising environment, the excessive exposure of children to food advertisements that mostly promotes energy dense low nutritious foods using several marketing techniques is having an impact on children’s eating behaviour and weight status.

Television food advertising may encourage children to prefer certain advertised food products. (Keller, Schulz, 2011, Reisch et al., 2013) Research suggests that heavy television viewing is able to cultivate children’s perceptions regarding food products and also, to develop food-related knowledge and preferences as well.

Research (Aktas Arnas, 2006) supports that *“behavioural, environmental and social factors in addition to genetic predisposition, including television viewing and food advertising environment, may also be important factors contributing to obesity among children”*.

Additional research (Dixon et al., 2007, Robinson et al., 2007) suggests that the heavy exposure to television food advertising that promotes unhealthy food choices will lead children to prefer food products like these much more and to prefer other healthy options much less.



Research (Vilaro et al., 2017) supports that boys who were more tuned to television were more likely to be obese compared to boys that were less frequent television viewers. Furthermore, every additional hour of television viewing embedded with food advertising was associated with an increase in BMI z-score, while viewing television without food advertisements showed no significant association with obesity.

According to a formulated mathematical model research suggested that obese children in the USA , from 1 in 7, up to 1 in 3 obese children, might not have been obese if they were not exposed to television food advertisements (Veerman et al., 2009).

So far, the impact of television food advertisements on children's eating habits, food requests, and attitudes towards advertisements was investigated. Parent's perspective was examined as well.

It is of great importance to investigate more specifically the responses of children towards branded products and how these impact on their preferences and knowledge.



### **5.2.3 Research Question 3: “What are the responses of children (age 6-12) towards television food advertising regarding brand logo recognition and brand logo recall ability?”**

Research (Cairns et al., 2013, Livingstone, Helsper, 2004, Hastings et al., 2003, Galst, White, 1976) suggests that *“marketing generates positive beliefs about advertised foods and influences children’s food preferences, purchase requests and consumption. Also is hard to escape the suggestion that children who may be more “tune in” to television commercials may be developing an attitude toward consumerism and product acquisition from commercial television”*.

Research (Boyland, E. J., Halford, 2013) showed that television food advertising and branded food products were recognised as important factors that have a major impact on influencing children’s food preferences and choices.

Previous research (Connor, 2006) indicated that since the majority of television food advertisements that target children are using a branding approach, this can affect the choice process of the child. Furthermore, brand loyalty can be established by an early age (around the age of 2).

The most important factors that are behind children’s food choice, food preferences and purchase decisions are the brand of the food product alongside with fun characteristics, taste, status and packaging.

Research states that *“children’s food choices are shaped by individual societal and cultural factors. Some are endogenous to the individual child, but others are environmental. These include the foods made available to children inside and outside the home and the modelling of food behaviours by parents”*. (Coon et al., 2001, Birch, 1999).

Furthermore, television food advertisements expose children to an excess number of messages related to food. Messages like these are able to shape children’s knowledge and expectations of what constitutes healthy eating habits and healthy food choices.

It is of great value to correlate these research findings with (Study Part 3) that examined a focus group of 71 children ages 6-12 regarding brand knowledge, brand recall and food knowledge. (Chapter 4, 4.9)

By examining the level of hunger before the tests was an important parameter to avoid the influence of the feeling of hunger on the tests results.(Folkvord, F. et al., 2013, Bennett, Blissett, 2014)

According to the hunger scale results and children’s testimony regarding when they had their last meal, most of the children were *“Not feeling hungry, or full, I’m feeling neutral”* something that allows the main researcher to approach a daily situation as much as possible.

According to the results of the first test (“Product Recognition Test”), (Chapter 3, section 3.5.3, 3.5.4, 3.5.5, 3.6, 3.6.1), (Chapter 4, Section 4.9.3) interesting outcomes are generated.

Purpose of the test was to evaluate the ability of children (6-12 years old) to identify 22 food products by their brand names even if the brand logo was missing.

It was hypothesised that the general exposure of children towards advertised products would be satisfactory in order for the children to identify-recognise the brand products with their brand names. This can be achieved without the appearance of the logo but with the memory recall and also to achieve a satisfactory recall ability.

According to the results children in the focus group (n=71) identified 22 food products with their brand name.

Results of the Test 1(“Product Recognition Test”), (Chapter 3, Section 3.5.3, 3.5.4, 3.5.5, 3,6, 3,6,1), (Chapter 4, Section 4.9.3) shows that the volume and persuasive content of food advertisements is one recognised link between television food advertising and study’s findings which is children’s ability to recognise branded products even without their brand name/logo on.

Overall children had demonstrated a high brand logo recognition ability towards all food products. In regards to the perfect score (100%) study’s results showed 71,2% (1113/1562) of children recognised all the brand logos and of them 76% of OW/OB (318/418). (Perfect score was calculated as follows 22 food products x 71 children= 1562) (and for the OW/OB children 22 food products x 19 children= 418). (Chapter 4, Section 4.9.3)

Similar results were shown in research (Folkvord, F. et al., 2013, Kopelman, Roberts & Adab, 2007) where children demonstrated a high brand logo recognition ability with 88% recognising at least 16 out of the 20 brand logos in the quiz and only 2.3% recognising 5 or less.

Taking into consideration the results of the first test and combine them with the results of the second test (“Brand logo recall-recognition measurement test”), (Chapter 3, Section 3.5.3, 3.5.4, 3.5.5, 3,6, 3,6,2), (Chapter 4, Section 4.9.4) valuable outcomes are generated as well.

The differentiation between this test (Test 2) and the previous (Test 1) is that in this test all the photos of all the food and drink products were not processed/photoshop so that the pictures were exactly the same as the original product including brand logo/name.

The purpose of this test was to evaluate the children’s ability to recall the food and beverage products with their brand name.

Research (Gorn, Goldberg, 1980, Borzekowski, Robinson, 2001) suggests that *“recall of a product’s brand name can be achieved with a minimal number of exposures, altering preferences, and behaviour. Also, a 30second commercial can affect the brand choices of children as young as 2 and repeated exposure has even greater impact”*.

Study findings showed that overweight/obese children did recalled 63% (246/418) of the brand logos in relation to healthy weight children 57% (654/1144). Due to small sample (52 NW vs 19 OW/OB children) it was not possible to examine statistical differences between groups. Similar results were found in research. (Halford, Boyland, Cooper et al., 2008).

The level of brand awareness noticed from Test 1 and the level of brand recall noticed from Test 2, shows the relationship between exposure to advertising and children’s responses.

Research (Robinson et al., 2007) shows that children by the age of 2, are possible to have beliefs about specific branded products. Children around the age of 2-to 6 years are able to recognize familiar brand names, packaging, logos and characters and associate them with

products. This outcome is intense especially if the brands use salient features such as bright colours, pictures and cartoon characters.

Furthermore, by middle childhood most children can name multiple brands of child's-oriented products. Finally, young's children awareness and recognition of a branded product can be translated into product requests, begging and nagging for specific product names and brands.

The food product requests and the number of branded over unbranded children's choices are influenced by both brand exposure and brand awareness. (Halford, Boyland, Cooper et al., 2008). Also, television branded food advertisements work not only on brand choice but also influence food choice in general.

(Cornwell, McAlister, 2011) Research suggests that there is an association between brand knowledge and recall ability with both highly advertised low-nutritious food and preferences for fat, sweet and salty tastes.

Further research also confirms (Harris, Jennifer L., Kalnova, 2018) the relationship between food brand knowledge and recall ability with television food advertising which as we already saw it influences children on liking the brand. Finally, television food advertisements may "frame" children's responses to foods. This means that if children enjoy and like the advertisement, they will also like the taste of the food more than if they had not first seen the particular advertisement.

Research (Boyland, E. J., Halford, 2013) suggests that children are under the exposure of heavy and extensive food marketing activity mostly through television during all stages of their development.

Television food advertising and food marketing's impact is demonstrated by children's brand logo recognition ability, and also by its influence on eating behaviour.

This test included 4 different "*Branded Chips*" and children recognised the brands. Especially 1 of the 4 branded chips was recognised by 70 out of 71 children (98,6%) and of all the OW/OB children in the focus group (n=19) (100%).

That specific brand is the one that uses the licenced character in the commercials. The other 3 branded chips were also very popular using several other marketing techniques to attract children. (Chapter 4, Section 4.9., 4.9.3)

It is also important to note that "*Chips*" is the first food product in rank in single product advertisements and the 20<sup>th</sup> in rank in supermarket advertisements. Also "*Chips*" is the most popular product during 6 out of the 15 time slots of single product advertisements documentation. (Chapter 4, 4.5, 4.5.9, 4.5.10, 4.6.3)

More specifically "*Chips*" were the most popular single advertisement during (07.00-08.00), (13.00-14.00), (15.00-16.00), (16.00-17.00), (17.00-18.00), (18.00-19.00) every day for 365 days of study. (Chapter 4, Section 4.5, 4.5.9)

Furthermore, when the frequency of food advertisements was documented "*Chips*" were the most popular single advertisement from all television channels air on not one but three days in week, more specifically on Tuesday, Friday (along with "*fast food*" advertisements) and Saturday "*Chips*" was the most single advertised product. (Chapter 4, 4.5, 4.5.8)

The brand of *“Morning cereal high in sugar”* was one very popular advertised product especially familiar with children. 48 (67,6%) out of 71 children recognised the product and 13 (69,4%) out of the 19 OW/OB children also. (Chapter 4, 4.9, 4.9.3)

In general, these advertisements (*“Morning cereal high in sugar”*) uses animation, bright colours, happy faces, cartoons having fun with children during breakfast, adventure scenery, and taste were the most used techniques. Mother feeling and looking satisfied when children eat happily breakfast with these cereals. (Chapter 5, Section 5.2, 5.2.1)

Nutrition information like *“Rich in vitamins and iron”* and statements used by mother was *“We nourish our children’s abilities”*, *“Start your child’s day with these”*, *“Children grow up only once”*, *“Choose these for better physical defence, for stronger bones and better brain function”*. (Chapter 5, Section 5.2, 5.2.1)

The brand of *“Dairy sugary milk powder”* was recognised by 53 (74,6%) of children and by 14 of the 19 (73,7%) of OW/OB children in the focus group. (Chapter 4, 4.9, 4.9.3)

For the *“Sugary cookies”* 4 items-products were selected and were 7<sup>th</sup> in rank in single product advertisements and the 13<sup>th</sup> in rank in supermarket advertisements. (Chapter 4, 4.5, 4.5.10, 4.6.3)

In general, these advertisements (*“Sugary cookies”*), included music, animation, fantasy world, adventure, taste, fun, happiness, sound of crunch in the mouth, “cool” themes and athletes, teen boys and girls, family scenery, were the themes used. (Chapter 5, Section 5.2, 5.2.1)

*“When the whole life is enclosed in this pleasure”*, *“Everybody in the family takes with them their favourite pleasure”*, *“Mini size, maxi pleasure”*, *“New package that goes everywhere”*, *“New reduced price”*, *“Even athletes choose them”* were some of the verbal and written slogans used. (Chapter 5, Section 5.2, 5.2.1)

This test included 4 different branded *“Sugary cookies”* and a high percentage of children recognised all the brands. Especially 1 of the 4 branded sugary cookies was recognised by 65 out of 71 children (91,5%) and of 18 of the OW/OB children in the focus group (n=19) (94,7%). (Chapter 4, 4.9, 4.9.3)

For the branded *“Fast food chains”*, 3 most popular fast food chains advertised on television was used for this test.

Branded *“Fast food advertisements”* were the most popular single advertisements of a specific television channel throughout the study year (Channel 08).

Also branded *“Fast food advertisements”* were the most popular aired television single advertisements at a specific time slot (12.00-13.00) of all single advertisements, and of all television channels. (Chapter 4, 4.5, 4.5.7, 4.5.9, 4.5.10, 4.6.3)

Furthermore, when the frequency of food advertisements was documented, *“Fast food”* advertisements were the second most popular single advertisement from all television channels. Also *“Fast food”* advertisements were the most single advertised food product air on three days of the week (Wednesday, Thursday) and along with chips on Friday. (Chapter 4, 4.5, 4.5.7, 4.5.8)

It was impressive that all “*Fast food chains*” brands were recognised by all the OW/OB children (100%). Also, all the 3 “*Fast food chains*” brands had almost the same level of recognition among all children (n=71) (85,9%-90,1%). (Chapter 4, 4.9, 4.9.3)

In general, these advertisements (“*Fast food chains*”), used Quantity vs price, taste and happy feeling, discounts for take away and offers if you order more or bigger size. “*Fine day*”, “*Fulfilling pleasure*”, “*Its finger licking good*”, “*From our place to yours*” were some of the promotional quotes used for “*Fast food*” ads. Statements- slogans were verbal and written as well. (Chapter 5, Section 5.2, 5.2.1)

Another important finding was the brand of “*Chocolate*” was recognised by all the OW/OB children (100%). Also 65 out of 71 children (95,8%) recognised the brand of the “*Chocolate*” product. (Chapter 4, 4.9, 4.9.3)

In general, these advertisements (“*Chocolates*”), used animations, songs (some of them known for more than 20 years in Cyprus), family scenery, child tricking parent, turning a bad situation into a good one when eating a chocolate, fun and happy feelings, sounds of chocolate breaking in the mouth, taste that brings back happy memories and nostalgia, children’s adventure themes and competitiveness over a chocolate. (Chapter 5, Section 5.2, 5.2.1)

“*Who stole my chocolate*”, “*Chocolate is for everyone all the times, anywhere*”, “*Have a break have a chocolate*”, “*The sweetest piece of your life*”, “*Big temptation*”. “*Share them with your friends*”, “*Chocolate drops of pleasure*” are some of the promotional slogans used. Slogans were verbal and written as well. Some chocolates were promoted in bigger boxes with extra free pieces and in large quantities suitable for treats like birthdays. (Chapter 5, Section 5.2, 5.2.1)

Branded “*Chocolate*” advertisements were the most popular single advertisement of a specific television channel throughout the study year (Channel 05). Also “*Chocolate*” advertisements were the most popular aired television single advertisements at two specific time slots (08.00-09.00) and (10.00-11.00) of all single advertisements, and of all television channels. (Chapter 4, 4.5, 4.5.7, 4.5.8, 4.5.10)

Furthermore, when the frequency of food advertisements was documented “*Chocolate*” advertisements were the third most popular single advertisement from all television channels and were the 10<sup>th</sup> most popular supermarket advertisements. (Chapter 4, 4.5, 4.5.10, 4.6.3)

Furthermore, the brand of “*Sugary products*” was recognised by 45 of 71 children (63,4%) and of 13 of the 19 OW/OB children (68,4%). (Chapter 4, 4.9, 4.9.3)

Adding to these, the brand of “*Dairy sugary milk beverage*” was recognised by all the OW/OB (100%) and by 56 of 71 of all children (78,9%). (Chapter 4, 4.9, 4.9.3)

When the frequency of food advertisements was documented “*Dairy sugary milk beverage*” advertisements were in 22<sup>nd</sup> rank of 39 single food advertisements. (Chapter 4, 4.5, 4.5.10)

Another important finding is that the brand of “*Cereal high in fibre*” was the only product that was recognised the less. Only 10 out of 71 children and only 6 out of 19 OW/OB children recognised the brand. (Chapter 4, 4.9, 4.9.3)

It is important to note that branded advertisements like *“Cereal high in fibre”* involved only adults, plain scenery without fun characteristics and playful music and focus their messages on constipation, good taste and calories. (Chapter 5, Section 5.2, 5.2.1)

*“Rich in fibres that regulate the function of the digestive system”, “Let’s try this to feel the difference”, “Would you trust your figure in cereal that contain more than 15% of sugar, or the real light cereal with 0% added sugar and 0% added fat”*. These statements were used as verbal and written as well. (Chapter 5, Section 5.2, 5.2.1)

One possible explanation for this result is that these advertisements were not as much attractive to children because of the lack of features, animations and interesting themes as the previous products.

Another expected result was the brand of *“Processed meat for children”* that was recognised by 55 out of 71 children (77,5) and by 16 of 19 OW/OB children (84,2%). (Chapter 4, 4.9, 4.9.3)

It is worth to mention that this advertisement was as parents reported the commercial jingle their children sang the most (food commercial jingle) (28%), (Chapter 4, Section 4.4, 4.4.6) followed by popular soft drink (35%).

It is important to note once again that branded *“Processed meat for kid’s”* product is very popular advertisement especially during kids- cartoon commercials and has the longest duration (27,7seconds) from all the TV food advertisements.

Also, the branded *“Processed meat for kid’s”* product is the most promoted single advertisement of a particular television channel that broadcasts several kids-cartoon programs. *“Soft drink”* commercial rank 3<sup>rd</sup> in popularity from all the food/drink single product advertisements and is the most popular advertisement for not one but for two television channels throughout the study year. (Chapter 4, 4.5, 4.5.7, 4.5.10)

In *“Processed meat for children”* ads, superheroes and cartoon princess were the main characteristics. Superheroes especially designed for boys with action, excitement and stickers giveaway were part of the commercials.

Graphics were blue for boys’ and pink for girls’ ads. Cartoon princesses with pink background, fairy tale music was used. Statements used, *“Get in to the magical world of taste with superhero/ princess ham”, “Made with love and care for our little superheroes/ princesses”, “The magical world of taste”*. Both boys and girls were part of these ads eating and enjoying these products saying with a smile *“Made for me”*.

Other cartoon characters were used for other processed meat products and statements used were *“Have fun in the magical world of taste with these delicious products made with love and care for our little friends”*. (Chapter 5, Section 5.2, 5.2.1)

*“Processed meat for children”* advertisements were the most popular single advertisement of a specific television channel throughout the study year (Channel 09), (Chapter 4, 4.5, 4.5.7).

Furthermore, when the frequency of food advertisements was documented *“Processed meat for children”* advertisements were 13<sup>th</sup> most popular single advertisement from all television channels. (Chapter 4, 4.5, 4.5.10).

The brand for “*Dairy sugary yogurt dessert*” was recognised by 65 children (91,5%) and by 18 of the 19 OW/OB children (94,7%). (Chapter 4, 4.9, 4.9.3)

Is important to note that the brand “*Dairy sugary yogurt dessert*” was the most popular advertisement of a particular channel (Channel 02) and also was the most advertised product in a particular time zone (09.00am-10.11am) of all single advertisements of all channels. (Chapter 4, 4.5, 4.5.9).

The brand for “*Soft drink*” was recognised by 67 of 71 children (94,4%) and by all OW/OB children (100%). (Chapter 4, 4.9, 4.9.3)

It is important to note that for the brand “*Soft drinks*” the use of “*Refresh your social life*”, or “*Great taste, no calories*”, the sound of the soft drink when the tin opens, feelings of happiness, free spirit, socialization and confidence were used. (Chapter 5, Section 5.2, 5.2.1)

“*Soft drinks*” advertisements were the most popular single advertisement of a specific television channel throughout the study year (Channel:04).

Also “*Soft drinks*” advertisements were the most popular aired television single advertisements at two specific time slots (19.00-20.00) and (20.00-21.00) of all single advertisements, and of all television channels. (Chapter 5, Section 5.2, 5.2.1)

Furthermore, when the frequency of food advertisements was documented “*Soft drinks*” advertisements were the fourth most popular single advertisement from all television channels. (Chapter 4, 4.5, 4.5.7, 4.5.9, 4.5.10).

Also, results from (Study Part 1) showed that the second commercial jingle children sang the most (food commercial jingle) was a branded popular soft drink (35%). (Chapter 4, 4.4, 4.4.6).

The brand for “*Sugary fruit drink*” was recognised by 67 out of 71 children (94.4%) and by 18 out of 19 OW/OB children (94,7%) (Chapter 4, 4.9, 4.9.3).

Furthermore, when the frequency of food advertisements was documented “*Sugary fruit drink*” advertisements ranked in 19<sup>th</sup> place of 39 categories of single advertisement from all television channels. (Chapter 4, 4.5, 4.5.10).

Finally, the brand for “Non-dairy milk” was recognised by only by 18 out of 71 children (25,4%) and by 5 out of the 19 OW/OB children (26,3%) (Chapter 4, 4.9, 4.9.3).

41% of OW/OB children recognised all 22 logos. Although the logo that was recognised by almost all children 98,6% was “*Chips*”. (Chapter 4, 4.9, 4.9.3)

As for the association between the promotion of advertised products and weekdays, it has been found that on Tuesdays “*Chips*” (6.5%) are promoted the most, ranking 1<sup>st</sup> in children’s’ brand logo recognition (Test 1, 98.6%).

Furthermore, the data show that on Wednesdays “*Fast Food Chains*” (6.9%) are promoted the most; on Thursdays, “*Fast Food Chains*” (6.5%); on Fridays, “*Chips*” και “*Fast Food Chains*” (5.7%); on Saturdays, “*Chips*” (10.7%) and on Sundays, “*Chocolate*” and “*Chips*” (10.9%).



All the above comply with the brand logo recognition test of the relevant products by children in Test 1, as “*Fast Food Chains*” rank 3<sup>rd</sup> (93%) in the Test 1 ranking and “*Chocolate*” ranks 2<sup>nd</sup> (95.8%).

As for the association between advertised products and hours (of advertisements), it has been found that between 7:00-13:00, when children are at school, “*Chips*” (17.2%), “*Chocolate*” (20.8%), “*Dairy Sugary Yogurt Dessert*” (10.1%), “*Juice*” (8.6%) and “*Fast Food Chains*” (9.9%) are promoted the most.

During other hours of the day, between 13:00-21:30, “*Chips*” (44.8%), “*HFSS Condiment*” - (High Fat Sugar Salt) (7.5%), “*Soft Drinks*” (18.4%) and “*Processed Meat*” (6.4%) were promoted the most.

Again, there is to a great extent a compliance between “*Chips*” promotion and recognition (1<sup>st</sup> place, 98,6%) and “*Soft drinks*” that rank 5<sup>th</sup> (94.4%).

These results that agrees with research which show that OW/OB children have greater recognition ability/recall and are more responsive to advertised products than healthy weight children. (Halford et al., 2007, Halford, Boyland, Hughes et al., 2008, Halford et al., 2004, Hastings et al., 2003, Halford, Boyland, Cooper et al., 2008, Boyland, E. J., Harrold, Kirkham, Corker et al., 2011, Gatou et al., 2016, Gorn, Goldberg, 1980, Kopelman, Roberts & Adab, 2007).

The high brand logo recognition ability that children demonstrated through the Test 1 in the study, agrees with research results and provides important evidence that children in Cyprus are very aware of the food promotion by the food industry. These findings demonstrate that food promotion has an influence on young children in terms of brand awareness.

Although study demonstrated a high brand logo recognition ability, it was not possible to demonstrate any significance between brand logo recognition ability and gender or age due to the small group number.

Study findings showed that OW/OB children did recognised 76% (318/418) of the logos in relation to healthy weight HW children 71.4% (817/1144).

Due to small sample (52 NW vs 19 OW/OB) it was not possible to examine statistical differences between groups (Chapter 4, 4.9, 4.9.3). On the other hand, research showed that in similar occasions (Halford et al., 2004) the difference between OW/OB children and healthy weight children was significant.

Research (Halford et al., 2007) suggests that recognition of food advertisements is correlated with body mass index.

When the test was finished (Test 1) the main researcher asked children what is the first place that comes to their mind in order to get/obtain the above food items and most popular answer was “*I see them on TV*” (73,2%) by 52 children, followed by “*At the supermarket*” (18%) by 13 children and “*We have them at home*” (8,4%) by 6 children.

Impressive were the results of the OW/OB children. The most popular answer by OW/OB children was “*At the supermarket*” (47,3%) by 9 children, followed by “*I see them on the TV*” (31,5%) by 6 children and “*We have them at home*” (21%) by 4 children. (Chapter 4, 4.9, 4.9.3, 4.9.3.1)

Food advertising in Cyprus promotes brand awareness to children. This positive association between promotion and logo recognition can alter beliefs and attitudes towards specific foods or foods in general.

This test's results add to existing body of evidence that the persuasive intent of television food advertising has an impact on children's brand logo recognition and recall ability.

The study used children's brand logo recognition and recall ability as a proxy measure of children's overall receptivity to food advertisements. Similar approach was used in research (Folkvord, F. et al., 2013) with similar results.

Taking into consideration the results of the first test and combine them with the results of the second test ("Brand logo recall-recognition measurement test"), (Chapter 3, Section 3.5.3, 3.5.4, 3.5.5, 3.7), (Chapter 4, 4.9, 4.9.4) valuable outcomes are generated as well.

The differentiation between this test (Test 2) and the previous (Test 1) is that in this test all the photos of all the food and drink products were not processed by Photoshop so that the pictures were exactly the same as the original product including brand logo/name.

The purpose of this test was to evaluate the children's ability to recall the food and drink products only with their brand name.

Research (Gorn, Goldberg, 1980, Borzekowski, Robinson, 2001, Sarver, Howland & McManus, 1976) suggests that recall of a product's brand name can be achieved with a minimal number of exposures, altering preferences, and behaviour.

Also, a 30second commercial can affect the brand choices of children as young as 2 and repeated exposure has even greater impact.

Study findings showed that OW/OB children did recalled 63% (246/418) of the brand logos in relation to NW children 57% (654/1144). (Chapter 4, 4.9, 4.9.4)

Due to small sample (52 NW vs 19 OW/OB) it was not possible to examine statistical differences between groups. Similar results were found in research. (Halford, Boyland, Cooper et al., 2008).

The level of brand awareness noticed from Test 1 and the level of brand recall noticed in Test 2, shows the relationship between exposure to advertising and children's responses.

Results from both tests (Test 1 and Test 2) shows that both boys and girls at age 6 recognised (an average 13-(59%) vs 15-(68%) out of 22) and recalled (an average 7-(32%) vs 8-(36%) out of 22) almost the same number of food products. (Chapter 4, Section 4.9, 4.9.3, 4.9.4)

At age 7 both boys and girls recognised (an average 14-(63%) vs 13-(59%) out of 22) and recalled (an average 9-(41%) out of 22) almost the same number of food products.

At age 8 both boys and girls recognised (an average 15-(68%) vs 14-(63%) out of 22) and recalled (an average 10-(45%) vs 11-(50%) out of 22) almost the same number of food products.

At age 9 both boys and girls recognised (an average 13-(59%) vs 10-(45%) out of 22) and recalled (an average 8-(36%) vs 15-(68%) out of 22) almost the same number of food products.

At age 10 both boys and girls recognised (an average 17-(77%) vs 19-(86%) out of 22) and recalled (an average 14-(63%) vs 17-(77%) out of 22) almost the same number of food products.

At age 11-12 both boys and girls recognised (an average 19-(86%) out of 22) and recalled (an average 18-(82%) out of 22) almost the same number of food products.

The previous results show that both boys and girls did demonstrate a very good knowledge regarding the branded products and also children have demonstrated greater recall ability as getting older.

Due to small sample it was not possible to examine statistical differences between groups. On the other side in research (Kopelman, Roberts & Adab, 2007) significant differences were identified between boys and girls with higher brand logo recognition among girls.

Also, research (Chernin, 2008) shows that there is minimal evidence that gender moderates the effects of marketing. On the other hand, research (Anschutz, Engels & Van Strien, 2009) suggests that gender moderated the relation between commercial exposure and food intake. Although food intake was not one of the objectives of this study.

Brand awareness and brand exposure influences choice and number of branded over unbranded food products requests (Halford, Boyland, Cooper et al., 2008). Also, television branded food advertisements do not work only on brand choice but also influence food choice in general.

Research (Cornwell, McAlister, 2011) indicates that brand knowledge and recall ability is associated with preferences for fat, sweet and salty tastes. Also, brand knowledge and recall for highly advertised unhealthy food products is related to heavy television marketing.

Research suggests (Galst, White, 1976) that children who watched more commercial television at home made more purchase demands at the supermarket. In 2006 research (Aktas Arnas) research showed that there was no correlation between the amount of time that children spent watching television and requesting a purchase while shopping.

According to the results, one of the "*Chips*" (the most popular) was recalled by 66 children (93%) and by 18 out of 19 OW/OB children (94,7%). (Chapter 4, 4.9, 4.9.4) Also, the other 3 "*Chips*" were recalled by children but with lower percentages.

"*Cereal high in sugar*" was recalled by 31 children (43,7%) and 10 of the OW/OB (52,6%).

The "*Dairy sugary milk powder*" was recalled by 40 children (56,3%) and 11 of the OW/OB (57,9%).

Of the "*Sugary cookies*" one of them was recalled by 51 children (71,8%) a 14 of the OW/OB (73,7%). Also, the other 3 "*Sugary cookies*" were recalled by children but with slightly lower percentages.

All three "*Fast food chains*" were recalled by almost all children with highest recall 84,5% and of the OW/OB (94,7%).

The "*Chocolate*" was recalled by 51 children (71,8%) and 16 of the OW/OB children (84,2%).

The "*Sugary products*" was recalled by 41 children (57,7%) and 7 of the OW/OB children (36,8%).

The “*Dairy sugary milk beverage*” was recalled by 66 children (93%) and 17 of the OW/OB children (89,5%).

The “*Cereal high in fibre*” was recalled by 10 children and 4 of the OW/OB children (21,1%).

The “*Processed meat for kids*” was recalled by 51 children (71,8%) and by 17 of the OW/OB children (89,5%).

The “*Dairy sugary yogurt dessert*” was recalled by 26 children (36,6%) and by 5 of the OW/OB children (26,3%).

The “*Soft drink*” was recalled by 56 (78,9%) and by 15 of the OW/OB children (78,9%).

The “*Sugary fruit drink*” was recalled by 49 children (69%) and by 13 of the OW/OB children (68,4%). (Chapter 4, 4.9, 4.9.4)



#### **5.2.4 Research Question 4: “What are the responses-preferences of children (age 6-12) towards Unbranded food products and Branded vs Unbranded products?”**

Adding to these, after Test 1, (Brand logo recognition test), Test 2 (Brand logo recall-measurement test), and instant food preference for intake (Chapter 4, 4.9.3, 4.9.4, 4.9.4.1) it would be of great interest to see the responses-preferences of children when they had to choose between pairs of unbranded food products (Test 3), (Chapter 4, 4.9, 4.9.5) and between pairs of branded and unbranded food products (Test 4) (Chapter 4, 4.9, 4.9.6).

At first (Test 3) it was hypothesised that children’s exposure to television food advertisements in their daily life would lead preferences towards “*Relatively Unhealthy Unbranded Food Products*” than “*Relatively Healthy Unbranded Food Products*”.

The preference was continued with Test 4 where it was hypothesised that exposure to advertised products would lead children to select more branded than unbranded food products.

Taking a step further, the results of the next test, Test 3 (Food Preference Test, Chapter 3, Section 3.5.3, 3.5.4, 3.5.5, 3.8) presented valuable responses from children. Details regarding the test are explained in (Chapter 4, 4.9, 4.9.5). The purpose of this test was to access the children’s food and drink preferences for unbranded food products.

Results showed that when the children had the chance to select between unbranded pairs of food, they preferred spontaneously what they liked at that moment the most.

Overall, 41% of normal weight (NW) children preferred the “*Relatively healthy food products*” and 33% of OW/OB children as well. Also 58% of healthy weight children preferred the “*Relatively Unhealthy Food Products*” and 66% of OW/OB children as well. Results showed that OW/OB children had chosen more “*Relatively Unhealthy Food Products*” and less “*Relatively Healthy Food Products*” rather than NW children that had chosen more “*Relatively Healthy Food Products*” and less “*Relatively Unhealthy Food Products*”. Due to small sample (52 NW vs 19 OW/OB children) was not possible to have statistically significant results. (Chapter 4, 4.9, 4.9.5)

More specifically, girls of age 6 preferred an average 6-(60%) out of 10 of the “Relatively Healthy” food products in relation to boys that preferred an average 5-(50%).

Girls of age 7 preferred an average 4-(40%) out of 10 of the “Relatively Healthy” food products in relation to boys that preferred an average 3-(30%).

Girls of age 8 preferred an average 8-(80%) out of 10 of the “Relatively Healthy” food products in relation to boys that preferred an average 5-(50%).

Girls and boys of age 9 preferred an average 7-(70%) out of 10 of the “Relatively Healthy” food products.

Girls of age 10 preferred an average 8-(80%) out of 10 of the “Relatively Healthy” food products in relation to boys that preferred an average 7-(70%).

Girls of age 11-12 preferred an average 7-(80%) out of 10 of the “Relatively Healthy” food products in relation to boys that preferred an average 6-(60%).

These results agree with other previous research (Hare-Bruun et al., 2011) that less healthy food preferences were observed among boys.

Research (Kopelman, Roberts & Adab, 2007, Gwozdz, Reisch & IDEFICS Consortium, 2011) showed that although overall children demonstrated a good knowledge of which foods were “Relatively Healthy” or “Relatively Unhealthy” boys showed a definite preference for the less healthy options out of the food pairs. Study’s results agreed with research findings.

According to research (Dixon et al., 2007) airing “Relatively Healthy Food Products” advertisements alongside with “Relatively Unhealthy Food Products” will not lead to a reduction of the impact of the “Relatively Unhealthy Food Product” advertisements.

Furthermore, research suggests that increasing the amount of healthy food advertisements may serve to promote the appeal of these foods to children. The presence of junk food advertisements alongside healthy food advertisements will not weaken the healthy food advertisements impact. However, there is some evidence that when healthy food ads were aired with junk food ads, children showed more negative attitudes toward healthy food products, whereas no such change was evident when the same number of healthy foods was aired without accompanying junk food ads (Dixon et al., 2007).

Finally, research indicated that airing healthy food advertisements alongside junk food advertisements did not decrease the impact of the junk food ads in promoting unhealthy foods (Dixon et al., 2007).

Taking into consideration the heavy advertisements of sugary, unhealthy food products, HFSS (Study Part 2), and the results of Test 1,2,3 it is shown that this heavy exposure can lead according to (Harrison, Marske, 2005) to generalization of preferences. This suggests that the exposure of sugary, HFSS products might increase the likelihood of non-advertised sugared HFSS food products. Study’s results agree with this theory since this test used only unbranded food products.

The findings of this test indicate that although television food advertising uses heavy branded food promotions there will be an influence on young children in terms not only brand awareness but also in spillover effect. According to research (Folkvord, F. et al., 2013) *“at spillover effect there is a transfer of liking or intake of specific energy-dense branded food towards different energy-dense brands or unbranded products that are available”*.

More specifically between the pair *“Fruit juice in a glass and Orange fruit in plate”* children preferred the first (50 children-70,4% and of them 16 OW/OB) in relation to *“Orange fruit”* that was selected by 21 children and of them 3 OW/OB. (Chapter 4, 4.9, 4.9.5)

Interesting results were also showed in the second pair *“Water in glass vs Coca Cola in glass”*. 58 Children 81,7% (of which 15 OW/OB) preferred *“Coca Cola”* vs 13 children (of which 4 OW/OB) that preferred *“Water”*. (Chapter 4, 4.9, 4.9.5)

The *“Strawberry fruit in bowl”* was preferred by 50 children 70,4% (11OW/OB) vs *“Fruity strawberry flavored lollipop”* (21 children-8OW/OB). (Chapter 4, 4.9, 4.9.5)

When children had to point their preference between *“Whole grain breakfast cereal and Sugary breakfast cereal”* children preferred most the second. More specifically 45 children (63,4%)

(11OW/OB) preferred the “*Sugary breakfast cereal*” vs 26 children (36,6%) (8 OW/OB) that preferred the “*Whole grain breakfast cereal*”. (Chapter 4, 4.9, 4.9.5)

Preferences between “*Cereal bar vs Milk chocolate bar*” were almost equal 36 vs 35 children, 10 OW/OB vs 9 OW/OB. (Chapter 4, 4.9, 4.9.5)

Similar were the results between “*Ham, cheese, tomato sandwich vs Ham, cheese and tomato pizza*”, (36 vs 35 children, 7 vs 12 OW/OB). (Chapter 4, 4.9, 4.9.5)

When children showed their preference between “*Jacket potato vs French fries*” results showed that 50 children preferred the “*French fries*” (18 OW/OB 94,7%) vs 21 children (1 OW/OB 5,3%) that preferred the “*Jacket potato*”. (Chapter 4, 4.9, 4.9.5)

Preferences between “*Roast chicken vs Chicken nuggets*” showed that children preferred “*Chicken nuggets*” (43 children and 14 of them OW/OB) vs “*Roast chicken*” (28 children and 5 of them OW/OB). (Chapter 4, 4.9, 4.9.5)

When children had to point their preferences between “*Yogurt with fresh strawberries vs Strawberry flavored yogurt*” 39 children (10 of them OW/OB) preferred the “*Strawberry flavored yogurt*” vs 32 children (9 of them OW/OB) who preferred the “*Yogurt with fresh strawberries*”. (Chapter 4, 4.9, 4.9.5)

Finally, 52 children (13 of them OW/OB) preferred the “*Pasta carbonara*” vs 19 children (6 of them OW/OB) who preferred the “*Pasta napolitana*”. (Chapter 4, 4.9, 4.9.5)

Boys had a higher mean in the selection of “*Coca cola*” vs “*Water*” ( $\bar{x} = .28$ ,  $SD = .46$ ) than girls ( $\bar{x} = .06$ ,  $SD = .25$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .05$  ( $t = -2.584$ ,  $df = 60.42$ ,  $p = .01$ ).

Boys had a higher mean in the selection of “*Fruity strawberry flavoured lollipop*” vs “*Strawberry fruit*” ( $\bar{x} = .41$ ,  $SD = .50$ ) than girls ( $\bar{x} = .16$ ,  $SD = .37$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .05$  ( $t = -2.465$ ,  $df = 68.342$ ,  $p = .02$ ).

Boys had a higher mean in the selection of “*Sugary breakfast cereal*” vs “*Whole grain breakfast cereal*” ( $\bar{x} = .49$ ,  $SD = .51$ ) than girls ( $\bar{x} = .22$ ,  $SD = .42$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .05$  ( $t = -2.442$ ,  $df = 68.987$ ,  $p = .02$ ).

Boys had a higher mean in the selection of “*French fries*” vs “*Jacket potato*” ( $\bar{x} = .82$ ,  $SD = .39$ ) than girls ( $\bar{x} = .56$ ,  $SD = .50$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .05$  ( $t = -2.374$ ,  $df = 57.481$ ,  $p = .02$ ).

Boys had a higher mean in the selection of “*French fries*” as a healthier option than “*Jacket potato*” ( $\bar{x} = .13$ ,  $SD = .34$ ) than girls ( $\bar{x} = .00$ ,  $SD = .00$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .05$  ( $t = -2.364$ ,  $df = 38$ ,  $p = .02$ ).

As for finding associations between students’ answers in tests 3, 4 and 5 and their grades (1<sup>st</sup> to 6<sup>th</sup>), the use of Chi Square test has not indicated statistically significant associations.

Also, according to the results, boys show a higher tendency towards “*Relatively Unhealthy Food Products*” than girls. Research agrees with these findings (Kopelman, Roberts & Adab, 2007, Reisch et al., 2013)

Having in mind the results of Test 1, Test 2 and Test 3, the impact of television food advertising on children’s brand awareness, recall ability and food preference of unbranded products, it is of great value to analyze the effect of “Branded vs Unbranded food products” (Test 4) (Food Preferences using Branded and Unbranded Products) (Chapter 3 Section 3.5.3, 3.5.4, 3.5.5, 3.9), (Chapter 4, 4.9, 4.9.6).

The purpose of this test was to evaluate the power of the brand and the food preferences of each child. According to research (Harris, Jennifer L., Kalnova, 2018) television food advertisements viewing is related to brand awareness on young children and it might also have direct effects on brand attitude as well.

Research (Robinson et al., 2007, Roberto et al., 2010, Chernin, 2008) has shown that branding and more specifically, branding that involves marketing techniques can lead children to believe that these foods taste better than the same foods presented in plain packaging.

According to this theory it is possible to assume that children’s exposure to television food advertising may also lead to the development of positive feelings and attitudes of brands in the minds of young children that could help explain these preferences towards alike but unbranded products.

Furthermore, research (Harris, Jennifer L., Kalnova, 2018, Boyland, Emma J. et al., 2016, Kelly et al., 2010) suggest that the children’s exposure to television food advertising and also the exposure to other brand food experiences will develop positive emotional associations with branded foods.

Research (Halford, Boyland, Hughes et al., 2008, Boyland, E. J., Harrold, Kirkham, Corker et al., 2011) shows that since television food advertising promotes energy-dense, high-caloric, poor nutrient foods is able to develop an obesogenic food preference response not only in overweight and obese children but also in normal weight children. Children that are high-television viewers are also more vulnerable to the effects of television food advertising, showing an increased preference for branded foods compared to children who watch less television.

Research (Goldberg, Gorn & Gibson, 1978) suggests that children’s food preferences tend to reflect their exposure experience. Also, “*exposure to energy-dense food products can shape child’s preferences on the “mere exposure model” of preference formation. The “mere exposure model” assumes that frequent exposure to a stimulus (including a food product), by making the stimulus more familiar, can lead to increased liking for it*”. Given the number and content of television food advertisements directed to children (Study Part 1) this mere exposure model was posited to be part of the influence process leading children to prefer energy-dense foods.

Research (Reisch, Gwozdz et al. 2013) states that “*the impact of television food advertising is influenced by 3 variables: children’s access to media, their penchants for TV programmes that carry more or less advertising and their actual exposure. Exposure to advertising affects children’s food knowledge and preferences- and accepting that advertising has the power to*



*shape preferences, food knowledge should be lower and preferences should be unhealthier when exposure is high. Such high exposure has consequences for both diet and weight status”.*

Study’s results overall show that children in the focus group selected more branded than unbranded food products. More specifically 71,3% of NW children preferred the “Branded Products” and 84% of OW/OB children preferred the “Branded Products” as well. On the other hand, 28,6% of NW children preferred the “Unbranded Products” and 15% of OW/OB children preferred the “Unbranded Products” as well. (Chapter 4, 4.9, 4.9.6)

Overall results show that children and especially the OW/OB preferred more branded than unbranded food products. Similar results were found in research (Boyland, E. J., Harrold, Kirkham, Corker et al., 2011, Halford, Boyland, Cooper et al., 2008, Gorn, Goldberg, 1982, Gorn, Goldberg, 1980).

This suggests that exposure to food advertisements may temporarily produce an “obesogenic” food preference response in NW children, although it is not known how long this behavioural modification lasts.

Furthermore research shows (Borzekowski, Robinson, 2001) that children who are exposed to television food advertisements prefer the advertising products significantly more often than the children who are not exposed so much to television food advertisements.

Adding to these, when fast food restaurants use healthy foods to promote unhealthy children’s fast food meal options, this approach has been referred to as a “health halo” effect. According to research (Whalen et al., 2018) *“the health halo effect involves cognitive bias where an explicit claim about single health quality (e.g. , “contains essential nutrients” , or an implicit reference within the marketing (e.g. , physical activity depiction) gives rise to more positive impression of other, non-claimed qualities, indicating that a less-healthy food may be considered as healthy based on package claims, or advertising claims or even the way is served”.*

Mere exposure according to Albert Harrison (1977) assumes that *“appropriately designed program-length TV material can be more effective in influencing children’s eating habits than the commercials they normally see”.*

This test (Test 4) included not only branded and unbranded food products. Three *“Fake Branded and Unbranded food products”* were developed especially for this test. (Chapter 4, 4.9, 4.9.6)

These products (*“McDonald’s Baby Carrots”, “McDonald’s Apple Slices”*) do not exist in the Cyprus market and this makes them unfamiliar to children.

These *“Fake Products”* were developed in order to examine the broader beyond-brand effect that young children experience through the brand products. These *“Fake Products”* were developed to investigate whether the children’s preferences would be influenced by branding especially from a heavily marketed source.

In this case, two marketed brands were selected in order to develop the 3 “Fake Products” of two brands. The first brand used was the Mc Donald’s. Taking into consideration the results of Study Part 1, and 2, and Study Part 3 (Test 1 and 2) branded “Fast Food advertisements” were

the most popular single advertisements of a specific television channel throughout the study year (Channel:08). Also branded "*Fast Food advertisements*" were the most popular aired television single advertisements at a specific time slot (12.00-13.00) of all single advertisements, and of all television channels. (Chapter 4, 4.5, 4.5.7, 4.5.9)

Study Part 1 and 2 showed that when the frequency of food advertisements was documented, "*Fast Food advertisements*" were the second most popular single advertisement from all television channels. Also "*Fast Food advertisements*" were the most single advertised food product air on three days of the week (Wednesday, Thursday) and along with chips on Friday. (Chapter 4, 4.5.7, 4.5.8, 4.5.9, 4.5.10)

In Study Part 3 (Test 1 and 2) all "*Fast Food chains*" brands were recognised by all the OW/OB children (100%). Also, all the 3 "*Fast Food chains*" brands had almost the same level of recognition among all children (n=71) (85,9%-90,1%). All three "*Fast Food chains*" were recalled by almost all children with highest recall 84,5% and of the OW/OB (94,7%) (Chapter 4, 4.9, 4.9.3, 4.9.4). This brand was used in order to develop two fake products. The "*Mc Donald's Baby Carrots*" and the "*Mc Donald's Fresh Apple Slices*". (Chapter 4, 4.9, 4.9.3, 4.9.4)

The second brand used was the "*Junior Yogurt*". In Study Part 1 is important to note that the product-brand "*Dairy sugary yogurt dessert*" was the most popular advertisement of a particular channel (Channel:02) and also was the most advertised product in a particular time zone (09.00am-10.11am) of all single advertisements of all channels. (Chapter 4, 4.5.7, 4.5.8, 4.5.9, 4.5.10)

In Study Part 3 (Test 1 and 2) the brand for "*Dairy sugary yogurt dessert*" was recognised by 65 children (91,5%) and by 18 of the 19 OW/OB children (94,7%). (Chapter 4, 4.9, 4.9.3, 4.9.4)

This brand was used in order to develop one fake product, the "*Junior yogurt with fresh fruit on top*". These two brands were chosen and was expected that most of the children to be familiar with the brands because of the intense television marketing.

Results of this test (Test 4) showed that the majority of the children had chosen the "*Fake Branded products*" vs the "*Fake Unbranded products*". Children preferred the branded products even if it wasn't in their knowledge that these were fake products that didn't exist in the Cyprus market. This result can lead to an impressive explanation that children's preference was influenced by the brand name. Possible positive experiences with the "original brand" in general might influenced this result as well.

Between two fake products, the "*Mc Donald's Baby Carrots vs Unbranded Baby Carrots*" 52 children (73,2%) (13 of them OW/OB 68,4%) preferred the "*Mc Donald's Baby Carrots*" vs 19 children (26,8%) (6 of them OW/OB 31,6%) who preferred the "*Unbranded Baby Carrots*". (Chapter 4, 4.9, 4.9.6)

Between the third pair of fake products the "*Branded Mc Donald's Fresh Apple Slices vs Unbranded Fresh Apple Slices*". 50 children (70,4%) (16 of them OW/OB 84,2%) preferred the "*Branded Mc Donald's Fresh Apple Slices*" vs 21 children (29,6%) (3 of them OW/OB 15,8%) that preferred the "*Unbranded Fresh Apple Slices*". (Chapter 4, 4.9, 4.9.6)

Between two fake products, the "*Junior Yogurt with fresh fruit on top*" vs "*Unbranded Yogurt with fruit on top*", 54 children (76,1%) (17 of them OW/OB 89,5%), preferred the "*Junior*

*Yogurt with fresh fruit on top*” vs 17 children (23,9%) (2 of them OW/OB 10,5%) who preferred the *“Unbranded Yogurt with fresh fruit on top”*. (Chapter 4, 4.9, 4.9.6)

Children preferred the products that thought they were from *“Mc Donald’s”* or *“Junior”* demonstrating that brand identity can influence young children’s preferences and perceptions since these products are not marketed in Cyprus and are not even available at stores.

Furthermore, the preference indicates the familiarity with the brands as well and results of this test agrees with previous research on this exact topic (Robinson et al., 2007).

As research (Robinson et al., 2007) indicates *“we cannot test how each individual direct or indirect exposure to these brand’s marketing, packaging etc., influences a child’s perceptions but accepted these as a complex whole of both independent and interacting influences on emotions and perceptions about the brand”*.

Findings of this test agrees with research (Boyland, E. J., Harrold, Kirkham, Corker et al., 2011, Hastings et al., 2003, Halford et al., 2007) that the effects of food advertising on children’s preferences occur at both a brand and “beyond-brand” categorical level.

For example, the serving of a fast food meal along with salad (or baby carrots, or apple slices) might change perceptions regarding the healthfulness of the whole meal. Once again boys show higher tendency to be affected by brand in relation to girls.

Furthermore, when fast food restaurants leverage healthy foods to promote unhealthy children’s fast food meal options, this approach has been referred to as a “health halo” effect.

When children had to point their preference between *“Mc Donald’s French fries”* vs *Unbranded French fries*”, 50 children (70,4%) (18 of them OW/OB 94,7%) preferred the branded *“Mc Donald’s French fries”* vs 21 children (29,6%) (1 of them OW/OB 5,3%) who preferred the *“Unbranded French fries”*. (Chapter 4, 4.9, 4.9.6)

Between the *“Branded Lays chips vs Unbranded chips”*, 54 children (76,1%) (15 of them OW/OB 78,9%) preferred the *“Branded Lays chips”* vs 17 children (23,9%) (4 of them OW/OB 21,1%) who preferred the *“Unbranded chips”*. (Chapter 4, 4.9, 4.9.6)

Between *“Branded Oreo cookies vs Unbranded Oreo cookies”*, 60 children (84,5%) (18 of them OW/OB 94,7%), preferred the *“Branded Oreo cookies”* vs 11 children (15,55) (1 of them OW/OB 5,3%) who preferred the *“Unbranded Oreo cookies”*. (Chapter 4, 4.9, 4.9.6)

Between the *“Branded Gregoriou kid’s vs Unbranded processed meat product”*, 60 children (84,5%) (18 of them OW/OB 94,7%) preferred the *“Branded Gregoriou kids”* vs 11 children (15,5%) (1 of them OW/OB 5,3%) that preferred the *“Unbranded processed meat”*. (Chapter 4, 4.9, 4.9.6)

Between the *“Branded Pizza Hut vs Unbranded pizza”*, 58 children (81,7%) (17 of them OW/OB 89,5%) preferred the *“Branded Pizza Hut”* vs 13 children (18,3%) (2 of them OW/OB 10,5%) who preferred the *“Unbranded pizza”*. (Chapter 4, 4.9, 4.9.6)

Between the third pair of fake products the *“Branded Mc Donald’s fresh apple slices vs Unbranded fresh apple slices”*. 42 children (59,2%) (13 of them OW/OB 68,4%) preferred the *“Branded Mc Donald’s fresh apple”* vs 29 children (40,8%) (6 of them OW/OB 31,65%) that preferred the *“Unbranded fresh apple slices”*. (Chapter 4, 4.9, 4.9.6)

Finally, between the “*Branded Caprice vs Unbranded chocolate wafer*”, 56 children (78,9%) (16 of them OW/OB 84,2%) preferred the “*Branded Caprice*” vs 15 children (21,1%) (3 of them OW/OB 15,8%) who preferred the “*Unbranded chocolate wafer*”. (Chapter 4, 4.9, 4.9.6)

Girls had a higher mean in the selection of Unbranded products for the pair “*Mc Donald’s baby carrots (FAKE-presented as original product) vs Regular*” ( $\bar{x} = .50$ ,  $SD = .51$ ) than boys ( $\bar{x} = .26$ ,  $SD = .44$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .05$  ( $t = 2.130$ ,  $df = 61.997$ ,  $p = .04$ ).

Girls had a higher mean in the selection of Unbranded products for the pair “*JUNIOR yogurt with FRESH FRUIT ON TOP (FAKE-presented as original product) vs Regular*” ( $\bar{x} = .38$ ,  $SD = .49$ ) than boys ( $\bar{x} = .13$ ,  $SD = .34$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .05$  ( $t = 2.408$ ,  $df = 53.239$ ,  $p = .02$ ).

Girls had a higher mean in the selection of Unbranded products for the pair “*Pizza Hut vs Regular*” ( $\bar{x} = .31$ ,  $SD = .47$ ) than boys ( $\bar{x} = .08$ ,  $SD = .27$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .05$  ( $t = 2.511$ ,  $df = 47.172$ ,  $p = .02$ ).

Girls had a higher mean in the selection of Unbranded products for the pair “*Mc Donald’s fresh apple slices (FAKE-presented as original product) vs Regular*” ( $\bar{x} = .81$ ,  $SD = .40$ ) than boys ( $\bar{x} = .41$ ,  $SD = .50$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .01$  ( $t = 3.787$ ,  $df = 68.948$ ,  $p = .001$ ).

Girls had a higher mean in the selection of Unbranded products for the pair “*Caprice vs Regular*” ( $\bar{x} = .38$ ,  $SD = .49$ ) than boys ( $\bar{x} = .08$ ,  $SD = .27$ ). The use of two-tailed t-test for independent samples has shown that this difference was statistically significant at a level of  $\alpha = .01$  ( $t = 3.070$ ,  $df = 45.928$ ,  $p = .004$ ).

As for finding associations between students’ answers in tests 3, 4 and 5 and their grades (1<sup>st</sup> to 6<sup>th</sup>), the use of Chi Square test has not indicated statistically significant associations.

### **5.2.5 Research Question 5: “What is the level of food knowledge of children (age 6-12) towards relatively healthy and relatively unhealthy food products?”**

Having these results regarding the effect of branded food products in children’s preferences it would be valuable to have results regarding the knowledge level children have regarding relatively healthy and relatively unhealthy products.

According to research (Reisch et al., 2013, Harrison, Marske, 2005, Feskanich, Rockett & Colditz, 2004) food advertising affects children’s knowledge about what constitutes a healthy/unhealthy nutrition. Intense exposure to television food advertising for low-nutritious, energy dense, high caloric unhealthy foods is associated to lower levels of nutritional knowledge. According to research *“television food advertising, therefore seemingly overrides knowledge already acquired from other sources that promote healthier choices”*.

Research (Kopelman, Roberts & Adab, 2007) suggests that *“consumer knowledge does not necessarily lead to preferences for healthier food and that even if such preferences develop, they do not automatically guide behavior. Thus, although children generally know what a healthy diet involves, their food choices, preferences often do not mirror this knowledge”*.

Furthermore, how children deal with television food advertising depends according to Kopelman *“on their advertising literacy which is their knowledge about the goals and mechanisms of advertising as well as on their attitudes towards advertising”*. Kopelman defines knowledge *“as children’s perceptions, including suspiciousness of advertising’s credibility and usefulness, whereas attitudes reflect the environment value that the advertisements hold for children”*.

Preference and knowledge test added valuable evidence to research (Gwozdz, Reisch & IDEFICS Consortium, 2011, Reisch et al., 2013). Since Test 3 provided evidence for children’s preferences between unbranded products, Test 5 is expected to provide evidence for children’s in regards to “Relatively Healthy/ Relatively Unhealthy Food Products”.

Although the Preference Test (Test 3) and the Knowledge Test (Test 5) use the same flashcards with the same unbranded products, the Preference Test (Test 3) took place first in order to avoid bias in children’s subsequently stated preferences.

Preparation, steps taken before, during and after the Test 5 (Food Knowledge Relatively Healthy/Relatively Unhealthy) are explained in (Chapter 3, Section 3.5.3, 3.5.4, 3.5.5, 3.10). Details regarding the test are explained in Chapter 4, 4.9, 4.9.7.

The purpose of this test was to assess the children’s knowledge in regards to “Relatively Healthy/Relatively Unhealthy” food products.

Children responded in a very positive way showing a good knowledge in regards to what is consider “Relatively Healthy” and “Relatively Unhealthy”. Similar results were shown in research as well (Gwozdz, Reisch & IDEFICS Consortium, 2011, Reisch et al., 2013, Kopelman, Roberts & Adab, 2007).

Overall, to the question *“Which one of each pair of food products you believe is the healthiest”* 89% of NW children identified correctly the “Relatively Healthy” food products and 84% of

the OW/OB children identified correctly the “Relatively Healthy” food products as well. (Chapter 4, 4.9, 4.9.7).

On the other hand, 16% of NW children identified the “*Relatively Unhealthy*” as healthy and 15% of OW/OB children identified the “*Relatively Unhealthy*” as healthy food choices. (Chapter 4, 4.9, 4.9.7).

Furthermore, the Test 5 (Knowledge Test) show that girls and boys had similar knowledge regarding “*Relatively Healthy and Relatively Unhealthy food products*”. More specifically girls of age 6 pointed towards an average 9-(90%) of 10 “Relatively Healthy products” vs boys that pointed towards an average 8-(80%) (Chapter 4, 4.9, 4.9.7).

Girls of age 7 pointed towards an average 9-(90%) of 10 “*Relatively Healthy products*” vs boys that pointed towards an average 7-(70%).

Girls of age 8 pointed towards an average 9-(90%) of 10 “*Relatively healthy products*” vs boys that pointed towards an average 8-(80%).

Girls and boys of age 9 pointed towards an average 9-(90%) of 10 “*Relatively Healthy products*”.

Girls of age 10 pointed towards an average 8-(80%) of 10 “*Relatively Healthy products*” vs boys that pointed towards an average 7-(70%).

Girls and boys of age 11-12 pointed towards an average 9-(90%) of 10 “*Relatively Healthy products*”.

From the results of Test 5 it is obvious that girls showed a high and stable knowledge level towards “*Relatively Healthy*” food products (almost all ages at 90%) in relation to boys that showed lower knowledge level towards “*Relatively Healthy food products*” (70-90%).

These results agree with other previous research (Hare-Bruun et al., 2011, Cooke, Wardle, 2005, Caine-Bish, Scheule, 2009) that less healthy food preferences were observed among boys.

Research (Kopelman, Roberts & Adab, 2007, Reisch et al., 2013) showed that although overall children demonstrated a good knowledge of which foods were “relatively healthy” or “relatively unhealthy” they showed a definite preference for the less healthy options out of the food pairs. Study’s results agreed with research findings.

The previous findings in relation to research findings could suggest that boy’s preferences may be more susceptible to be influenced by television viewing than girl’s food preference and knowledge.

According to the results, for the first pair “*Fruit juice vs Orange fruit*”, 51 children (71.8%) (10 of them OW/OB 52,6%) identified the “*Orange fruit*” as healthier choice.

All children 100% identifies the “*Water*” as healthier choice vs “*Coca Cola*”.

70 children (98,6%) (18 of them OW/OB 94,7%) identified the "*Strawberry fruit*" as healthier choice than "*Fruity strawberry flavoured lollipop*" that was identified as healthier choice by 1 child (1,4%) that was OW/OB as well.

The "*Whole grain breakfast cereal*" was identified by 66 children (93%) (18 of them OW/OB 94,7%) as healthier choice than "*Sugary breakfast cereal*" that was identified by 5 children (7%) (1 of them OW/OB 5,3%).

The "*Cereal bar*" was identified by 70 children (98,6%) (18 of them OW/OB 94,7%) as healthier choice than "*Milk chocolate bar*" that was identified by 1 child (1,4%) as healthier choice.

The "*Jacket potato*" was identified by 66 children (93%) (18 of them OW/OB 94,7%) as healthier choice than "*French fries*" that was identified by 5 children (7%) (1 of them OW/OB 5,3%) as healthier choice.

The "*Ham, cheese, tomato sandwich*" was identified by 66 children (93%) (16 of them OW/OB 84,2%) as healthier choice than "*Ham, cheese and tomato pizza*" that was identified by 5 children (7%) (3 of them OW/OB 15,8%) as healthier choice.

The "*Roast chicken*" was identified by 62 children (87,3%) (18 of them OW/OB 94,7%) as healthier choice than "*Chicken nuggets*" that was identified by 9 children (12,7%) (1 of them OW/OB 5,3%) as healthier choice.

The "*Yogurt with fresh strawberries*" was identified by 58 children (81,7%) (16 of them OW/OB 84,2%) as healthier choice than "*Strawberry flavoured yogurt*" that was identified by 13 children (18,3%) (3 of them OW/OB 15,8%) as healthier choice.

The "*Pasta napolitana*" was identified by 45 children (63,4%) (10 of them OW/OB 52,6%) as healthier choice than "*Pasta carbonara*" that was identified by 26 children (36,6%) (9 of them OW/OB 47,4%) as healthier choice. (Chapter 4, 4.9, 4.9.7).

### **5.3 Children's Eating Habits, Food Preferences for Intake.**

Children in focus group (46,5%) reported to main researcher that they “Never” have breakfast. This result is not consisted with what parents answered in (Study Part 1) regarding family eating habits since breakfast is of great importance not just for children but for everyone. Parents (42,8%) rated their family's eating habits as “Good” and (2,5%) as “Excellent”. One possible explanation for this outcome is that parents may not value enough the importance of breakfast and as told earlier the morning routine is usually fast, they might not consider that this particular meal is of that importance, since at school the first break is at 09.05am. They might consider that since the first break is soon enough from the beginning of lessons (07.45), its acceptable for the child to eat during break and not at home.

The instant food preference for intake showed that children chose a wide variety of food and drink from the flashcards shown (Test 2).

According to research (Folkvord, F. et al., 2014) the sight and smell of food are food related cues that can act as a stimuli that trigger conditioned responses like craving and actual eating behaviour. This cue reactivity theory suggests that children's exposure to television food related cues (like television food advertisements) results in cephalic phase responses and strong desires to eat. (Jansen et al., 2009, Folkvord, Frans et al., 2016).

Although according to research (Folkvord, Frans et al., 2016) there is no theoretical model specifically explaining how food cues in advertising influences children's eating behaviour, a possible explanation by research (Buijzen, Reijmersdal & Owen, 2010) states that *“the level at which children process persuasive messages influences the extent to which food advertising impacts on their eating behaviour. This model of Processing of Commercialized Media Content (PCMC) suggests that when children use less cognitive elaboration to process the food cues embedded in the advertisement, it will have a stronger effect than when children use more cognitive elaboration”*.

Furthermore, research (Folkvord, Frans et al., 2016) suggests that *“children automatically process these cues with a minimal level of cognitive elaboration, making it more difficult to initiate consumer defences such as persuasion knowledge and scepticism. In these cases, children are unaware that they are targeted by food advertisements”*.

Taking into consideration the previous results (Test1, Test 2) and the above theory, children have been exposed to food cues even from the use of flashcards and not necessarily television advertisements. This exposure has driven children to choose a wide variety of food/drink.

At the Instant Food Preference for Intake (Chapter 4, 4.9, 4.9.3, 4.9.4, 4.9.4.1) all food/drinks were chosen and all children used the product's brand names. The most popular food/drink choices were “Chips” and more specifically the most popular brand (between the 4 chips brands in the test). The brand of “Chips” that was children's first choice was the same brand that was recognised by children in Test 1 (Brand Product Logo Recognition Test) and also was the same brand that children recalled the most.

The second most popular choice was the “Fast Food”. The “Fast Food” category (3 brands of fast food) was almost equally recognised by all children and especially by all OW/OB



children in Test 1 (Brand Recognition Test) and was recalled by more than 80% of children and OW/OB children as well. (Chapter 4, 4.9, 4.9.3, 4.9.4, 4.9.4.1)

The third most popular product choice was the brand of *"Dairy sugary milk beverage"*. The brand of *"Dairy sugary milk beverage"* was recognised by almost 80% of children and by all OW/OB children in Test 1 (Brand Recognition Test) and was recalled by more than 93% of children and 17 of the 19 OW/OB children as well. (Chapter 4, 4.9, 4.9.3, 4.9.4, 4.9.4.1)

The last most popular choice was the *"Sugary fruit drink"*. The brand of *"Sugary fruit drink"* was recognised by almost 94,4% of children and by 18 of the 19 OW/OB children in Test 1 (Brand Logo Recognition Test) and was recalled by 69% of children and 13 of the 19 OW/OB children as well. (Chapter 4, 4.9, 4.9.3, 4.9.4, 4.9.4.1)

Although food products that were in top rank of advertisements, and in recognition test like *"Processed meat for kids"*, *"Chocolate"*, *"Soft drink"*, *"Sugary cookies"* were almost not part of children's choices to eat at that specific time. (Chapter 4, 4.9, 4.9.4.1)

Finally, all the other products have been in children's choices as shown in table with lower percentages (Chapter 4, 4.9, 4.9.4.1).

After the tests was finished children's shopping behaviour and purchase requests was assessed (Chapter 4, 4.9, 4.9.7.1, 4.9.7.1.(a)). At first children described what the *"Ideal school canteen"* would be like for each one of them. Children described what food/drink products they would like for the *"ideal school canteen"* to have for sale.

According to the results children's ideal school canteen is the one that can have for sale *"Sugary cookies"* as a first choice, *"Chips"*, *"Fast food"*, *"Dairy sugary milk beverage"*, *"Soft drinks"* and *"Sugary fruit drink"*. Furthermore, there were some other requests like *"Fresh juice"*, *"Fresh fruit"* and *"Vegetables"*.

The second question was challenging children to shop in an imaginary supermarket, (Chapter 4, 4.9, 4.9.7.1, 4.9.7.1.(b)) where everything was for free and could select any food/drink they would like in order to eat at that time or at other time.

According to children's answers the most popular food/drink products that they would have from the *"Imaginary Supermarket"* was *"Chips"*, *"Fast food"* and *"Dairy sugary milk beverage"* followed by *"Sugary cookies"* and *"Chocolate"*. Other product had less requests and other had none.

The third question was challenging children to remember what food products they requested the most from their parents at the supermarket. (Chapter 4, 4.9, 4.9.7.1, 4.9.7.1.(c)).

According to the results, children's most requested food/drink products were *"Chips"*, (more specifically the most popular brand), *"Dairy sugary milk beverage"*, *"Sugary cookies"*, (more specifically the most popular brand), *"Chocolate"*, *"Soft drink"*, *"Processed meat for kids"*, *"Sugary products"*, *"Cereal high in sugar"* and *"Dairy sugary yogurt dessert"*.

None of the children reported that within its requests were the *"Cereal high in fibre"*. Also, only eight children reported that *"Fruits"* do belong in their list of requests at the supermarket.

Research (Gorn, Goldberg, 1982) supports that *“an occasional fruit announcement aired against a barrage of unhealthy food messages is not likely to change children’s snack behaviour towards fruit”*.

Also research (Dixon et al., 2007) reported that in order for the industry to apply a counter-advertising strategies to television food advertising, this will demand more “anti-junk food” advertisements. The “anti-junk food advertisements” will have as a target to challenge the low-nutritious food advertising messages. Furthermore, the broadcast of a considerable number of healthier food advertisements in relation to low-nutritious food would consider to be a counter-advertising strategy as well. The broadcast of a healthy food advertising close to or next to a low-nutritious food advertising showed that minimize the impact of the junk food advertisements.

Research showed that the broadcast of a combination of unhealthy and healthy food advertisements had according to research a negative impact on attitudes to vegetables/fruits, whereas viewing healthy food ads or junk food ads had no impact. The presence of junk food ads alongside healthy food ads did not weaken the healthy food ads’ impact. When airing healthy food ads alongside junk food ads did not dampen the impact of the junk food ads in promoting unhealthy foods”.

These results suggest that increasing airing of healthy food ads on children’s television would be an improvement on the current situation where such ads are under-represented.

Hence, the old WHO moto “making the healthy choice the easy choice” should be reassessed and taken more seriously by everyone responsible for children’s diet. Above all food choices are affected by the “triple A” of food items- availability, affordability and accessibility- particularly if paired with and supported by social norms

By studying the products most persistently asked for (requests) at supermarkets by children and their promotion frequency, the following points are worth noting: Ranking first in both categorizations are “Chips” (148 -1<sup>st</sup>, 7873 – 1<sup>st</sup>), “Chocolate” (112 – 2<sup>nd</sup>, 6910 – 3<sup>rd</sup>) and “Cereal” (72 – 3<sup>rd</sup>, 6251 – 5<sup>th</sup>).

## **5.4 Policies Regarding Television Food Advertising.**

The following part of the study will discuss briefly how several countries respond to television food advertising from a legislation and policies point of view.

The public health community needs to undertake a massive campaign to educate parents about links between television food advertising, healthy eating habits, childhood overweight and obesity.

Furthermore, government and health agents should take steps to regarding food marketing to children. The effective drafting and fruition of any legislation is complex, but this should not prevent a creative and rigorous exploration of a wide range of options for modification of food marketing to children.

According to research (Brody et al., 1981) even from the 70's there was a continuous governmental concern regarding the impact of television food advertising on young children. One of the very first approaches was by the Federal Trade Commission (1978) that suggested to prohibit all television food advertisements that were designed to target children younger than 8 years old.

The other suggestion was to prohibit all television food advertisements of energy dense-sugary products directed at children of age 8-11. Furthermore, they suggested as a last solution the advertisements of such low-nutrition food products be balanced by advertising messages urging good nutritional habits.

Research showed that (Jenkin et al., 2014, Hawkes, 2007, Capacci et al., 2012, Ahrens et al., 2011, Keller, Schulz, 2011, Cawley, 2006, Kimbro, Rigby, 2010, Traill et al., 2013, Frieden, Dietz & Collins, 2010, Penney et al., 2014, Silva, Higgins & Hussein, 2015, Silva, Higgins & Kulesz, 2016) taking into consideration the impact of television food advertising to young children, the content of advertisements, the associations shown its relation to childhood overweight and obesity, international health organizations have called on governments to monitor the problem.

Research (Hawkes, 2007, Hawkes, Lobstein, 2011) indicated that several countries have developed regulatory systems in order to control the issues around television food advertising to children.

In most of the cases, these systems are not governmental but industry self-regulatory initiatives that avoid government regulation. Regulatory content rules that limit advertising messages to children, premium offers, celebrities' endorsements, promotional characters and nutritional health claims do exist in UK, Australia and Ireland. These countries view as important the regulation of the persuasive content of food advertising to children.

Any applied regulations or restrictions will underline the need for the development of a regulatory environment for advertising marketing and educational programs that target the field of childhood overweight and obesity prevention.

Research (Kunkel, Gantz, 1992) suggests that both television food restrictions and regulations are of great importance since children below the age of 7-8 years are a special audience with narrowed information-processing capabilities.

According to research (Kim et al., 2016) the Centre for Science in the Public Interest (USA 2005) has suggested that *“advertisers should not use any manipulative appeals to market any food products and should be very careful when they make claims about health, entertainment, emotional and/or social benefits of the advertised food products and proposed that advertisers for low-nutrition foods should not use premiums and incentives because it is likely to encourage children to nag their parents to buy low-nutrition foods”*.

Television food advertising practices has been associated with lessen the effectiveness of parents’ authority and their role as gatekeepers of healthy nutrition for their children. The Council of Better Business Bureaus 2007 suggested the elimination of the use of third-party-licenced characters in the advertising of energy-dense low-nutritious food products. Furthermore, the Federal Trade Commission (FTC 2008) in the US has also recognised the need for changes in the television food advertising practices that has children as a target audience.

According to Swedish Radio and Television Act (1996:844) *“commercial television advertising must not be designed to attract the attention of children younger than 12 years old”*.

Also, in 2007 the Office of Communications in UK introduced regulations and restrictions in order to eliminate the television advertising of high-fat, high-sugar and high-salt food and drink products to young people. The specific regulation has prevented marketers and advertisers to promote advertisements for food products like these in or around programs specifically appeal to children younger than 16 years.

Appropriate regulatory actions are urgently needed to protect children from the possible negative effects of peripheral cues used in child-targeted food advertisements.

So far, we can say that food industry self-regulation is not currently protecting children from the television exposure to unhealthy food products and marketing food advertisement exposure.

The World Health Organization calls on governments to introduce regulation that *“has the ability to reduce the power of marketing by targeting the use of special techniques which have a particular powerful effect, a disproportionate influence, or to which children are particularly vulnerable”*.

In 2015, 18 food companies participated in industry self-regulation. (Schermbek, Powell, 2015). Even if this pledge of 18 company participants refrain from marketing of unhealthy food products to children the television food advertising environment will still consist of unhealthy and persuasive food advertisements marketed by companies not participating in the pledge.

For example, of the 407 products approved by the industry-based Children’s Food and Beverage Advertising Initiative (CFBAI) to be advertised to children, 53% did not meet the standards set by the federal Interagency Working Group’s nutrition recommendations.

CFBAI was established in 2006. Although since its initiation small improvements in the nutritional quality of food advertisements viewed from 2003-2009 (Powell, L. M., Schermbek & Chaloupka, 2013, Olsen et al., 2013, Schermbek, Powell, 2015), however the majority of food advertisements during children’s programming continues to promote HFSS food products.

Research (Potvin Kent, Dubois & Wanless, 2012, Nestle, 2006) suggest that public health experts should continue to call for improvements to address limitations to CFBAI, including expanding the types of marketing covered by company pledges, as well as strengthening the nutrition standards for foods than can be advertised to children.

In 2007, EU pledge was launched as part of signatories' commitment to the European Union Platform for Action on Diet, Physical Activity and Health, the multi-stakeholder forum set by the former EU Health and Consumer Affairs Commissioner Markos Kyprianou 2005 to encourage stakeholders to take initiatives aimed at promoting healthy lifestyles in Europe.

In the context, of the EU Platform, the EU pledge commitment is owned by the World Federation of Advertisers (WFA), which also supports the program. EU pledge is a voluntary initiative by leading food and beverage companies to change the way advertise to children and it consist of two main commitments: (a) no advertising for food and beverage products to children under the age of 12 on TV, print and internet, except for products which fulfil common nutritional criteria, and (b) no communication related to products in primary schools, except where specifically requested by, or agreed with the school administration for educational purposes.

EU pledge 22 member companies represents over 80% of food and beverage advertising expenditure in the EU (Amica Chips, Arla foods, Bel Group, Burger King, Coca Cola, Danone, Ferrero, Friesland Campina, General Mills, Intersnack, Kellogg, KiMs, Lorenz Snack-World, McDonald's, Mars, Mondelez, Nestle, PepsiCo, Unilever, Unichips-San Carlo and Zweifel Pomy Chips). The initiative is open to any food and beverage company active in Europe and willing to subscribe to the EU pledge commitments. (Landwehr, Hartmann, 2020, Jensen, Ronit, 2015)

The EU pledge nutrition criteria were first published in 2012 and updated in 2015. The changes reflect to reduce by 10% the sugar and sodium thresholds applicable in several product categories by the end of 2018. Last update was in 2017.

Of the 22 member companies under the EU pledge 17 of them advertise their food and beverage products on the Cyprus television channels. According to study's results (Study Part 2) some of the most advertised products ranking in top positions of documentation belong in these companies.

Furthermore, some of these products (chips, fast food chains, sugary cookies, soft drinks, chocolate, sugary cereal) do belong in children's purchase requests, brand logo recognition, brand recall, instant preference for intake, instant supermarket intention for purchase and request for placement in school canteen.

Public health and communication professionals should continue to assess the food advertising environment and determine if policy changes regarding child-directed food advertising can change prevalence of unhealthy advertisements exposure and persuasive marketing in an effort to promote balance diets among children.

Research (Lobstein, Dobb, 2005, Ip, Mehta & Coveney, 2007, Wiecha et al., 2006, Galbraith-Emami, Lobstein, 2013, Epstein et al., 2008) shows that young children require a more specific treatment when it comes to television food advertising since they lack the capability in relation to older children or adults to comprehend and evaluate the advertising messages and the

persuasive intention of the advertisements. Several home environment changes adjusted by parents may contribute to limit the effects of television food advertising and children's eating behaviour.

On the other hand, it is not practical for parents to turn the television off at each advertising break or selectively prohibiting their children from watching television channels which show advertisements.

The enforcement of the existing regulations, the restrictions of food advertising that target children, the limiting of non-core food advertisements, the improvement of the content and types of food advertisements, the development of health-related policies to improve children's food and lifestyle choices are changes that can contribute to a healthier advertising scenery and better health and nutrition habits among children.

On the other hand, public policies that are designed to limit children's exposure to energy-dense high sugar, low nutritious food advertisements need to be considered as part of a general strategy for reducing the escalating rates of child obesity (Berge, Everts, 2011, Chambers et al., 2015, Davison et al., 2013, Hendrie et al., 2013, Rebholz et al., 2014).

Research (Lowry et al., 2002, Dietz, Gortmaker, 1985) shows that when the time spent watching television is reduced this will probably create opportunities for activity. Also, this time spend in a non-sedentary activity may shift the children's dietary intake away from HFSS foods that are frequently advertised on television.

Furthermore, community-based strategies should be designed in order to have positive changes and increase in physical activity. According to researchers (Lowry et al., 2002) communities that are designed to provide with safety environments with parks and playgrounds, neighbourhood recreation centres with sports facilities, walking and bicycle trails, and supervised activities for young children can have promising results in increasing physical activity level.

The International Food and Beverage Alliance pledges to *"raise awareness on balanced diets and increased levels of physical activity"* and the Food and Drink Federation states that *"marketing messages should communicate healthy dietary habits and physical activity"*.

Also, nutrition education campaigns can be sponsored by public health and community-based organizations. Since schools reach almost all children can have a major impact through comprehensive health and physical education programs that are able to prepare students for a lifetime of physical activity and healthy eating. School can also sponsor after school programs that provide youth with safe and active alternatives to watching television.

This was the first study in Cyprus that collected and analysed data from the Cyprus Radio-Television Authority and provided for the first-time data regarding the content of television advertising during family zone for a whole year, the type of advertisements (food/services), the duration and seasonality of the advertisements.

According to article 29/legislation 118(1)/2010 of Cyprus Republic *"Media service providers are obliged to develop, together with the Cyprus Radio-television Authority, a joint code of conduct regarding inappropriate audio-visual commercial communications, accompanying or included in children's programmes, of foods and beverages containing nutrients and substances with a nutritional or physiological effect, in particular those such as fat, trans-fatty*

*acids, salt/sodium and sugars, excessive intakes of which in the overall diet are not recommended”.*

*For the purposes of the obligation, “media service providers, including the Cyprus Radio-television Authority, shall within a maximum period of one year from the date of the implementation of this Law, and following consultation between them, submit to the Authority for approval a joint code of conduct regarding inappropriate audio-visual commercial communications on the basis of a list of unhealthy foods which is defined and regularly revised by the competent services of the Ministry of Health of the Republic of Cyprus”.*

So far (2019) a joint code of conduct regarding inappropriate audio-visual commercial communications on the basis of a list of unhealthy foods was not submitted by any media service provider to the any authority in Cyprus.

Legislation in Cyprus television is still weak since there are no pre-defined kids’ zones in television channels. What is defined is “family zone” that extents from 07.00am-21.30pm. During this zone only “toys” and “alcohol” are not allowed to be advertised according to existing legislation. “Toys” and “Alcohol” are allowed to be advertised after 21.30, but during documentation alcohol advertisements made their appearance a little bit before 21.30.

After the study’s results, the main researcher proposed to the Cyprus Radio-Television Authority for evaluation and implementation, the approve of a crawl that will appear on the bottom of any advertised product high in sugar, salt or fat HFSS.

Since not all food companies are members of the EU pledge and there are local food companies that advertise heavily in Cyprus television channels, this crawl will be very helpful and informative for viewers especially for the parents.

Although if and when the previous legislation and the companies that are members of the EU pledge implement all rules and regulations the previous suggestion will not be necessary, since food and beverage products will follow the local code of conduct or the EU pledge code.

The Cyprus Dietetic and Nutrition Association should work along health professionals, Radio-television Authority and media service providers in order to determine the nutrition criteria and define with accuracy what food and beverage products that are part of the Cyprus market (either manufactured in Cyprus or imported) belong in the HFSS category.

Otherwise the EU pledge has already developed in 2012 a nutrition criteria white paper that was updated in 2015 that local companies can follow.

Adding to these, it would be extremely valuable for the Cyprus Radio-television Authority to define a specific kids-zone in Cyprus television channels both for weekdays and for weekends. These kids-zones should be treated according to EU pledge rules and regulations or can be characterized as advertisements free zones.

Furthermore, Cyprus Dietetic Association and Cyprus Radio-television Authority will be able to have for the first time complete and analysed data regarding television food advertising in

Cyprus. These data can be used in the future as baseline data and also as a platform in order to compare Cyprus' data with data from other countries.

Adding to these, tests like brand-logo recognition, branded-non-branded food preferences, food knowledge, can provide results for the first-time regarding children of age 6-12, and especially for such big and representative sample in Cyprus and can be used as a platform for further future research.





## **5.5 Strengths, Limitations of research and further recommendations.**

Although this project aims to do some innovation study in Cyprus it was proven by the literature review that such study was never done not only in Cyprus but international wise.

The differentiation from the other studies that may examined the television food advertising field in relation to children's behaviour related to food preferences, knowledge and food choices is that this will be the first study in Cyprus and worldwide that will interlink three major objectives, to collect and analyse data from the Cyprus Radio-Television Authority for 365 days, to collect and interrelate responses of parents related to the field of television food advertisements and finally to collect and interrelate responses of children through knowledge tests. This study will provide for the first-time data regarding the content of television advertising during family zone for a whole year, the type of advertisements (food/ toy/services), the duration of them and the repeatability of them, the seasonality of the advertising. Finally, an important proposal to the Cyprus Radio-Television Authority will be suggested for evaluation and implementation, to approve a crawl that will appear on the bottom of any advertised product high in sugar, salt or fat (HFSS).

The proposal of the crawl to the Cyprus-Radio-Television Authority will be independent from the outcome of the data collected.

Furthermore, Cyprus Dietetic Association and Cyprus Radio-Television Authority will be able to have for the first time complete and analysed data regarding television food advertising in Cyprus. These data can be used in the future as baseline data and also as a platform in order to compare Cyprus' data with data from other countries.

Adding to these, tests like brand-logo recognition, branded-non-branded food preferences, food knowledge, will provide results for the first-time regarding children of age 6-12, and especially for such big and representative sample in Cyprus.

This study is based on original research of 1088 children ages 6-12 and it produces new knowledge rather than summarize what is already known in a new form.

It was a new process for observation and the newly developed tools (test1-5) were used for the first time in Cyprus but also in the international professional community.

Although worldwide research was developed regarding television food advertising, that covered only a few days, or a few weekdays, or a few months, but a 365 days documentation covering all country's television channels during family zone (07.30-21.30) was a worldwide innovation.

Adding to these, knowledge tests (Test 1-5) were applied in the past in other countries, although tests in this study were modified and adjusted to the Cypriot culture and use.

Therefore, these tools and observational process can be used by other educators and dieticians/nutritionists to assist the nutritional behaviour of children.

Finally, this is the first study that combined and interlink the results of the television food advertising results (365 hours of television food advertising of all television channels during family time (07.30-21.30) (Study Part 2) with the responses of parents through the original

questionnaire for 1088 children of age 6-12 (Study Part 1) and also the responses of children through the focus group and knowledge tests (Study Part 3).

All these aspects Study Part 1, Study Part 2, Study Part 3 were designed to work together and for the first time worldwide to have results and correlations separately and between the previous areas of investigation.

This worldwide innovative study examined the content of television food advertisements for 365 days for all television channels (9) that broadcast in Cyprus and interlinked these results with parents responses through the use of questionnaire regarding television food advertisements and also children's responses through knowledge tests and results shows that there is a relationship and an association between the television channel's most popular advertised products (that are high in sugar/fat and or salt (HFSS food products) and present a totally unhealthy scenery) and parents responses and concerns regarding the heavy television food marketing towards their children and finally children's preferences that were guided by the persuasion techniques of food marketers.

Since every study that has ever been conducted has limitations it is reasonable that this study has its own limitations as well.

The number of valid questionnaires (Study Part 1) had overcome the significant number set at the design and methodology chapter. 1050 was the significant sample and 1088 was the valid questionnaires received. Furthermore, during study Part 2 the documentation of television food advertising was considered complete since, 365 days were covered.

On the other hand, the sample size of the focus group was a convenience sample. The main researcher decided to enrol a specific school in Nicosia for convenience reasons.

The number of participants of focus group (n=71) could be larger if the main research enrolled more schools and that could encourage more children to participate. This might provide more children's views regarding brand logo recognition, recall ability, food preferences and food knowledge.

Adding to these, the test results that were diverted from the focus group cannot be generalized for all children ages 6-12 in Cyprus since the focus group sample is not significant.

On the other hand, we cannot ignore these results since all point to a link between television food advertising and brand knowledge, purchase requests and food preferences for advertised branded products.

At this point the main researcher would suggest further research on this topic using a significant number of children of ages 6-12.

Since study's results (Study Part 1) provided evidence regarding specific eating habits (breakfast, snacks between meals) the main researcher would suggest that a food frequency intake for children ages 6-12 and for adults would be of great value for future research since the documentation of television food advertisements is already available.

This can provide evidence regarding eating habits (for adults and children) of certain branded products and advertisements.

Furthermore, further research regarding actual family buying habits (product/brand frequency per week)- not just requests or beliefs will be of great value, since so far we do have the results of what is advertised, and would be an important piece of the puzzle to have the family's "weekly shopping list using the product's brand names".

This can provide evidence regarding what are the actual buying and eating habits of families and relate them to advertisements and its impact on this certain topic.

Further and extensive research is required to identify the relationship between the frequency of consumption of fruits and vegetables during the day and during viewing time.

Having data regarding the frequency and the quantity of consumption of fruits and vegetables can help to identify to what level children consume their "5 portions of fruits and vegetables" per day according to international nutrition guidelines.

Also, further research is required to identify what percentage of food requests ends up to be an actual purchase and with what frequency and what food products remain as requests and with what frequency as well.

This will help identify how parents deal with their children's pester power and why they agree or not to specific requests and with what frequency as well.

Also, further research is required to identify what proportion of children's requests end up as purchases just because of the child's pester power and what proportion because the parent consider the food product as a suitable choice for the child.

Further research is required to investigate the relationship between age, gender and food product requests during time starting from preschool age until 10-12 years old where children do possess the cognitive ability to understand (theoretically) the persuasive intent of advertisements.

Adding to these, further research is required to define the exact level and duration of physical activity that children engage the most and examine if this physical activity is capable to raise children's heart rate and improve any physical performance.

Further research is required to identify any associations between limits in television viewing (ban or controlled) and level of physical activity.

According to the study's results we can strongly believe that advertisements related regulations and nutrition criteria in Cyprus should not only be formed with more specifications but closely monitored how they are applied.

Regulations should not only monitor the content of each advertisement but also the frequency and the time of its promotion.

The Cyprus Dietetic and Nutrition Association along with health educators and marketers can work together to formulate messages and persuasive techniques for more nutritious food choices and through media to enhance awareness that pleasure, happy feelings, great taste can be associated with healthier food choices.

The above suggestion emerges in order to improve the nutritional landscape of television food advertisements and especially those that are targeting children since rates of obesity in children are escalated and several health issues are related to this.

On the other hand, strategies reliant on individuals to respond to public health campaigns by merely suggesting they choose to alter their “lifestyles”, without an accompanying change in the environment that markedly influences their behavior and personal choices, do not provide lasting solutions.

Above from the previous suggestions, much stronger and more focused prevention measures on nutrition require the direct involvement of many departments of government as well as business and civil society in Cyprus.

The paramount challenge for public health education is not merely to focus on persuading individuals to adopt healthier lifestyles, but to inform more effectively political leaders, commercial decision makers and opinion leaders, including the medical and health professions how to recognize the vast societal dimensions of the problem, take on effective measures in the food chain including food production and marketing as a genuine priority, commit to implementing strategic responses at all levels in society.

There is unequivocal evidence that healthy eating habits and food choices are essential to good health throughout life, and is especially important for all children.

A well-nourished and healthy population contributes to economic development and to social and community cohesion.

Investing in better eating habits and food choices can help to contain costs in the health care system by reducing pressure on the acute care sector through reduced rates of illness and disease.

Good health especially in later years, when a person is more likely to consume higher levels of health services, can reduce demands on services.

Developing interventions that focus on individual behaviour change and personal action alone ignores the broader environmental issues.

A population approach is able to address the broader environmental factors that influence healthy eating habits and physical activity.

Suggestions that involve several stakeholders include the following topic of interest: increase healthy nutrition awareness, increase physical activity and decrease sedentary living to prevent childhood overweight and obesity.

Adding to these, provide quality programs, services and infrastructure to increase physical activity, decrease sedentary living and increase healthier eating behavior and food choices.

Achieve social, health and environmental benefits arising from better eating habits and food choices.

It is important to focus on the government working together with the community, industry and relevant organizations to create communities in which children can live more productive and healthy lives, make an impact on the whole of the population not just the risk groups and

combine the efforts of all sectors in a consultative environment, concentrate on solutions rather than re-voicing problems, ensuring action on health promoting environments. It is important to recognize that behavior change is complex and takes a long time.

In order for the previous suggestions to be achieved in a family based, school based, community based, health care sector and industry based the following steps can be applied: create a healthy eating environment at home, school, create a healthy active environment within the family and school, create children's, parent's, teacher's learning environment as well.

It is important to develop leadership, individual skills, partnerships and resources that will help to promote healthier eating habits and food choices.

The national body that accredits child care services should continue to identify healthy eating as one of the important principles that must be met. Nutritionists should continue to identify the need for clear guidelines for child care centres to be better able to meet this principle.

#### One of the primary roles of family are to develop healthier eating environment.

Some of the actions suggested are: parents should promote healthful eating behaviors and regular physical activity for their children, to promote healthful food and beverage choices for children by carefully considering nutrient quality and energy density, implement the same healthy eating habits for the entire family, not just for select individuals, plan times and prepare the food with the child, (children enjoy participating and can learn about healthy cooking and food preparation), eat dinner together at the dinner table at regular times with the television set off, avoid rushing to finish meals, eating too quickly does not allow enough time to digest and to feel the sense of fullness, do not prohibit children from eating unhealthy foods, the key is moderation, watch children's portion sizes and make sure the diet is consistent with the recommendations of the food guide pyramid, involve the child in food purchasing by taking it for food shopping and allow it to help select healthy foods, give the child specific praise for making healthy food choices.

Busy families look for easy dinner options, which are often unhealthy, should take some extra time and involve the whole family in creating a weekly healthy eating plan, keep fatty and sugary snacks to a minimum, limit frequency of fast-food eating, keep bottled water, fruits, vegetables, yogurt and low-fat snacks readily available.

#### Another important role of families is to develop an active environment for children.

Some of the actions suggested are: Encourage and support regular physical activity, limit children's television viewing and other recreational screen time to fewer than two hours per day, make time for the entire family to participate in regular physical activities that everyone enjoys, plan special active family-outings, start an active neighborhood program, join together with other families for group activities, assign active chores to every family member such as vacuuming, washing the car, rotate the schedule of chores to avoid boredom from routine. Enroll the child in a structured activity that he or she enjoys, instill an interest to children to try a new sport by joining a team at school or in the community, work with community groups to develop safe walk-to school programs if it is unsafe for the children to walk to school.

Families should develop learning environment as well.

Some of the actions suggested are: learn about supervised activities offered by after-school programs at schools and community centers if families live in a neighborhood that is unsafe for children to play in the street or in the playgrounds, discuss weight status with their child's health-care provider and monitor age-and gender-specific body mass index (BMI) percentile, if there is concern about child's weight, in the absence of a physical disorder, the only way to lose weight is to reduce the number of calories being eaten and to increase the child's level of physical activity, learn and take information about obesity issues, parents should be encouraged to serve as positive role models for the children regarding eating and physical-activity behavior, respect the child's appetite; children do not need to finish every bottle or meal, do not provide food for comfort or as a reward, do not offer sweets in exchange for a finished meal, make sure children try to eat at least five servings of fruits and vegetables each day and learn the importance of breakfast.

Schools should develop healthier eating environment.

Some of the actions suggested are: ensure that all foods and beverages sold in schools meet the Dietary Guidelines, ensure that schools are advertising-free as possible, students and teachers who practice healthy eating should be encouraged to serve as role models in the school, ensure that no canteens sell high fat or high sugar foods or drinks, ensure that all students have an easy access to drinking water in schools.

Schools should develop active and learning environment for children and teachers as well.

Some of the suggested actions are: Ensure that all children participate in a minimum of 30 minutes of moderate to vigorous physical activity during the school day, improve environments in schools, preschools and childcare settings to promote healthy eating and active play, build on and further develop the existing activities in childcare services that promote healthy eating and physical activity, schools and community organizations should provide adequate funding, equipment, and supervision for programs that meet and interests of all students, provide health promotion programs about physical activity for school faculty and staff, review school sport programs and structures in order to ensure that school sport develops fundamental movement skills and includes fun, engaging physical activity that meet the interests of all students, behavior-focused nutrition education should be integrated into the curriculum in all the grades, educators who provide nutrition education programs should be nutrition specialists, teachers should be role models, they should show students how important is for them to make healthy choices, ensure that specialist nutrition and physical activity expertise is available to support these actions in schools, preschools and childcare services, help students develop the knowledge, attitudes and skills they need to adopt and maintain a physically active lifestyle, ensure that parents support their children's participation in physical activity, to be physically active role models, and to include physical activity in family events, establish a class-wide motivational system to encourage students to eat a healthful breakfast every day, understand that the provision of knowledge does not necessarily translate into behavior change.

Simply informing students about the importance of daily physical activity and healthy eating behaviors, does not mean they will adopt them immediately, provide an environment that supports these behaviors, motivation and reinforcement for engaging in these behaviors, and role models who espouse these behaviors, help students set realistic, well-defined, measurable goals for themselves regarding healthy eating and physical activity.

Increase awareness for healthier eating habits and food choices in a community level.

Some of the actions suggested are: improve knowledge and resources of community care workers to promote healthy eating and active living, promote Dietary Guidelines and Physical Activity Guidelines to community workers, develop a country-wide community education campaign using various forms of media, publication of an easy to use compendium of nutrition and physical activity related information, development of online training program providing information on physical fitness, nutrition and healthy lifestyle options for children, establishment of Center for Overweight and Obesity so to increase the overweight and obesity research capability.

Increase opportunities for children and young people to participate in physical activity in the community.

Some of the actions suggested are: Increase and promote active transport (walking and cycling facilities) in neighbourhoods, through local communities and local government, to maintain the commitment of Roads and Traffic Authority to building off-road bicycle ways wherever practicable, these off-road paths will link resident areas to parks, schools, shopping centers, sports grounds and other local facilities, develop and use guidelines that promote excellence in location, design, construction and operation of facilities that promote physical activity and healthy eating, locate and promote clubs and facilities that provide affordable, quality facilities for physical activities opportunities, promote and increase opportunities for safe, active recreation and play in neighborhoods.

Increase opportunities to improve knowledge and resources of primary health care professionals to promote healthier eating habits and food choices.

Some of the actions suggested are: promote information sharing amongst relevant professionals about ways to implement guidelines into practice, all related agencies (Public Health Professionals, Cyprus Dietetic Association, Health-Care Providers, Pediatricians, Family Physicians, Health- and Medical Care Professional Societies, Health Care Delivery Systems) involved could be engaged in the prevention of children's eating habits and food choices, regularly monitor trends in the growth of children (height/length, weight, BMI) in different childhood settings.

Increase opportunities to expand options for healthier food choices at an industry level.

Some of the actions suggested are: develop and contribute to national food regulation that protects and enhances population nutritional status, industry should make obesity prevention in children and youth a priority by developing and promoting products and information that will encourage healthy eating and regular physical activity, fast food and full service restaurants should expand healthier meal, food, and beverage options and provide calorie content and general nutrition information at the point of purchase, provide general nutrition information that will help consumers make informed decisions about food and meal selections and portion sizes.

## **Chapter VI**

### **Conclusions**

This worldwide innovative study examined the content of television food advertisements for 365 days for all television channels (9) that broadcast in Cyprus and interlinked these results with parents responses through the use of questionnaire regarding television food advertisements and also children's responses through knowledge tests and results shows that there is a relationship and an association between the television channel's most popular advertised products (that are high in sugar/fat and or salt (HFSS food products) and present a totally unhealthy scenery) and parents responses and concerns regarding the heavy television food marketing towards their children and finally children's preferences that were guided by the persuasion techniques of food marketers.

Television food advertisements promote throughout the year more non-core than core food products using heavy marketing techniques and messages. Results showed that whenever a child decides to watch TV, morning or afternoon, weekday or weekend, its viewing will be dominated by the HFSS category. Also, parents view the enormous amount of television food marketing as stressful for them and their families as well.

The formed pyramid of advertisements in Cyprus was totally inconsistent in relation to the food pyramid recommended by the "Eat Well Plate" (EWP). This misrepresentation of food groups in inverted food pyramid implies that television food advertisements promote an unhealthy "food plate" and unhealthy eating habits among children and family which according to study results has an impact on their food choices, preferences and knowledge.

Children are being under the marketing influence of food industry, marketers and advertisers towards unhealthy, low nutrition food choices since these choices dominate the food advertising environment in Cyprus television.

Marketers and advertisers use persuasive techniques that are designed as strategies in order to increase children's brand loyalty, recall of advertisements, purchase requests, preferences and consumption of advertised foods.

Results of these study showed that children are exposed to television food advertising and are more likely to select and prefer advertised food products or make more requests for advertised products since results showed that children are been both receptive and responsive to advertisements. Also, television viewing increases energy intake and at the end of the day the total caloric increase is possible to contribute to a positive energy balance. Taking this into consideration we can assume that television viewing is associated with poor overall diet quality since the types of food products most advertised on television do reflect a specific dietary pattern that can be associated with increased risk of obesity since the types of the most advertised food products are not in line with recommended nutritional guidelines.

As we saw television food advertisements expose children to an excess number of messages related to food. Messages like these are able to shape children's knowledge and expectations of what constitutes healthy eating habits and healthy food choices. Children are under the



exposure of heavy and extensive food marketing activity mostly through television during all stages of their development.

Children's exposure to television food advertising may also lead to the development of positive feelings and attitudes of brands as study also showed since results demonstrate that food promotion has an influence on young children in terms of brand awareness, preferences and knowledge.

Taking this into consideration the study's results we can strongly believe that advertisements related regulations and nutrition criteria should be formed in Cyprus (and closely monitored how they are applied) that will not only regulate the content of each advertisement but also the frequency and the time of its promotion.

Health educators and marketers can work together to formulate messages and persuasive techniques for more nutritious food choices and through media to enhance awareness that pleasure, happy feelings, great taste can be associated with healthier food choices.

The above suggestion emerges in order to improve the nutritional landscape of television food advertisements and especially those that are targeting children since rates of obesity to children are escalated and several health issues are related to this.

The Cyprus Dietetic and Nutrition Association should work along health professionals, Radio-television Authority and media service providers in order to determine the nutrition criteria and define with accuracy what food and beverage products that are part of the Cyprus market (either manufactured in Cyprus or imported) belong in the HFSS category. Otherwise the EU pledge has already developed in 2012 a nutrition criteria white paper that was updated in 2015 that local companies can follow.

Adding to these, it would be extremely valuable for the Cyprus Radio-television Authority to define a specific kids-zone in Cyprus television channels both for weekdays and for weekends. These kids-zones should be treated according to EU pledge rules and regulations or can be characterized as advertisements free zones.

Furthermore, Cyprus Dietetic Association and Cyprus Radio-television Authority can now have for the first time complete and analysed data regarding television food advertising in Cyprus. These data can be used in the future as baseline data and also as a platform in order to compare Cyprus' data with data from other countries.

Adding to these, tests like brand-logo recognition, branded-non-branded food preferences, food knowledge, provided results for the first-time regarding children of age 6-12, and especially for such big and representative sample in Cyprus and can be used as a platform for further future research.

The study's results added to all existing knowledge that television food advertising is powerful. The sugar lobby and HFSS products are influential. The lobby is colourful, engaging and pulls you in with the promise of happiness, fun, pleasure, taste that makes everything better, that brings family together, food that brings nostalgia or the promise of good times with friends, and feeling complete and part of a group.

This illusion of an "advertisements world" that dominates the "money land" should not rule the minds of children. Children should not be defenceless against advertising.

Only when governments, communities, health professionals, educators and parents work together as a team with common goal our children, only then, any suggestions, any regulations and any policy can find breeding ground for growth and fruition.

Today is the child of yesterday and the parent of tomorrow. The work you produce today will create your future (Bruce Mau).

It is our duty to protect, educate and nourish our children with healthy eating habits and provide them a world of where healthy eating is not a goal but a way of living.

As Nelson Mandela said “Children are the rock on which our future will be built, our greatest asset. The youth of today are the leaders of tomorrow”.

Let’s think, lets act before them, for them...



## **Bibliography**

"Marketing foods to children and adolescents: licensed characters and other promotions on packaged foods in the supermarket", 2010, *Public health nutrition*, , no. 3.

Adachi-Mejia, A.M., Longacre, M.R., Gibson, J.J., Beach, M.L., Titus-Ernstoff, L.T. & Dalton, M.A. 2007, "Children with a TV in their bedroom at higher risk for being overweight", *International journal of obesity (2005)*, vol. 31, no. 4, pp. 644-651.

Ahrens, W., Bammann, K., Siani, A., Buchecker, K., De Henauw, S., Iacoviello, L., Hebestreit, A., Krogh, V., Lissner, L., Marild, S., Molnar, D., Moreno, L.A., Pitsiladis, Y.P., Reisch, L., Tornaritis, M., Veidebaum, T., Pigeot, I. & IDEFICS Consortium 2011, "The IDEFICS cohort: design, characteristics and participation in the baseline survey", *International journal of obesity (2005)*, vol. 35 Suppl 1, pp. S3-15.

Aktas Arnas, Y. 2006, "The effects of television food advertisement on children's food purchasing requests", *Pediatrics international : official journal of the Japan Pediatric Society*, vol. 48, no. 2, pp. 138-145.

Altenburg, T.M., Holthe, J.K. & Chinapaw, M.J.M. 2016, "Effectiveness of intervention strategies exclusively targeting reductions in children's sedentary time: a systematic review of the literature", *International Journal of Behavioral Nutrition & Physical Activity*, vol. 13, pp. 1-18.

Andriani, H., Chu-Yung Liao & Hsien-Wen Kuo 2015, *Parental weight changes as key predictors of child weight changes*, BioMed Central.

Anschutz, D.J., Engels, R.C. & Van Strien, T. 2009, "Side effects of television food commercials on concurrent nonadvertised sweet snack food intakes in young children", *The American Journal of Clinical Nutrition*, vol. 89, no. 5, pp. 1328-1333.

Ashton, D. 2004, *Food advertising and childhood obesity*, Sage Publications, Ltd.

Barcus, F.E. & Action, f.C. 1971, *Saturday Children's Television; A Report of TV Programming and Advertising on Boston Commercial Television*.

Bennett, C. & Blissett, J. 2014, "Measuring hunger and satiety in primary school children. Validation of a new picture rating scale", *Appetite*, vol. 78, pp. 40-48.

Berge, J.M. & Everts, J.C. 2011, "Family-Based Interventions Targeting Childhood Obesity: A Meta-Analysis", *Childhood Obesity*, vol. 7, no. 2, pp. 110-121.

Birch, L.L. 1999, "Development of food preferences", *Annual Review of Nutrition*, vol. 19, pp. 41-62.

Bland, J.M.(.1.). & Altman, D.G.(.2.). 1997, "Statistics notes: Cronbach's alpha", *BMJ*, vol. 314, no. 7080, pp. 572.

Bolton, R.N. 1983, "Modeling the Impact of Television Food Advertising on Children's Diets", *Current Issues & Research in Advertising*, vol. 6, no. 1, pp. 173.

- Borzekowski, D.L. & Robinson, T.N. 2001, "The 30-second effect: an experiment revealing the impact of television commercials on food preferences of preschoolers", *Journal of the American Dietetic Association*, vol. 101, no. 1, pp. 42-46.
- Boyland, E.J. & Halford, J.C. 2013, "Television advertising and branding. Effects on eating behaviour and food preferences in children", *Appetite*, vol. 62, pp. 236-241.
- Boyland, E.J., Harrold, J.A., Dovey, T.M., Allison, M., Dobson, S., Jacobs, M.C. & Halford, J.C. 2013, "Food choice and overconsumption: effect of a premium sports celebrity endorser", *The Journal of pediatrics*, vol. 163, no. 2, pp. 339-343.
- Boyland, E.J., Harrold, J.A., Kirkham, T.C., Corker, C., Cuddy, J., Evans, D., Dovey, T.M., Lawton, C.L., Blundell, J.E. & Halford, J.C. 2011, "Food commercials increase preference for energy-dense foods, particularly in children who watch more television", *Pediatrics*, vol. 128, no. 1, pp. e93-100.
- Boyland, E.J., Harrold, J.A., Kirkham, T.C. & Halford, J.C. 2011, "The extent of food advertising to children on UK television in 2008", *International journal of pediatric obesity : IJPO : an official journal of the International Association for the Study of Obesity*, vol. 6, no. 5-6, pp. 455-461.
- Boyland, E.J., Nolan, S., Kelly, B., Tudur-Smith, C., Jones, A., Halford, J.C.G. & Robinson, E. 2016, "Advertising as a cue to consume: a systematic review and meta-analysis of the effects of acute exposure to unhealthy food and nonalcoholic beverage advertising on intake in children and adults", *American Journal of Clinical Nutrition*, vol. 103, no. 2, pp. 519-533.
- Brody, G.H., Stoneman, Z., Lane, T.S. & Sanders, A.K. 1981, "Television Food Commercials Aimed at Children, Family Grocery Shopping, and Mother-Child Interactions", *Family Relations*, vol. 30, no. 3, pp. 435-439.
- Buijzen, M., Reijmersdal, E. & Owen, L. 2010, *Introducing the PCMC Model: An Investigative Framework for Young People's Processing of Commercialized Media Content*, .
- Buttriss, J. 2004, *FACTS BEHIND THE HEADLINES Food promotion to children: the facts*, Wiley-Blackwell.
- Caine-Bish, N. & Scheule, B. 2009, "Gender differences in food preferences of school-aged children and adolescents", *Journal of School Health*, vol. 79, no. 11, pp. 532-540.
- Cairns, G., Hastings, G., Angus, K. & Caraher, M. 2013, "Systematic reviews of the evidence on the nature, extent and effects of food marketing to children. A retrospective summary", *Appetite*, vol. 62, pp. 209-215.
- Campbell, M.J. & Machin, D. 1999, *Medical statistics : a commonsense approach*, 3rd ed. edn, J. Wiley.
- Campbell, M.J., Machin, D. & Walters, S.J. 2007, *Medical statistics : a textbook for the health sciences*, 4th ed. edn, J. Wiley.
- Capacci, S., Mazzocchi, M., Shankar, B., Brambila Macias, J., Verbeke, W., Pérez-Cueto, F., J.A., Koziol-Kozakowska, A., Piórecka, B., Niedzwiedzka, B., D'Addesa, D., Saba, A., Turrini, A., Aschemann-Witzel, J., Bech-Larsen, T., Strand, M., Smillie, L., Wills, J. & Traill, W.B. 2012, "Policies to

- promote healthy eating in Europe: a structured review of policies and their effectiveness", *Nutrition reviews*, vol. 70, no. 3, pp. 188-200.
- Cawley, J. 2006, "Markets and Childhood Obesity Policy", *The Future of Children*, vol. 16, no. 1, pp. n/a.
- Chamberlain, L.J., Wang, Y. & Robinson, T.N. 2006, "Does children's screen time predict requests for advertised products? Cross-sectional and prospective analyses", *Archives of Pediatrics & Adolescent Medicine*, vol. 160, no. 4, pp. 363-368.
- Chambers, S.A., Freeman, R., Anderson, A.S. & MacGillivray, S. 2015, *Reducing the volume, exposure and negative impacts of advertising for foods high in fat, sugar and salt to children: A systematic review of the evidence from statutory and self-regulatory actions and educational measures*.
- Chernin, A. 2008, "The Effects of Food Marketing on Children's Preferences: Testing the Moderating Roles of Age and Gender", *The Annals of the American Academy of Political and Social Science*, vol. 615, no. 1, pp. 101-118.
- Connor, S.M. 2006, "Food-related advertising on preschool television: building brand recognition in young viewers", *Pediatrics*, vol. 118, no. 4, pp. 1478-1485.
- Cooke, L.J. & Wardle, J. 2005, "Age and gender differences in children's food preferences", *British Journal of Nutrition*, vol. 93, no. 5, pp. 741-746.
- Coon, K.A., Goldberg, J., Rogers, B.L. & Tucker, K.L. 2001, "Relationships between use of television during meals and children's food consumption patterns", *Pediatrics*, vol. 107, no. 1, pp. E7.
- Coon, K.A. & Tucker, K.L. 2002, "Television and children's consumption patterns. A review of the literature", *Minerva pediatrica*, vol. 54, no. 5, pp. 423-436.
- Cornwell, T.B. & McAlister, A.R. 2011, "Alternative thinking about starting points of obesity. Development of child taste preferences", *Appetite*, vol. 56, no. 2, pp. 428-439.
- Cox, R., Skouteris, H., Rutherford, L. & Fuller-Tyszkiewicz, M. 2012, "The Association between Television Viewing and Preschool Child Body Mass Index", *Journal of Children & Media*, vol. 6, no. 2, pp. 198.
- Crespo, C.J., Smit, E., Troiano, R.P., Bartlett, S.J., Macera, C.A. & Andersen, R.E. 2001, "Television watching, energy intake, and obesity in US children: results from the third National Health and Nutrition Examination Survey, 1988-1994", *Archives of Pediatrics & Adolescent Medicine*, vol. 155, no. 3, pp. 360-365.
- Davison, K.K., Jurkowski, J.M., Li, K., Kranz, S. & Lawson, H.A. 2013, "A childhood obesity intervention developed by families for families: results from a pilot study", *International Journal of Behavioral Nutrition & Physical Activity*, vol. 10, pp. 1-11.
- Dietz, W.H., Jr & Gortmaker, S.L. 1985, "Do we fatten our children at the television set? Obesity and television viewing in children and adolescents", *Pediatrics*, vol. 75, no. 5, pp. 807-812.

- Dixon, H.G., Scully, M.L., Wakefield, M.A., White, V.M. & Crawford, D.A. 2007, "The effects of television advertisements for junk food versus nutritious food on children's food attitudes and preferences", *Social science & medicine* (1982), vol. 65, no. 7, pp. 1311-1323.
- Donkin, A.J., Neale, R.J. & Tilston, C. 1993, "Children's food purchase requests", *Appetite*, vol. 21, no. 3, pp. 291-294.
- Dovey, T.M., Taylor, L., Stow, R., Boyland, E.J. & Halford, J.C. 2011, "Responsiveness to healthy television (TV) food advertisements/commercials is only evident in children under the age of seven with low food neophobia", *Appetite*, vol. 56, no. 2, pp. 440-446.
- Dubois, L., Farmer, A., Girard, M. & Peterson, K. 2008, "Social factors and television use during meals and snacks is associated with higher BMI among pre-school children", *Public health nutrition*, vol. 11, no. 12, pp. 1267-1279.
- Epstein, L.H., Roemmich, J.N., Robinson, J.L., Paluch, R.A., Winiewicz, D.D., Fuerch, J.H. & Robinson, T.N. 2008, "A randomized trial of the effects of reducing television viewing and computer use on body mass index in young children", *Archives of Pediatrics & Adolescent Medicine*, vol. 162, no. 3, pp. 239-245.
- Feskanich, D., Rockett, H.R. & Colditz, G.A. 2004, "Modifying the Healthy Eating Index to assess diet quality in children and adolescents", *Journal of the American Dietetic Association*, vol. 104, no. 9, pp. 1375-1383.
- Folkvord, F., Anschutz, D.J., Buijzen, M. & Valkenburg, P.M. 2013, "The effect of playing advergames that promote energy-dense snacks or fruit on actual food intake among children", *The American Journal of Clinical Nutrition*, vol. 97, no. 2, pp. 239-245.
- Folkvord, F., Anschutz, D.J., Nederkoorn, C., Westerik, H. & Buijzen, M. 2014, "Impulsivity, "advergames," and food intake", *Pediatrics*, vol. 133, no. 6, pp. 1007-1012.
- Folkvord, F., Anschutz, D.J., Boyland, E., Kelly, B. & Buijzen, M. 2016, *Food advertising and eating behavior in children*.
- Folta, S.C., Goldberg, J.P., Economos, C., Bell, R. & Meltzer, R. 2006, "Food advertising targeted at school-age children: a content analysis", *Journal of nutrition education and behavior*, vol. 38, no. 4, pp. 244-248.
- FRECHETTE, S. 2016, "The Effect of Television Food Advertising on Children's Preferences, Demands, and Intake of High-Fat and Low-Nutrient Products", *Annals of Spiru Haret University, Journalism Studies*, vol. 17, no. 1, pp. 30-40.
- Frieden, T.R., Dietz, W. & Collins, J. 2010, "Reducing Childhood Obesity Through Policy Change: Acting Now To Prevent Obesity", *Health affairs*, vol. 29, no. 3, pp. 357-63.
- Fuller-Tyszkiewicz, M., Skouteris, H., Hardy, L.L. & Halse, C. 2012, "The associations between TV viewing, food intake, and BMI. A prospective analysis of data from the Longitudinal Study of Australian Children", *Appetite*, vol. 59, no. 3, pp. 945-948.

- Galbraith-Emami, S. & Lobstein, T. 2013, "The impact of initiatives to limit the advertising of food and beverage products to children: a systematic review", *Obesity reviews : an official journal of the International Association for the Study of Obesity*, vol. 14, no. 12, pp. 960-974.
- Galst, J.P. & White, M.A. 1976, "The Unhealthy Persuader: The Reinforcing Value of Television and Children's Purchase-Influencing Attempts at the Supermarket", *Child development*, vol. 47, no. 4, pp. 1089-1096.
- Gatou, T., Mamai-Homata, E., Koletsi-Kounari, H. & Polychronopoulou, A. 2016, "The short-term effects of television advertisements of cariogenic foods on children's dietary choices", *International dental journal*, vol. 66, no. 5, pp. 287-294.
- Goldberg, M.E., Gorn, G.J. & Gibson, W. 1978, "TV Messages for Snack and Breakfast Foods: Do They Influence Children's Preferences?", *Journal of Consumer Research*, vol. 5, no. 2, pp. 73-81.
- Goris, J.M., Petersen, S., Stamatakis, E. & Veerman, J.L. 2010, "Television food advertising and the prevalence of childhood overweight and obesity: a multicountry comparison", *Public health nutrition*, vol. 13, no. 7, pp. 1003-12.
- Gorn, G.J. & Goldberg, M.E. 1982, "Behavioral Evidence of the Effects of Televised Food Messages on Children", *Journal of Consumer Research*, vol. 9, no. 2, pp. 200-205.
- Gorn, G.J. & Goldberg, M.E. 1980, "Children's Responses to Repetitive Television Commercials", *Journal of Consumer Research*, vol. 6, no. 4, pp. 421-424.
- Gortmaker, S.L., Must A FAU - Sobol,,A.M., FAU, S.A., Peterson K FAU - Colditz,,G.A., FAU, C.G. & Dietz, W.H. *Television viewing as a cause of increasing obesity among children in the United States, 1986-1990*.
- Gregori, D., Lorenzoni, G., Ballali, S., Gabriella Vecchio, M., Verduci, E. & Berchiolla, P. 2017, "Is brand visibility on snacks packages affecting their consumption in children? Results from an experimental ad-libitum study", *Archivos Latinoamericanos de Nutrición*, vol. 67, pp. 36-49.
- Gussow, J. 1972, "Counternutritional messages of TV ads aimed at children", *Journal of Nutrition Education*, vol. 4, no. 2, pp. 48-52.
- Gwozdz, W., Reisch, L.A. & IDEFICS Consortium 2011, "Instruments for analysing the influence of advertising on children's food choices", *International journal of obesity (2005)*, vol. 35 Suppl 1, pp. S137-43.
- Halford, J.C., Boyland, E.J., Cooper, G.D., Dovey, T.M., Smith, C.J., Williams, N., Lawton, C.L. & Blundell, J.E. 2008, "Children's food preferences: effects of weight status, food type, branding and television food advertisements (commercials)", *International journal of pediatric obesity : IJPO : an official journal of the International Association for the Study of Obesity*, vol. 3, no. 1, pp. 31-38.
- Halford, J.C., Boyland, E.J., Hughes, G., Oliveira, L.P. & Dovey, T.M. 2007, "Beyond-brand effect of television (TV) food advertisements/commercials on caloric intake and food choice of 5-7-year-old children", *Appetite*, vol. 49, no. 1, pp. 263-267.

- Halford, J.C., Boyland, E.J., Hughes, G.M., Stacey, L., McKean, S. & Dovey, T.M. 2008, "Beyond-brand effect of television food advertisements on food choice in children: the effects of weight status", *Public health nutrition*, vol. 11, no. 9, pp. 897-904.
- Halford, J.C., Gillespie, J., Brown, V., Pontin, E.E. & Dovey, T.M. 2004, "Effect of television advertisements for foods on food consumption in children", *Appetite*, vol. 42, no. 2, pp. 221-225.
- Hancox, R.J. & Poulton, R. 2006, "Watching television is associated with childhood obesity: but is it clinically important?", *International journal of obesity*, vol. 30, no. 1, pp. 171-5.
- Hare-Bruun, H., Nielsen, B.M., Kristensen, P.L., Møller, N.C., Togo, P. & Heitmann, B.L. 2011, "Television viewing, food preferences, and food habits among children: A prospective epidemiological study", *BMC Public Health*, vol. 11, pp. 311-320.
- Harris, J.L., Bargh, J.A. & Brownell, K.D. 2009, "Priming effects of television food advertising on eating behavior", *Health psychology : official journal of the Division of Health Psychology, American Psychological Association*, vol. 28, no. 4, pp. 404-413.
- Harris, J.L. & Kalnova, S.S. 2018, *Food and beverage TV advertising to young children: Measuring exposure and potential impact*.
- Harrison, K. & Marske, A.L. 2005, "Nutritional content of foods advertised during the television programs children watch most", *American Journal of Public Health*, vol. 95, no. 9, pp. 1568-1574.
- Hastings, G., Stead, M., McDermott, L., Forsyth, A., Marie MacKintosh, A., Rayner, M., Godfrey, C., Caraher, M. & Angus, K. 2003, *Review Of Research On The Effects Of Food Promotion To Children*, .
- Hawkes, C. 2007, "Regulating and Litigating in the Public Interest: Regulating Food Marketing to Young People Worldwide: Trends and Policy Drivers", *American Journal of Public Health*, vol. 97, no. 11, pp. 1962-1973.
- Hawkes, C. & Lobstein, T. 2011, "Regulating the commercial promotion of food to children: a survey of actions worldwide", *International journal of pediatric obesity : IJPO : an official journal of the International Association for the Study of Obesity*, vol. 6, no. 2, pp. 83-94.
- Hendrie, G., Sohonpal, G., Lange, K. & Golley, R. 2013, "Change in the family food environment is associated with positive dietary change in children", *International Journal of Behavioral Nutrition & Physical Activity*, vol. 10, pp. 1-11.
- Hulley, S.B. 2001, *Designing clinical research : an epidemiologic approach*, 2nd ed. edn, Lippincott Williams & Wilkins.
- Ip, J., Mehta, K.P. & Coveney, J. 2007, "Exploring parents' perceptions of television food advertising directed at children: A South Australian study", *Nutrition & Dietetics*, vol. 64, no. 1, pp. 50-58.
- Jago, R., Baranowski, T., Baranowski, J.C., Thompson, D. & Greaves, K.A. 2005, "BMI from 3-6 y of age is predicted by TV viewing and physical activity, not diet", *International journal of obesity (2005)*, vol. 29, no. 6, pp. 557-564.



- Jansen, A., Nederkoorn, C., van Baak, L., Keirse, C., Guerrieri, R. & Havermans, R. 2009, "High-restrained eaters only overeat when they are also impulsive", *Behaviour research and therapy*, vol. 47, no. 2, pp. 105-110.
- Janz, K.F., Levy, S.M., Burns, T.L., Torner, J.C., Willing, M.C. & Warren, J.J. 2002, "Fatness, physical activity, and television viewing in children during the adiposity rebound period: the Iowa Bone Development Study", *Preventive medicine*, vol. 35, no. 6, pp. 563-571.
- Jeffrey, D.B., McLellarn, R.W. & Fox, D.T. 1982, "The development of children's eating habits: the role of television commercials", *Health education quarterly*, vol. 9, no. 2-3, pp. 174-189.
- Jenkin, G., Madhvani, N., Signal, L. & Bowers, S. 2014, "A systematic review of persuasive marketing techniques to promote food to children on television", *Obesity Reviews: An Official Journal Of The International Association For The Study Of Obesity*, vol. 15, no. 4, pp. 281-293.
- Jensen, J.D. & Ronit, K. 2015, *The EU pledge for responsible marketing of food and beverages to children: implementation in food companies*, Springer Nature.
- Kaur, H., Choi, W.S., Mayo, M.S. & Harris, K.J. 2003, "Duration of television watching is associated with increased body mass index", *The Journal of pediatrics*, vol. 143, no. 4, pp. 506-511.
- Keller, S.K. & Schulz, P.J. 2011, "Distorted food pyramid in kids programmes: A content analysis of television advertising watched in Switzerland", *European journal of public health*, vol. 21, no. 3, pp. 300-305.
- Kelleth, E. & Schmerlaib, Y. 1999, "The Australian Guide to Healthy Eating. (cover story)", *Nutridate*, vol. 10, no. 3, pp. 1.
- Kelly, B., Halford, J.C., Boyland, E.J., Chapman, K., Bautista-Castaño, I., Berg, C., Caroli, M., Cook, B., Coutinho, J.G., Effertz, T., Grammatikaki, E., Keller, K., Leung, R., Manios, Y., Monteiro, R., Pedley, C., Prell, H., Raine, K., Recine, E., Serra-Majem, L., Singh, S. & Summerbell, C. 2010, "Television Food Advertising to Children: A Global Perspective", *American Journal of Public Health*, vol. 100, no. 9, pp. 1730-1736.
- Kim, H., Lee, D., Hong, Y., Ahn, J. & Lee, K. 2016, "A content analysis of television food advertising to children: comparing low and general-nutrition food", *International Journal of Consumer Studies*, vol. 40, no. 2, pp. 201-210.
- Kimbro, R.T. & Rigby, E. 2010, "Federal Food Policy And Childhood Obesity: A Solution Or Part Of The Problem?", *Health affairs*, vol. 29, no. 3, pp. 411-8.
- Kopelman, C.A., Roberts, L.M. & Adab, P. 2007, "Advertising of food to children: is brand logo recognition related to their food knowledge, eating behaviours and food preferences?", *Journal of Public Health*, vol. 29, no. 4, pp. 358-358.
- Kotler, J.A., Schiffman, J.M. & Hanson, K.G. 2012, "The influence of media characters on children's food choices", *Journal of health communication*, vol. 17, no. 8, pp. 886-898.
- Krishna, A., Cian, L. & Sokolova, T. 2016, "The power of sensory marketing in advertising", *Current Opinion in Psychology*, vol. 10, pp. 142-147.

- Kunkel, D. & Gantz, W. 1992, "Children's Television Advertising in the Multichannel Environment", *Journal of Communication*, vol. 42, no. 3, pp. 134-152.
- Landwehr, S.C. & Hartmann, M. 2020, *Industry self-regulation of food advertisement to children: Compliance versus effectiveness of the EU Pledge*, Elsevier Ltd.
- Langeheine, M., Pohlabein, H., Lauria, F., Veidebaum, T., Tornaritis, M., Molnar, D., Eiben, G., Stefaan, d.H., Moreno, L.A., Williams, G., Ahrens, W. & Rach, S. 2018, *Attrition in the European Child Cohort IDEFICS/I.Family: Exploring Associations Between Attrition and Body Mass Index*, Frontiers Media S.A.
- Lawrence, D. 2003, "The role of characters in kids marketing", *Young Consumers*, vol. 4, no. 3, pp. 43-48.
- Linn, S.E. 2004, "Food marketing to children in the context of a marketing maelstrom", *Journal of public health policy*, vol. 25, no. 3-4, pp. 367-378.
- Linn, S. 2006, "Beyond Commercials: how Food Marketers Target Children", *Loyola of Los Angeles Law Review*, vol. 39, pp. 13.
- Lioutas, E.D. & Tzimitra-Kalogianni, I. 2015, "'I saw Santa drinking soda!' Advertising and children's food preferences", *Child: Care, Health & Development*, vol. 41, no. 3, pp. 424-433.
- Livingstone, S. & Helsper, E. 2004, *Advertising foods to children: Understanding promotion in the context of children's daily lives*, .
- Lobstein, T. & Dobb, S. 2005, "Evidence of a possible link between obesogenic food advertising and child overweight", *Obesity reviews : an official journal of the International Association for the Study of Obesity*, vol. 6, no. 3, pp. 203-208.
- Lowry, R., Wechsler, H., Galuska, D.A., Fulton, J.E. & Kann, L. 2002, "Television viewing and its associations with overweight, sedentary lifestyle, and insufficient consumption of fruits and vegetables among US high school students: differences by race, ethnicity, and gender", *The Journal of school health*, vol. 72, no. 10, pp. 413-421.
- Lynch, M. 2012, "Food Messages in Television Programs for Preschoolers: A Call for Research", *Canadian Journal of Communication*, vol. 37, no. 2, pp. 345-352.
- Manios, Y., Kourlaba, G., Kondaki, K., Grammatikaki, E., Anastasiadou, A. & Roma-Giannikou, E. 2009, "Obesity and television watching in preschoolers in Greece: the GENESIS study", *Obesity (Silver Spring, Md.)*, vol. 17, no. 11, pp. 2047-2053.
- Marquis, M., Filion, Y.P. & Dagenais, F. 2005, "Does eating while watching television influence children's food-related behaviours?", *Canadian journal of dietetic practice and research : a publication of Dietitians of Canada = Revue canadienne de la pratique et de la recherche en dietetique : une publication des Dietetistes du Canada*, vol. 66, no. 1, pp. 12-18.
- Marty, L., Chambaron, S., Nicklaus, S. & Monnery-Patris, S. 2018, *Learned pleasure from eating: An opportunity to promote healthy eating in children?*.

- Matheson, D.M., Killen, J.D., Wang, Y., Varady, A. & Robinson, T.N. 2004, "Children's food consumption during television viewing", *The American Journal of Clinical Nutrition*, vol. 79, no. 6, pp. 1088-1094.
- Menendez Garcia, R.A. & Franco Diez, F.J. 2009, "Advertising and feeding: influence of graphical advertisements on dietary habits during childhood and adolescence", *Nutricion hospitalaria*, vol. 24, no. 3, pp. 318-325.
- Missbach, B., Weber, A., Huber, E.M. & König, J.S. 2015, "Inverting the pyramid! Extent and quality of food advertised on Austrian television Health behavior, health promotion and society", *BMC Public Health*, vol. 15, no. 1.
- Montagnese, C., Santarpia, L., Buonifacio, M., Nardelli, A., Caldara, A.R., Silvestri, E., Contaldo, F. & Pasanisi, F. 2015, "European food-based dietary guidelines: A comparison and update", *Nutrition*, vol. 31, no. 7, pp. 908-915.
- Nestle, M. 2006, "Food marketing and childhood obesity--a matter of policy", *The New England journal of medicine*, vol. 354, no. 24, pp. 2527-2529.
- Olsen, S., Parker, L., Breiner, H., National, A.P. & Institute, o.M. 2013, *Challenges and Opportunities for Change in Food Marketing to Children and Youth : Workshop Summary*, National Academies Press, Washington, District of Columbia.
- Pala, V., Lissner, L., Hebestreit, A., Lanfer, A., Sieri, S., Siani, A., Huybrechts, I., Kambek, L., Molnar, D., Tornaritis, M., Moreno, L., Ahrens, W. & Krogh, V. 2013, "Dietary patterns and longitudinal change in body mass in European children: a follow-up study on the IDEFICS multicenter cohort", *European journal of clinical nutrition*, vol. 67, no. 10, pp. 1042-9.
- Pellai, A., Vetrano, S., Nobile, M. & Luti, C. 2012, "The reverse pyramid: a quali-quantitative study about food advertising inside children's television programmes", *Minerva pediatrica*, vol. 64, no. 1, pp. 15-26.
- Penney, T.L., Almiron-Roig, E., Shearer, C., McIsaac, J. & Kirk, S.F.L. 2014, "Modifying the food environment for childhood obesity prevention: challenges and opportunities", *The Proceedings of the Nutrition Society*, vol. 73, no. 2, pp. 226-36.
- Pettigrew, S., Jongenelis, M., Miller, C. & Chapman, K. 2017, *A path analysis model of factors influencing children's requests for unhealthy foods*.
- Pine, K.J. & Nash, A. 2003, "Barbie or Betty? Preschool children's preference for branded products and evidence for gender-linked differences", *Journal of developmental and behavioral pediatrics : JDBP*, vol. 24, no. 4, pp. 219-224.
- Potvin Kent, M., Dubois, L. & Wanless, A. 2012, "A nutritional comparison of foods and beverages marketed to children in two advertising policy environments", *Obesity (Silver Spring, Md.)*, vol. 20, no. 9, pp. 1829-1837.
- Powell, L.M., Schermbeck, R.M. & Chaloupka, F.J. 2013, "Nutritional content of food and beverage products in television advertisements seen on children's programming", *Childhood obesity (Print)*, vol. 9, no. 6, pp. 524-531.

- Powell, R.M. & Gross, T. 2018, "Food for Thought: A Novel Media Literacy Intervention on Food Advertising Targeting Young Children and their Parents", *Journal of Media Literacy Education*, vol. 10, no. 3, pp. 80-94.
- Rebholz, C.E., Chinapaw, M.J., van Stralen, M.M., Bere, E., Bringolf, B., De Bourdeaudhuij, I., Jan, N., Kovacs, E., Maes, L., Manios, Y., Moreno, L., Singh, A.S., Brug, J. & te Velde, S.J. 2014, "Agreement between parent and child report on parental practices regarding dietary, physical activity and sedentary behaviours: the ENERGY cross-sectional survey", *BMC Public Health*, vol. 14, pp. n/a-918.
- Reisch, L.A., Gwozdz, W., Barba, G., De Henauw, S., Lascorz, N. & Pigeot, I. 2013, "Experimental evidence on the impact of food advertising on children's knowledge about and preferences for healthful food", *Journal of obesity*, vol. 2013, pp. 408582.
- Roberto, C.A., Baik, J., Harris, J.L. & Brownell, K.D. 2010, "Influence of licensed characters on children's taste and snack preferences", *Pediatrics*, vol. 126, no. 1, pp. 88-93.
- Robinson, T.N. 1999, "Reducing children's television viewing to prevent obesity: a randomized controlled trial", *Jama*, vol. 282, no. 16, pp. 1561-1567.
- Robinson, T.N., Borzekowski, D.L., Matheson, D.M. & Kraemer, H.C. 2007, "Effects of fast food branding on young children's taste preferences", *Archives of Pediatrics & Adolescent Medicine*, vol. 161, no. 8, pp. 792-797.
- Rose, G.M., Merchant, A. & Bakir, A. 2012, "Fantasy in Food Advertising Targeted at Children", *Journal of Advertising*, vol. 41, no. 3, pp. 75-90.
- Sarver, G.S., Howland, A. & McManus, T. 1976, "Effects of Age and Stimulus Presentation Rate on Immediate and Delayed Recall in Children", *Child development*, vol. 47, no. 2, pp. 452-458.
- Schermbeck, R.M. & Powell, L.M. 2015, "Nutrition recommendations and the Children's Food and Beverage Advertising Initiative's 2014 approved food and beverage product list", *Preventing chronic disease*, vol. 12, pp. E53-E53.
- Silva, A., Higgins, L.M. & Hussein, M. 2015, "An Evaluation of the Effect of Child-Directed Television Food Advertising Regulation in the United Kingdom", *Canadian Journal of Agricultural Economics*, vol. 63, no. 4, pp. 583-600.
- Silva, A., Higgins, L.M. & Kulesz, M.M. 2016, "Nutritional Impact of Child-Directed TV Food Advertising Regulation: Are We Rearranging the Deck Chairs on the Titanic?", *Journal of the Association for Consumer Research*, vol. 1, no. 3, pp. 422-444.
- Story, M. & French, S. 2004, "Food Advertising and Marketing Directed at Children and Adolescents in the US", *The International Journal of Behavioral Nutrition and Physical Activity*, vol. 1, pp. 3-5868-1-3.
- TABECK, P.S. & BANERJEE, S.P. 2016, "Content Analysis of Children Based Food and Beverages Advertisements", *CLEAR International Journal of Research in Commerce & Management*, vol. 7, no. 7, pp. 14-20.

- Taras, H.L., Sallis, J.F., Patterson, T.L., Nader, P.R. & Nelson, J.A. 1989, "Television's influence on children's diet and physical activity", *Journal of developmental and behavioral pediatrics : JDBP*, vol. 10, no. 4, pp. 176-180.
- Traill, W.B., Mazzocchi, M., Niedzwiedzka, B., Shankar, B. & Wills, J. 2013, "The EATWELL project: Recommendations for healthy eating policy interventions across Europe", *Nutrition Bulletin*, vol. 38, no. 3, pp. 352-357.
- Vaughn, R. 1980, "How Advertising Works: A Planning Model", *Journal of Advertising Research*, vol. 20, no. 5, pp. 27.
- Veerman, J.L., Van Beeck, E.F., Barendregt, J.J. & Mackenbach, J.P. 2009, "By how much would limiting TV food advertising reduce childhood obesity?", *European journal of public health*, vol. 19, no. 4, pp. 365-369.
- Vilaro, M.J., Barnett, T.E., Watson, A.M., Merten, J.W. & Mathews, A.E. 2017, *Weekday and weekend food advertising varies on children's television in the USA but persuasive techniques and unhealthy items still dominate*.
- Viner, R.M. & Cole, T.J. 2005, "Television viewing in early childhood predicts adult body mass index", *The Journal of pediatrics*, vol. 147, no. 4, pp. 429-435.
- Volders, E. 2018, "Eating (Well) at School", *Nutridate*, vol. 29, no. 1, pp. 3-8.
- Walter, P., Infanger, E. & Mühlemann, P. 2007, "Food Pyramid of the Swiss Society for Nutrition", *Annals of Nutrition & Metabolism*, vol. 51, pp. 15-20.
- Weilbacher, W.M. 2003, "How Advertising Affects Consumers", *Journal of Advertising Research*, vol. 43, no. 2, pp. 230-234.
- Whalen, R., Harrold, J., Child, S., Halford, J. & Boyland, E. 2018, "The Health Halo Trend in UK Television Food Advertising Viewed by Children: The Rise of Implicit and Explicit Health Messaging in the Promotion of Unhealthy Foods", *International Journal of Environmental Research & Public Health*, vol. 15, no. 3, pp. 560-N.PAG.
- Wiecha, J.L., Peterson, K.E., Ludwig, D.S., Kim, J., Sobol, A. & Gortmaker, S.L. 2006, "When children eat what they watch: impact of television viewing on dietary intake in youth", *Archives of Pediatrics & Adolescent Medicine*, vol. 160, no. 4, pp. 436-442.
- Woodside, A.G. ( 1,3 ), Sood, S. ( 2,4 ) & Miller, K.E. ( 2,5 ) 2008, "When consumers and brands talk: Storytelling theory and research in psychology and marketing", *Psychology and Marketing*, vol. 25, no. 2, pp. 97-145.
- World, H.O. 2003, *Diet, nutrition, and the prevention of chronic diseases report of a joint WHO/FAO expert consultation*, Geneva : World Health Organization, 2003.

## **Appendices**

### **Table of contents**

1. Cyprus Bioethics Committee Research Approval.
2. Ministry of Education Research Approval.
3. Cyprus Radio-Television Authority Agreement for Data Provision.
4. Cyprus Dietetic and Nutrition Association Research Approval.
5. General Data Protection Regulation (GDPR) Research Approval.
6. Information-Orientation Letter to School Directors.
7. Consent Letter-Information-Orientation Letter for Parents/Guardians.
8. Questionnaire.
9. Consent Letter-Information-Orientation Letter for Parents/Guardians for Focus-Test Group.
10. Hunger Scale.
11. Test 1: Product Recognition Test- photos used.
12. Test 2: Brand logo Recall-Recognition Measurement Test- photos used.
13. Test 3: Food Preference Test-photos used.
14. Test 4: Food Preference Using Branded and Unbranded Food Products- photos used.
15. Test 5: Food Knowledge, Relatively Healthy/Relatively Unhealthy Test- photos used.
16. PhD Photos.



ΚΥΠΡΙΑΚΗ ΔΗΜΟΚΡΑΤΙΑ

ΕΘΝΙΚΗ ΕΠΙΤΡΟΠΗ ΒΙΟΗΘΙΚΗΣ ΚΥΠΡΟΥ

Αρ. Φακ.: ΕΕΒΚ ΕΠ 2017.01.64

Αρ. Τηλ.: 22809038/039

Αρ. Φαξ: 22353878

15 Μαΐου 2017

Ξάνθη Σοφοκλέους  
Ξάνθης 22  
2450 Δευτερά  
Λευκωσία

**Θέμα: «Η επίδραση της τηλεοπτικής διαφήμισης στην παιδική παχυσαρκία και στην διατροφική συμπεριφορά των παιδιών καθώς και η συνεισφορά της διατροφικής συμβουλευτικής στην αντιμετώπιση της»**

Αναφέρομαι στην αίτηση γνωμοδότησης που υποβάλατε για την πιο πάνω ερευνητική πρόταση. Επιθυμώ να σας πληροφορήσω ότι από τη μελέτη του περιεχομένου των εγγράφων που έχετε καταθέσει, που αφορούν την πιο πάνω ερευνητική πρόταση, έχω την γνώμη ότι η εν λόγω έρευνα σας δεν **χρήζει** βιοηθικής αξιολόγησης.

2. Παραμένει περαιτέρω ευθύνη δική σας η διεξαγωγή της έρευνας με τρόπο που να διασφαλιστεί η τήρηση της εμπιστευτικότητας και ανωνυμίας των συμμετεχόντων με βάση τον περί Επεξεργασίας Δεδομένων Προσωπικού Χαρακτήρα (Προστασία του Ατόμου) Νόμο του 2001 (Ν.138(I)/2001) και με τις εκάστοτε τροποποιήσεις.

3. Σας ενημερώνουμε ότι για σκοπούς καλύτερου συντονισμού και αποφυγής επανάληψης ερευνών με το ίδιο θέμα ή/και υπό εξέταση πληθυσμό μέσα σε σύντομο σχετικά χρονικό διάστημα, η ΕΕΒΚ δημοσιεύει στην ιστοσελίδα της το θέμα της έρευνας, τον φορέα και τον υπό εξέταση πληθυσμό.

4. Κατά τη διάρκεια εκπόνησης της έρευνας, ο συντονιστής / επιστημονικός υπεύθυνος θα ενημερώνει την ΕΕΒΚ για κάθε τροποποίηση των αρχικά κατατεθειμένων εγγράφων (πρωτόκολλο ή άλλα ερευνητικά έγγραφα) και θα υποβάλλει τις απαιτούμενες έντυπες τροποποιήσεις στην Επιτροπή.

5. Σε περίπτωση διακοπής της έρευνας, ο συντονιστής/ επιστημονικός υπεύθυνος θα ενημερώσει γραπτώς την Επιτροπή κάνοντας αναφορά και στους λόγους διακοπής της έρευνας.

.../2

ΕΘΝΙΚΗ ΕΠΙΤΡΟΠΗ ΒΙΟΗΘΙΚΗΣ ΚΥΠΡΟΥ

Κέντρο Υγείας Έγκωμης, Νίκου Κρανιδιώτη, 2411 Λευκωσία,

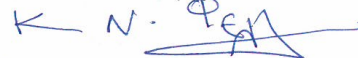
Ηλεκτρονικό Ταχυδρομείο: [cnbc@bioethics.gov.cy](mailto:cnbc@bioethics.gov.cy) Ιστοσελίδα: [www.bioethics.gov.cy](http://www.bioethics.gov.cy)

6. Ο συντονιστής/ επιστημονικός υπεύθυνος θα ενημερώσει την Επιτροπή σε περίπτωση αδυναμίας να συνεχίσει ως συντονιστής και θα υποβάλει τα στοιχεία επικοινωνίας του αντικαταστάτη του.

7. Με το πέρας της ερευνητικής πρότασης, ο συντονιστής / επιστημονικός υπεύθυνος θα ενημερώσει εγγράφως την Επιτροπή ότι το υπό αναφορά ερευνητικό πρωτόκολλο ολοκληρώθηκε.

8. Σας ευχόμαστε κάθε επιτυχία στη διεξαγωγή της έρευνάς σας.

Με εκτίμηση,



Καθ. Κωνσταντίνος Ν. Φελλάς

Πρόεδρος

Εθνικής Επιτροπής Βιοηθικής Κύπρου

UNIVERSITY of NICOSIA





ΚΥΠΡΙΑΚΗ ΔΗΜΟΚΡΑΤΙΑ  
ΥΠΟΥΡΓΕΙΟ  
ΠΑΙΔΕΙΑΣ ΚΑΙ ΠΟΛΙΤΙΣΜΟΥ

ΔΙΕΥΘΥΝΣΗ  
ΔΗΜΟΤΙΚΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

Αρ. Φακ.: 7.19.46.10/12  
Αρ. Τηλ. : 22800665  
Αρ. Φαξ : 22809513  
E-mail : [dde@moe.gov.cy](mailto:dde@moe.gov.cy)

25 Ιουλίου, 2017

Κυρία  
Ξάνθη Σοφοκλέους  
Ξάνθης 22  
2450 Δευτερά

**Θέμα: Άδεια για διεξαγωγή έρευνας με μαθητές δημοτικών σχολείων**

Αγαπητή κυρία Σοφοκλέους,

Έχω οδηγίες να αναφερθώ στη σχετική με το πιο πάνω θέμα αίτησή σας προς το Κέντρο Εκπαιδευτικής Έρευνας και Αξιολόγησης, που υποβλήθηκε στις 20 Απριλίου 2017, και να σας πληροφορήσω ότι εγκρίνεται το αίτημά σας για διεξαγωγή έρευνας με μαθητές δημοτικών σχολείων που εσείς θα επιλέξετε, με θέμα «*Η επίδραση της τηλεοπτικής διαφήμισης τροφίμων στην παιδική παχυσαρκία και στη διατροφική συμπεριφορά των παιδιών, καθώς και η σημασία της διατροφικής συμβουλευτικής στην αντιμετώπισή της*», την ερχόμενη σχολική χρονιά 2017-2018. Η απάντηση του Κέντρου Εκπαιδευτικής Έρευνας και Αξιολόγησης σας αποστέλλεται συνημμένα, για δική σας ενημέρωση. Θα πρέπει, επίσης, να παρουσιάσετε το Αναλυτικό Σχέδιο Έρευνας, σε περίπτωση που αυτό σας ζητηθεί.

2. Νοείται, βέβαια, ότι πρέπει να εξασφαλιστεί η άδεια των διευθυντών/διευθυντριών των σχολείων, εκ των προτέρων, ώστε να ληφθούν όλα τα απαραίτητα μέτρα για να μην επηρεαστεί η ομαλή λειτουργία τους. Η έρευνα θα πρέπει να διεξαχθεί με ιδιαίτερα προσεγμένο τρόπο, ώστε να μη θίγεται το έργο των εκπαιδευτικών, το σχολικό περιβάλλον ή οι οικογένειες των μαθητών και όλες οι δραστηριότητες που θα αναπτυχθούν πρέπει να εμπίπτουν μέσα στο πλαίσιο που καθορίζεται από το Αναλυτικό Πρόγραμμα. Η έρευνα θα διεξαχθεί νοουμένου ότι η απώλεια του διδακτικού χρόνου των μαθητών θα περιοριστεί στον ελάχιστο δυνατό βαθμό, ενώ για τη συμμετοχή τους χρειάζεται η **γραπτή** συγκατάθεση των γονιών τους. Οι γονείς πρέπει να γνωρίζουν όλες τις σχετικές λεπτομέρειες για τη διεξαγωγή της έρευνας, καθώς και τα στάδια μέσα από τα οποία θα εξελιχθεί. Σημειώνεται, επίσης, ότι τα πορίσματά σας κρίνεται απαραίτητο να είναι ανώνυμα και οι πληροφορίες που θα συλλέξετε να τηρηθούν απόλυτα εμπιστευτικές και αποκλειστικά και μόνο για τον σκοπό της έρευνας.



Υπουργείο Παιδείας και Πολιτισμού, 1434 Λευκωσία  
Τηλ.: 22800600 Φαξ: 22428277 Ιστοσελίδα: <http://www.moe.gov.cy>

3. Η παρούσα έγκριση παραχωρείται με την προϋπόθεση ότι τα πορίσματα της εργασίας, θα κοινοποιηθούν μόλις αυτή ολοκληρωθεί, στη Διεύθυνση Δημοτικής Εκπαίδευσης για σχετική μελέτη και κατάλληλη αξιοποίηση.

Με εκτίμηση,



(Χρίστος Χατζηθανασίου)  
για Γενική Διευθύντρια

Κοιν.: Π.Λ.Ε.  
Επαρχιακά Γραφεία Παιδείας

AT/AT EREVNES

### Σχόλια για ερευνητικές προτάσεις

Θέμα έρευνας:	"Η επίδραση της τηλεοπτικής διαφήμισης τροφίμων στην παιδική παχυσαρκία και στην διατροφική συμπεριφορά των παιδιών καθώς και η σημασία της διατροφικής συμβουλευτικής στην αντιμετώπιση της"
Κωδικός έρευνας:	190004
Ονοματεπώνυμο Ερευνητή:	Σοφοκλέους Ξάνθη
Διεύθυνση στην οποία υποβλήθηκε:	Διεύθυνση Δημοτικής Εκπαίδευσης
Ημερομηνία υποβολής στο ΚΕΕΑ:	28/06/2017

- 1. Σκοπός -ερευνητικά ερωτήματα/υποθέσεις**  
Δεν υπάρχουν παρατηρήσεις.
- 2. Χρησιμότητα-αναγκαιότητα της έρευνας**  
Δεν υπάρχουν παρατηρήσεις.
- 3. Διαδικασία συλλογής δεδομένων**  
Δεν υπάρχουν παρατηρήσεις.
- 4. Δειγματοληψία**  
Δεν υπάρχουν παρατηρήσεις.
- 5. Ερευνητικά εργαλεία**  
Δεν υπάρχουν παρατηρήσεις.
- 6. Χρόνος απασχόλησης**  
Δεν υπάρχουν παρατηρήσεις.

7. Χρονική περίοδος έρευνας και αναμενόμενος χρόνος αποτελεσμάτων  
Δεν υπάρχουν παρατηρήσεις.

8. Θέματα ηθικής και ερευνητικής δεοντολογίας  
Δεν υπάρχουν παρατηρήσεις.

9. Εισήγηση ΚΕΕΑ

Η έρευνα να προχωρήσει ως έχει για υλοποίηση	✓
Η έρευνα να προχωρήσει για υλοποίηση, νοουμένου ότι θα γίνουν οι αλλαγές/τροποποιήσεις/εισηγήσεις που επισημαίνονται πιο πάνω	
Η αίτηση για έρευνα να υποβληθεί ξανά αφού ληφθούν υπόψη τα πιο πάνω	



Αρ. Φακ. 1.12.01

Προς Επιτροπή Βιοηθικής Κύπρου

26 Απριλίου, 2017

Κύριε / Κυρία

**Θέμα:** Έρευνα διδακτορικού του Πανεπιστημίου Λευκωσίας με θέμα «Η επίδραση των τηλεοπτικών διαφημίσεων στη διατροφική συμπεριφορά των παιδιών της Κύπρου ηλικίας 6-12 και ποιος ο ρόλος της διατροφικής συμβουλευτικής»

Δια της παρούσης θα ήθελα να σας ενημερώσω ότι για τους σκοπούς της πιο πάνω έρευνας, η Αρχή Ραδιοτηλεόρασης Κύπρου, κατόπιν σχετικού αιτήματος της διδακτορικής φοιτήτριας κ. Ξάνθης Σοφοκλέους, έχει συμφωνήσει να παρέχει στην κ. Σοφοκλέους από τον Φεβρουάριο 2016 το οπτικοακουστικό υλικό που της είναι απαραίτητο για να μπορέσει να φέρει εις πέρας την καταγραφή και κατόπιν ανάλυση των δεδομένων των τηλεοπτικών διαφημίσεων που σχετίζονται με τρόφιμα της περιόδου Νοεμβρίου 2016 – Δεκεμβρίου 2017.

Τα δεδομένα αυτά περιλαμβάνουν το οπτικοακουστικό υλικό 12 μηνών, 7 ημερών την εβδομάδα, των ωρών 07.00 – 21.30 εννέα τηλεοπτικών οργανισμών (ΡΙΚ1, ΡΙΚ2, MEGAONE, EXTRA TV, CAPITAL TV, SIGMA, ALPHA ΚΥΠΡΟΥ, ANTENNA TV, PLUS TV). Η Αρχή παρέχει στην ερευνήτρια το οπτικοακουστικό υλικό, μέσω αντιγραφής του ηλεκτρονικού υλικού σε εξωτερικό σκληρό δίσκο. Στόχος της κ. Σοφοκλέους είναι να καταγράψει όλες τις διαφημίσεις που σχετίζονται με τρόφιμα, καθώς και πολλές άλλες λεπτομέρειες που συζητήθηκαν στις συναντήσεις μας.

Η Αρχή Ραδιοτηλεόρασης Κύπρου αναμένει με ιδιαίτερο ενδιαφέρον τα αποτελέσματα της εν λόγω έρευνας, καθώς αυτά θα μπορούν να αποτελέσουν χρήσιμη βάση για την ανάλυση και αξιολόγηση της επίδρασης που ενδεχομένως να έχει η τηλεόραση στις διατροφικές συνήθειες των παιδιών.

Με εκτίμηση,

(Νεόφυτος Επαμεινώνδας)

Διευθυντής

Αρχής Ραδιοτηλεόρασης Κύπρου

Λεωφ. Αθαλάσσης αρ.42, 2012 Στρόβολος - Λευκωσία, Τ.Κ. 23377, 1682 Λευκωσία, Κύπρος  
Τηλ.: ++357 22512468, Φαξ.: ++357 22512473, E-mail: [crtauthority@crt.a.org.cy](mailto:crtauthority@crt.a.org.cy)  
Website: [www.crt.a.org.cy](http://www.crt.a.org.cy)



## ΣΥΝΔΕΣΜΟΣ ΔΙΑΙΤΟΛΟΓΩΝ & ΔΙΑΤΡΟΦΟΛΟΓΩΝ ΚΥΠΡΟΥ

1

20 Σεπτεμβρίου 2017

Κυρία Ξάνθη Σοφοκλέους  
Απόστολου Μάρκου 18,  
Διαμ 102, 2049 Λευκωσία

Αγαπητή κα. Σοφοκλέους,

Ο Σύνδεσμος Διαιτολόγων και Διατροφολόγων Κύπρου επιθυμεί να σας ενημερώσει ότι έχει θέσει υπό την αιγίδα του την διδακτορική σας έρευνα με τίτλο **«Η επίδραση της τηλεοπτικής διαφήμισης στην παιδική παχυσαρκία και στην διατροφική συμπεριφορά των παιδιών καθώς και η συνεισφορά της διατροφικής συμβουλευτικής στην αντιμετώπιση της»**.

Με εκτίμηση,

Δρ Ελένη Π. Ανδρέου, RDN, LD  
Πρόεδρος

Άννα Παχίτα, RD  
Γραμματέας

**Πρόεδρος:** Ελένη Π. Ανδρέου, **Αντιπρόεδρος:** Χριστιάνα Φιλίππου, **Γραμματέας:** Άννα Παχίτα, **Ταμίας:** Προκόπης Καλλή  
**Βοηθός Γραμματέας:** Νικολέττα Ντορζή, **Μέλη:** Νικόλαος Ντάφλος, Ανδρέας Σάββα

Ταχ. Διεύθυνση: Τ.Θ. 28823, Τ.Τ. 2083 Λευκωσία, Κύπρος / Τηλ: 22452258- Fax: 22-452292



ΚΥΠΡΙΑΚΗ ΔΗΜΟΚΡΑΤΙΑ

Αρ. Φακ.: 3.28.509  
Αρ. Τηλ: 22818303  
Αρ. Φαξ: 22304565



ΓΡΑΦΕΙΟ ΕΠΙΤΡΟΠΟΥ ΠΡΟΣΤΑΣΙΑΣ  
ΔΕΔΟΜΕΝΩΝ ΠΡΟΣΩΠΙΚΟΥ  
ΧΑΡΑΚΤΗΡΑ

1 Νοεμβρίου 2017

Κυρία Ξάνθη Σοφοκλέους  
Ξάνθης 22  
2450 Δευτερά

**Θέμα: Γνωστοποίηση Σύστασης Λειτουργίας Αρχείου/ Έναρξης Επεξεργασίας της κ. Ξάνθης Σοφοκλέους, Κλινικής Διαιτολόγου, Καθηγήτριας στο KES College, φοιτήτριας διδακτορικού επιπέδου στο Πανεπιστήμιο Λευκωσίας, που αφορά έρευνα της με θέμα: «Η επίδραση της τηλεοπτικής διαφήμισης τροφίμων στην παιδική παχυσαρκία», με ενημέρωση των υποκειμένων των δεδομένων και εθελοντική συμμετοχή τους με λήψη της συγκατάθεσης τους (από τους γονείς) για επεξεργασία των προσωπικών δεδομένων**

Αναφέρομαι στο έντυπο Γνωστοποίησης Σύστασης και Λειτουργίας Αρχείου/ Έναρξης Επεξεργασίας με ημερομηνία 26.10.2017 που υποβάλατε στο Γραφείο Επιτρόπου Προστασίας Δεδομένων Προσωπικού Χαρακτήρα, σχετικά με το πιο πάνω θέμα, και έχω οδηγίες να σας πληροφορήσω τα εξής:

- 2.1. Αφού ελήφθη υπόψη η ιδιότητα σας ως Κλινικής Διαιτολόγου συνεπώς δεσμεύεστε από επαγγελματικό κώδικα δεοντολογίας με καθήκον εχεμύθειας για τους ασθενείς σας,
- 2.2. ότι είστε καθηγήτρια στο KES College και φοιτήτρια διδακτορικού επιπέδου στο Πανεπιστήμιο Λευκωσίας, συνεπώς η εν λόγω έρευνα είναι επιστημονικού επιπέδου και ότι η επεξεργασία των δεδομένων θα γίνει αποκλειστικά για τους σκοπούς της, πιο πάνω επιστημονικής έρευνας,
- 2.3. ότι η συμμετοχή στην έρευνα θα είναι εθελοντική και τα υποκείμενα των δεδομένων (συγκεκριμένα οι γονείς) θα ενημερώνονται και η επεξεργασία των προσωπικών δεδομένων (των παιδιών τους) θα γίνεται με τη συγκατάθεσή τους,
- 2.4. ότι τα υπογεγραμμένα έντυπα ενημέρωσης και λήψης συγκατάθεσης θα λαμβάνονται και θα φυλάγονται ξεχωριστά από τα απαντημένα ερωτηματολόγια,
- 2.5. ότι η λήψη των δεδομένων για τους σκοπούς της έρευνας θα είναι ανώνυμη,
- 2.6. ότι δεν θα κοινοποιηθούν σε κανένα προσωπικά δεδομένα,
- 2.7. ότι στο σημείο «Η» έχετε περιλάβει μέτρα ασφάλειας και προστασίας των δεδομένων, τόσο σε χάρτινη όσο και σε ηλεκτρονική μορφή,
- 2.8. ότι τα προσωπικά δεδομένα θα διαγραφούν/καταστραφούν στο τέλος μηνός Δεκεμβρίου του έτους 2020,
3. η Γνωστοποίηση φαίνεται να είναι σύμφωνη με τις διατάξεις του άρθρου 7(1)(2) των περί Επεξεργασίας Δεδομένων Προσωπικού Χαρακτήρα (Προστασία του Ατόμου) Νόμων του



2001 μέχρι 2012 (Ν. 138(Ι)/2001 όπως τροποποιήθηκε με τους Ν. 37(Ι)/2003 και Ν. 105(Ι)/2012), στο εξής «ο Νόμος», και, ως εκ τούτου, έχει καταχωριστεί στο Μητρώο Αρχείων και Επεξεργασιών που τηρεί ο Επίτροπος δυνάμει των διατάξεων των άρθρων 7(4), 23(1)(ιγ) και 24(1)(α) του Νόμου.

4. Το πιο πάνω Μητρώο είναι προσβάσιμο στο κοινό, σύμφωνα με το άρθρο 24(2) του Νόμου.

5. Να σημειωθεί ότι η καταχώρηση της Γνωστοποίησης στο εν λόγω μητρώο σε καμία περίπτωση δεν ισοδυναμεί με άδεια επεξεργασίας προσωπικών δεδομένων, ούτε απαλλάσσει τον εκάστοτε υπεύθυνο επεξεργασίας από ενδεχόμενη ευθύνη του σε σχέση με τα στοιχεία τα οποία έχουν δηλωθεί στο έντυπο Γνωστοποίησης ή σε σχέση με την εν γένει επεξεργασία των προσωπικών δεδομένων ιδίως σε περίπτωση που υποβληθούν στο Γραφείο μας αιτήσεις νομιμότητας, παράπονα, καταγγελίες ή ακόμη και σε περιπτώσεις αυτεπάγγελτης εξέτασης. Σε κάθε περίπτωση η καταχώρηση της Γνωστοποίησης στο εν λόγω Μητρώο δεν ισοδυναμεί με νομιμότητα της σχετικής επεξεργασίας.

6. Επιπλέον επισημαίνουμε ότι από τις 25.5.2018 τίθεται σε εφαρμογή ο Κανονισμός (ΕΕ) 2016/679 της 27<sup>ης</sup> Απριλίου 2016 και θεωρούμε χρήσιμο να σας πληροφορήσουμε ότι θα ισχύουν οι διατάξεις του άρθρου 30 για τα Αρχεία των δραστηριοτήτων επεξεργασίας.



(Μάριος Παπαχριστοδούλου)  
για Επίτροπο Προστασίας Δεδομένων  
Προσωπικού Χαρακτήρα

ΜΠαπ



Αγαπητέ κε/κα Διευθυντή/τρια

Ονομάζομαι Ξάνθη Σοφοκλέους, φοιτώ στο University of Nicosia όπου και κάνω την Διδακτορική μου έρευνα. Σκοπός της έρευνας μου είναι η αξιολόγηση της επίδρασης των διαφημίσεων που σχετίζονται με τρόφιμα, οι επιπτώσεις τους στο βάρος των παιδιών, στην διατροφική τους συμπεριφορά.

Η κύρια επιβλέπων της Διδακτορικής διατριβής είναι η Δρ Ελένη Ανδρέου και η παρούσα έρευνα έχει υποβληθεί και έχει εξασφαλίσει άδεια από το αρμόδιο τμήμα του Υπουργείου Παιδείας Αρ. Φακ.: 7.10.46.10/12, Επιτροπή Ηθικής και Δεοντολογίας του Πανεπιστημίου Λευκωσίας και Επιτροπή Βιοηθικής Κύπρου Αρ. Φακ.: ΕΕΒΚ ΕΠ 2017.01.64, για διεξαγωγή της έρευνας σε μαθητές δημοτικών σχολείων. Επίσης η έρευνα τελεί υπό την αιγίδα του Συνδέσμου Διαιτολόγων και Διατροφολόγων Κύπρου.

Τα στάδια της έρευνας αφορούν:

Α στάδιο: Συμπλήρωση ερωτηματολογίου από γονείς/κηδεμόνες (το ερωτηματολόγιο θα δοθεί στα παιδιά μέσω των δασκάλων τους και θα επιστραφεί με τον ίδιο τρόπο)

Στο στάδιο αυτό θα λάβουν μέρος: 1 Δημοτικό σχολείο από της επαρχία Λευκωσίας

1 Δημοτικό σχολείο από την επαρχία Λάρνακας

1 Δημοτικό σχολείο από την επαρχία Λεμεσού

1 Δημοτικό σχολείο από την επαρχία Πάφου

1 Δημοτικό σχολείο από την ελ. επαρχία Αμμοχώστου

Η συμμετοχή είναι εθελοντική και διασφαλίζεται η ανωνυμία των συμμετεχόντων και θα ληφθούν τα απαραίτητα μέτρα για την ασφαλή φύλαξη των δεδομένων της έρευνας. Όλοι οι συμμετέχοντες έχουν το δικαίωμα να αποσυρθούν σε οποιοδήποτε στάδιο της έρευνας.

Τα αποτελέσματα της έρευνας θα μας βοηθήσουν να κατανοήσουμε καλύτερα την σχέση μεταξύ διαφημίσεων, βάρους, φύλου με έμφαση στις παραμέτρους εκείνες που πιθανών να συμβάλλουν στην τροποποίηση διατροφικών συνηθειών. Η ανάδειξη των παραμέτρων αυτών μπορεί να βοηθήσει τους επαγγελματίες υγείας, εκπαιδευτικούς καθώς και γονείς να βελτιώσουν η και να τροποποιήσουν τις διατροφικές συνήθειες με στόχο το υγιές βάρος των παιδιών τους.

Τα δεδομένα της αξιολόγησης είναι άκρως εμπιστευτικά και μπορούν να χρησιμοποιηθούν μόνο από την υποφαινόμενη κύρια ερευνήτρια και την επιβλέπουσα καθηγήτρια ή Δρ. Ελένη Ανδρέου και θα μπορούν να χρησιμοποιηθούν μόνο για σκοπούς της παρούσας έρευνας. Είμαι στην διάθεσή σας για οποιαδήποτε διευκρίνηση σχετικά με τα όσα προαναφέρθηκαν.

Στο Β στάδιο στο οποίο θα λάβει μέρος 1 επιλεγόμενο σχολείο της επαρχίας Λευκωσίας μικρή ομάδα παιδιών θα λάβει μέρος σε δραστηριότητες που θα αξιολογήσουν(τεστ) τις διατροφικές τους προτιμήσεις.

Παρακαλώ όπως και το δικό σας σχολείο λάβει μέρος στην έρευνα και παρακαλώ να μου δοθεί σαφής ημερομηνία για να πραγματοποιηθεί η έρευνα.

Το σχολείο σας θα λάβει μέρος στο στάδιο Α.

Τα ερωτηματολόγια θα πρέπει να δοθούν άμεσα στην χρονική περίοδο Οκτωβρίου- Νοεμβρίου 2017.

Μετά το πέρας της έρευνας θα προσφερθεί επιμορφωτική διάλεξη προς τους γονείς και άλλη προς τους μαθητές από εμένα ως κύρια ερευνήτρια ή από συνεργάτες της ερευνητικής μου ομάδας ή μέλη του Συνδέσμου Διαιτολόγων και Διατροφολόγων Κύπρου.

Πιο κάτω σας παραθέτω τα στοιχεία επικοινωνίας μου για οποιαδήποτε επιπλέον πληροφορία ή διευκρίνιση χρειάζεστε.

Σας ευχαριστώ εκ των προτέρων για την θετική σας ανταπόκριση για την ολοκλήρωση αυτού του έργου.

Ξάνθη Σοφοκλέους, BSc in Nutrition/Dietetics, MBA, PhD Candidate in Nutrition and Dietetics

Κλινική Διαιτολόγος, Διατροφολόγος, μέλος του Συνδέσμου Διαιτολόγων και Διατροφολόγων Κύπρου, Εγγεγραμμένο μέλος Συμβουλίου Εγγραφής Επιστημόνων , Τεχνολόγων Τροφίμων και Διαιτολόγων Κύπρου.

Τηλέφωνο επικοινωνίας : 99475906

Email: [xanthiso@cytanet.com.cy](mailto:xanthiso@cytanet.com.cy)

## Διδακτορικό Πρόγραμμα στην Διατροφή και Διαιτολογία

**Έντυπο ΕΝΗΜΕΡΩΣΗΣ των γονέων και κηδεμόνων για συμμετοχή των μαθητών/τριών στην έρευνα**

**«Η επίδραση της τηλεοπτικής διαφήμισης τροφίμων στην διατροφική συμπεριφορά των παιδιών ηλικίας 6-12 χρονών στην Κύπρο»**

Αγαπητοί γονείς/ κηδεμόνες,

Ονομάζομαι Ξάνθη Σοφοκλέους, φοιτώ στο University of Nicosia όπου και κάνω την Διδακτορική μου έρευνα. Σκοπός της έρευνας μου είναι η αξιολόγηση της επίδρασης των διαφημίσεων που σχετίζονται με τρόφιμα, οι επιπτώσεις τους στο βάρος των παιδιών, στην διατροφική τους συμπεριφορά, και ποια η σημασία της διατροφικής συμβουλευτικής. Η έρευνα έχει εγκριθεί από το Υπουργείο Παιδείας, Επιτροπή Ηθικής και Δεοντολογίας του Πανεπιστημίου Λευκωσίας και Επιτροπή Βιοηθικής Κύπρου και τελεί υπό την αιγίδα του Συνδέσμου Διαιτολόγων και Διατροφολόγων Κύπρου.

Για την διεκπεραίωση της έρευνας η συνεισφορά σας θεωρείται πολύτιμη. Το παρόν ερωτηματολόγιο έχει δοθεί σε 1050 παιδιά Παγκύπρια. Το σχολείο του παιδιού σας έχει τυχαία επιλεγεί για να συμμετέχει στην έρευνα. Ζητάμε από γονείς/κηδεμόνες την συμπλήρωση του(συνολικός χρόνος περίπου 20 λεπτά). Η συμμετοχή είναι εθελοντική και διασφαλίζεται η ανωνυμία των συμμετεχόντων και θα ληφθούν τα απαραίτητα μέτρα για την ασφαλή φύλαξη των δεδομένων της έρευνας. Όλοι οι συμμετέχοντες έχουν το δικαίωμα να αποσυρθούν σε οποιοδήποτε στάδιο της έρευνας.

Τα αποτελέσματα της έρευνας θα μας βοηθήσουν να κατανοήσουμε καλύτερα την σχέση μεταξύ διαφημίσεων, βάρους, διατροφικών συνηθειών με έμφαση στις παραμέτρους εκείνες που πιθανών να συμβάλλουν στην παιδική παχυσαρκία. Η ανάδειξη των παραμέτρων αυτών μπορεί να βοηθήσει τους επαγγελματίες υγείας, εκπαιδευτικούς καθώς και γονείς να βελτιώσουν η και να τροποποιήσουν τις διατροφικές συνήθειες με στόχο το υγιές βάρος των παιδιών τους.

Τα δεδομένα της αξιολόγησης είναι άκρως εμπιστευτικά και μπορούν να χρησιμοποιηθούν μόνο από την υποφαινόμενη κύρια ερευνήτρια και την επιβλέπουσα καθηγήτρια ή Δρ. Ελένη Ανδρέου και θα μπορούν να χρησιμοποιηθούν μόνο για σκοπούς της παρούσας έρευνας. Είμαι στην διάθεσή σας για οποιαδήποτε διευκρίνιση σχετικά με τα όσα προαναφέρθηκαν.

Η παρούσα επιστολή θα θεωρηθεί έγκυρη μόνο εάν επιστραφεί **ΜΟΝΟ** το **ΈΝΤΥΠΟ ΣΥΓΚΑΤΑΘΕΣΗΣ** υπογεγραμμένο από τον γονέα/κηδεμόνα για συμμετοχή του παιδιού σας στην παρούσα έρευνα.

Ημερ. / 2017, Τηλ. Επικοινωνίας :99 475906 (Ξάνθη Σοφοκλέους).

Email: xanthiso@cytanet.com.cy

Για οποιοδήποτε παράπονο που αφορά την έρευνα μπορείτε να επικοινωνήσετε στο 22841656 κ. Άνθος Σιεκκερής (Αναπληρωτής Διευθυντής γραφείου έρευνας και καινοτομίας Πανεπιστήμιο Λευκωσίας )

Email: shekeris.@unic.ac.cy

## Διδακτορικό Πρόγραμμα στην Διατροφή και Διαιτολογία

**Έντυπο ΣΥΓΚΑΤΑΘΕΣΗΣ των γονέων και κηδεμόνων για συμμετοχή των μαθητών/τριών στην έρευνα**

**«Η επίδραση της τηλεοπτικής διαφήμισης τροφίμων στην διατροφική συμπεριφορά των παιδιών ηλικίας 6-12 χρονών στην Κύπρο»**

Αγαπητοί γονείς/ κηδεμόνες,

Ονομάζομαι Ξάνθη Σοφοκλέους, φοιτώ στο University of Nicosia όπου και κάνω την Διδακτορική μου έρευνα. Σκοπός της έρευνας μου είναι η αξιολόγηση της επίδρασης των διαφημίσεων που σχετίζονται με τρόφιμα, οι επιπτώσεις τους στο βάρος των παιδιών, στην διατροφική τους συμπεριφορά, και ποια η σημασία της διατροφικής συμβουλευτικής. Η έρευνα έχει εγκριθεί από το Υπουργείο Παιδείας, Επιτροπή Ηθικής και Δεοντολογίας του Πανεπιστημίου Λευκωσίας και Επιτροπή Βιοηθικής Κύπρου και τελεί υπό την αιγίδα του Συνδέσμου Διαιτολόγων και Διατροφολόγων Κύπρου.

Για την διεκπεραίωση της έρευνας η συνεισφορά σας θεωρείται πολύτιμη. Το παρόν ερωτηματολόγιο έχει δοθεί σε 1050 παιδιά Παγκύπρια. Το σχολείο του παιδιού σας έχει τυχαία επιλεγεί για να συμμετέχει στην έρευνα. Ζητάμε από γονείς/κηδεμόνες την συμπλήρωση του(συνολικός χρόνος περίπου 20 λεπτά). Η συμμετοχή είναι εθελοντική και διασφαλίζεται η ανωνυμία των συμμετεχόντων και θα ληφθούν τα απαραίτητα μέτρα για την ασφαλή φύλαξη των δεδομένων της έρευνας. Όλοι οι συμμετέχοντες έχουν το δικαίωμα να αποσυρθούν σε οποιοδήποτε στάδιο της έρευνας.

Τα αποτελέσματα της έρευνας θα μας βοηθήσουν να κατανοήσουμε καλύτερα την σχέση μεταξύ διαφημίσεων, βάρους, διατροφικών συνηθειών με έμφαση στις παραμέτρους εκείνες που πιθανών να συμβάλλουν στην παιδική παχυσαρκία. Η ανάδειξη των παραμέτρων αυτών μπορεί να βοηθήσει τους επαγγελματίες υγείας, εκπαιδευτικούς καθώς και γονείς να βελτιώσουν η και να τροποποιήσουν τις διατροφικές συνήθειες με στόχο το υγιές βάρος των παιδιών τους.

Τα δεδομένα της αξιολόγησης είναι άκρως εμπιστευτικά και μπορούν να χρησιμοποιηθούν μόνο από την υποφαινόμενη κύρια ερευνήτρια και την επιβλέπουσα καθηγήτρια ή Δρ. Ελένη Ανδρέου και θα μπορούν να χρησιμοποιηθούν μόνο για σκοπούς της παρούσας έρευνας .. Είμαι στην διάθεσή σας για οποιαδήποτε διευκρίνιση σχετικά με τα όσα προαναφέρθηκαν.

Η παρούσα επιστολή θα θεωρηθεί έγκυρη μόνο εάν επιστραφεί το **ΈΝΤΥΠΟ ΣΥΓΚΑΤΑΘΕΣΗΣ** υπογεγραμμένο από τον γονέα/κηδεμόνα για συμμετοχή του παιδιού σας στην παρούσα έρευνα.

### **Έντυπο Συγκατάθεσης**

Ευχαριστούμε για την συμβολή σας στην πραγμάτωση αυτής της προσπάθειας.

Διάβασα το πιο πάνω κείμενο και συμφωνώ να συμμετέχει το παιδί μου στην πιο πάνω έρευνα.

Ερευνήτρια

Γονέας/ κηδεμόνας του/της

Επικεφαλής Προγράμματος



-----

Δρ. Ελένη Π. Ανδρέου- Γεωργάκη

Ξάνθη Σοφοκλέους

Τάξη-----

Κλινική Διαιτολόγος, Επίκουρη καθηγήτρια

**Υπογραφή γονέα/ κηδεμόνα**

Πανεπιστήμιο Λευκωσίας



## Questionnaire

Κωδικός.

--	--	--	--

## ΕΡΩΤΗΜΑΤΟΛΟΓΙΟ

Η συμμετοχή σας είναι εθελοντική, διασφαλίζεται η ανωνυμία των συμμετεχόντων και θα ληφθούν τα απαραίτητα μέτρα για την ασφαλή φύλαξη των δεδομένων της έρευνας.

Όλοι οι συμμετέχοντες έχουν το δικαίωμα να αποσυρθούν σε οποιοδήποτε στάδιο της έρευνας.

Τα αποτελέσματα της έρευνας θα μας βοηθήσουν να κατανοήσουμε καλύτερα την σχέση μεταξύ διαφημίσεων, βάρους, με έμφαση στις παραμέτρους εκείνες που πιθανών να επηρεάζουν τις παιδικές διατροφικές συνήθειες. Η ανάδειξη των παραμέτρων αυτών μπορεί να βοηθήσει τους επαγγελματίες υγείας, εκπαιδευτικούς καθώς και γονείς να βελτιώσουν η και να τροποποιήσουν τις διατροφικές συνήθειες με στόχο το υγιές βάρος των παιδιών τους.

Τα δεδομένα της αξιολόγησης είναι άκρως εμπιστευτικά και μπορούν να χρησιμοποιηθούν μόνο από την υποφαινόμενη κύρια ερευνήτρια και την επιβλέπουσα καθηγήτρια Δρ. Ελένη Ανδρέου και θα μπορούν να χρησιμοποιηθούν μόνο για σκοπούς της παρούσας έρευνας.

Είμαι στην διάθεσή σας για οποιαδήποτε διευκρίνιση σχετικά με τα όσα προαναφέρθηκαν.

Ημερ. / 2017, Τηλ. Επικοινωνίας :99 475906 (Ξάνθη Σοφοκλέους).

Email: [xanthiso@cytanet.com.cy](mailto:xanthiso@cytanet.com.cy)

Απαντήστε ξεχωριστά ερωτηματολόγια για κάθε παιδί ακόμα και αν είναι αδέλφια.

Για οποιοδήποτε παράπονο/σχόλιο που αφορά την έρευνα μπορείτε να επικοινωνήσετε στο 22841656 κ. Άνθος Σιεκκερής (Αναπληρωτής Διευθυντής γραφείου έρευνας και καινοτομίας Πανεπιστήμιο Λευκωσίας )

Email: [shekeris@unic.ac.cy](mailto:shekeris@unic.ac.cy)

Παρακαλώ όπως απαντήσετε σε ΟΛΕΣ τις ερωτήσεις.

Απαντήστε βάζοντας ✓ όπου χρειάζεται.

1. Στοιχεία Παιδιού	Αγόρι	Κορίτσι	Ηλικία	Ύψος	Βάρος
2. Είναι ένας από τους δυο γονείς παχύσαρκος/υπέρβαρος?( δείτε στο τέλος ερωτηματολογίου για ορισμό παχυσαρκίας/ υπερβάλλον βάρους βάση ΔΜΣ)					
Ναι Πατέρας_____ Μητέρα_____		Όχι		Και οι δυο	
3. Ηλικία μητέρας					
20-29	30-39	40-49	50-59		
4. Ηλικία πατέρα					
20-29	30-39	40-49	50-59		
5. Οικογενειακό εισόδημα					
0-700	701-1500	1501-2300	2301-3100	3100 και άνω	
6. Μορφωτικό επίπεδο μητέρας					
Απόφοιτος λυκείου	Απόφοιτος πανεπιστημίου	Μεταπτυχιακές απόφοιτος	Άλλο:		
7. Μορφωτικό επίπεδο πατέρα					
Απόφοιτος λυκείου	Απόφοιτος πανεπιστημίου	Μεταπτυχιακές απόφοιτος	Άλλο:		
8. Τί εικόνα έχει το παιδί σας για το βάρος του?					
Αδύνατο:	Φυσιολογικό:	Υπέρβαρο:	Παχύσαρκο		
9. Τί εικόνα έχετε ΕΞΕΙΣ ως προς το βάρος του παιδιού σας?					
Αδύνατο:	Φυσιολογικό:	Υπέρβαρο:	Παχύσαρκο		

<b>10. Πώς δικαιολογείτε το επιπλέον βάρος του παιδιού σας (εάν έχει)?</b>					
Είναι «οικογενειακό» (κληρονομικό) μας	Καταναλώνει μεγάλες ποσότητες φαγητού	Καταναλώνει αρκετό fast food	Έλλειψη άσκησης	Έλλειψη γνώσεων για τη σωστή διατροφή	
<b>11. Τι τρώει <u>συνήθως</u> το παιδί σας για πρωινό? (μπορείτε να έχετε περισσότερο από μια απάντηση)</b>  (1.) Δημητριακά πρωινού ολικής άλεσης (2.) Δημητριακά πρωινού με γλυκαντικές ουσίες (μέλι, σοκολάτα, σιρόπι κλπ) (3.) Τοστ (4.) Γάλα (5.) Αρτοποιήματα (6.) «Γαλατάκι» (γάλα σοκολάτας) (7.) Φρουτοποτό (8.) Γνήσιο Χυμό (9.) Βαφλες-πίτες (10.) Κέικ (11.) Ντόνατς (12.) Φρούτο (13.) Τίποτα					
<b>12. Τι παίρνει <u>συνήθως</u> το παιδί σας μαζί του στο σχολείο για να το καταναλώσει κατά τη διάρκεια του διαλείμματος? (μπορείτε να έχετε περισσότερες από μια απάντηση)</b>					
Σάντουιτς από το σπίτι	Τοστ με τυρί	Τοστ με τυρί/αλλαντικά	Γάλα	Αρτοποιήματα	Γαλατάκι
Φρουτοποτό	Γνήσιο Χυμό	Βαφλες -πίτες	Κέικ	Ντόνατς	Φρουτογιαούρτι ή γιαούρτι με μέλι/μαρμελάδα
Γκοφρέτες	Κουλούρι	Φρούτο	Μπισκότα	Τίποτα	
<b>13. Τι αγοράζει <u>συνήθως</u> το παιδί σας από την καντίνα του σχολείου (βάση τιμοκαταλόγου των σχολικών κυλικείων) ?</b>					

<b>14. Τι καταναλώνει <u>συνήθως</u> το παιδί σας μαζί με το φαγητό του?</b>				
Νερό	Φρέσκο χυμό	Χυμό εμπορίου χωρίς ζάχαρη	Χυμό εμπορίου τύπου φρουτοποτό	
Αναψυκτικό	Αναψυκτικό light	Τίποτα		
<b>15. Τι καταναλώνει <u>συνήθως</u> το παιδί σας μεταξύ των γευμάτων?</b>				
Πατατάκια Τσίπς	Σοκολάτες	Μπισκότα	Γλυκά/Γλυκίσματα	
Φρούτα	Μπάρες δημητριακών			
<b>16. Πόσο συχνά μαγειρεύετε για την οικογένεια?</b>				
Καθημερινά	5-6 φορές την εβδομάδα	4-5 φορές την εβδομάδα	1-3 την εβδομάδα	Καθόλου
<b>17. Πόσο συχνά επισκέπτεστε με το παιδί σας εστιατόρια τύπου fast food μέσα σε 1 μήνα?</b>				
1 φορά την εβδομάδα	1-3 φορές τον μήνα	4-6 φορές τον μήνα	Σπάνια	Καθόλου
<b>18. Πόσο ενημερωμένοι πιστεύετε ότι είστε ως γονείς ως προς τις σωστές διατροφικές συνήθειες?</b>				
Καθόλου	Λίγο	Αρκετά	Πολύ	Πάρα πολύ
<b>19. Πόσο ενημερωμένοι πιστεύετε ότι είστε όσο αφορά τις παθολογικές επιπλοκές της παχυσαρκίας?</b>				
Καθόλου	Λίγο	Αρκετά	Πολύ	Πάρα πολύ
<b>20. Πώς κρίνετε τις διατροφικές συνήθειες της οικογένειάς σας?</b>				
Κακές	Μέτριες	Καλές	Πολύ καλές	Εξαιρετικές



<b>21. Πόσο ικανοποιητική θεωρείτε ότι είναι η ενημέρωση που παρέχει το σχολείο ως προς τις σωστές διατροφικές συνήθειες?</b>				
Καθόλου	Μέτρια	Καλή	Αρκετά καλή	Εξαιρετική
<b>22. Πόση επιρροή πιστεύετε πως έχετε επάνω στο παιδί σας ως προς το τι θα επιλέξει να φάει?</b>				
Καθόλου	Λίγη	Μέτρια	Αρκετή	Μεγάλη
<b>23. Σε ποιο βαθμό ανταποκρίνεται η πιο κάτω πρόταση: "Το παιδί μου αντιλαμβάνεται τις σωστές και τις λάθος διατροφικές του συνήθειες"</b>				
Καθόλου	Σπάνια	Κάποιες φορές	Αρκετές φορές	Πάντα
<b>24. Ποιοι οι λόγοι που αποτρέπουν το παιδί σας να έχει καλύτερες διατροφικές συνήθειες?</b>				
Πολύπλοκη καθημερινότητα	Κόστος	Έλλειψη πειθαρχίας	Έλλειψη κινήτρου	Έλλειψη γνώσεων περί υγιεινής διατροφής
Έλλειψη ικανοτήτων μαγειρικής	Δεν υπάρχει στήριξη από την οικογένεια	Το υγιεινό φαγητό δεν μου προσφέρει απόλαυση		
<b>25. Πιστεύετε πως το παιδί σας επηρεάζεται από τα "πρότυπα" άνδρα και γυναίκας που προβάλλονται μέσα από την τηλεοπτική διαφήμιση τροφίμων?</b>				
Καθόλου	Σπάνια	Μερικές φορές	Πολύ	Πάρα πολύ
<b>26. Το παιδί σας παρακολουθεί παιδικά τηλεοπτικά προγράμματα?</b>				
Καθόλου	Σπάνια	Μερικές φορές	Συχνά	Καθημερινά
<b>27. Πόσες ώρες παρακολουθεί τηλεόραση Το παιδί σας τις καθημερινές?</b>				
0	1-2	2	>2	>3

<b>28. Πόσες ώρες παρακολουθεί τηλεόραση Το παιδί σας το σαββατοκύριακο?</b>				
0	1-2	2	>2	>3
<b>29. Όταν το παιδί παρακολουθεί τηλεόραση είναι παρόν στο δωμάτιο κάποιος ενήλικας?</b>				
Ποτέ	Σπάνια	Κάποιες φορές	Συνήθως	Πάντα
<b>30. Έχει το παιδί σας τηλεόραση μέσα στο δωμάτιο του?</b>				
Ναι		Όχι		
<b>31. Πιστεύετε πως οι αγοραστικές σας συνήθειες επηρεάζονται από τις διαφημίσεις της τηλεόρασης?</b>				
Καθόλου	Λίγο	Μερικές φορές	Πολύ	Πάρα πολύ
<b>32. Πιστεύετε ότι τα παιδιά χρησιμοποιούνται ως «το μέσο» για την επίτευξη πωλήσεων από εταιρίες τροφίμων?</b>				
Καθόλου	Σπάνια	Μερικές φορές	Πολύ	Πάρα πολύ
<b>33. Όταν το παιδί σας παρακολουθεί τηλεόραση αναζητάει φαγητό ή κάποιο σνακ?</b>				
Ποτέ	Σπάνια	Συνήθως	Συχνά	Πάντα
<b>34. Το είδος φαγητού- σνακ που ζητάει το παιδί σας είναι προϊόν διαφήμισης?</b>				
Ποτέ	Σπάνια	Συνήθως	Συχνά	Πάντα
<b>35. Το είδος φαγητού- σνακ που ζητάει το παιδί σας είναι προϊόν το οποίο συνηθίζετε να έχετε στο σπίτι?</b>				
Ποτέ	Σπάνια	Συνήθως	Συχνά	Πάντα

<b>36. Το είδος φαγητού- σνακ που ζητάει το παιδί σας είναι προϊόν ΚΑΙΝΟΥΡΓΙΟ για τις δικές σας αγοραστικές συνήθειες?</b>				
Ποτέ	Σπάνια	Συνήθως	Συχνά	Πάντα
<b>37. Αρέσουν στο παιδί σας οι διαφημίσεις?</b>				
Καθόλου	Σπάνια	Μερικές φορές	Πολύ	Πάρα πολύ
<b>38. Το παιδί σας ζητά ΕΠΙΜΟΝΑ φαγητά/σνακ που έχει δει σε διαφημίσεις?</b>				
Ποτέ	Σπάνια	Συνήθως	Συχνά	Πάντα
<b>39. Οι διαφημίσεις αποσπούν την προσοχή του παιδιού σας?</b>				
Καθόλου	Σπάνια	Μερικές φορές	Πολύ	Πάρα πολύ
<b>40. Πόσο πιστεύετε ότι οι διαφημίσεις επηρεάζουν τις διατροφικές συνήθειες του παιδιού σας?</b>				
Καθόλου	Σπάνια	Μερικές φορές	Πολύ	Πάρα πολύ
<b>41. Το παιδί σας τραγουδάει διαφημιστικά σλόγκαν?</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>42. Όταν τρώει το παιδί σας η τηλεόραση είναι ανοιχτή?</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>43. Σε ποιο γεύμα είναι η τηλεόραση ανοικτή?</b>				
Πρωινό	Μεσημεριανό	Βραδινό	Σε όλα	Σε κανένα
<b>44. Το παιδί σας αντιλαμβάνεται την διαφορά της διαφήμισης από το υπόλοιπο τηλεοπτικό πρόγραμμα?</b>				
Καθόλου	Σπάνια	Μερικές φορές	Πολύ	Πάρα πολύ
<b>45. Το παιδί σας θεωρεί την διαφήμιση ως μέρος του τηλεοπτικού προγράμματος?</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα

<b>46. Οι διαφημίσεις με έντονη μουσική, έντονα χρώματα και έντονη κίνηση αποσπούν την προσοχή του παιδιού σας?</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>47. Οι διαφημίσεις που περιλαμβάνουν ήρωες από κινούμενα σχέδια αποσπούν την προσοχή του παιδιού σας?</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>48. Οι διαφημίσεις που περιλαμβάνουν ηθοποιούς, ποδοσφαιριστές κλπ αποσπούν την προσοχή του παιδιού σας?</b>				
Μερικές φορές	Μερικές φορές	Μερικές φορές	Μερικές φορές	Μερικές φορές
<b>49. Οι διαφημίσεις που περιλαμβάνουν παιδιά αποσπούν την προσοχή του παιδιού σας?</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>50. Ακόμα και αν το παιδί σας ΔΕΝ παρακολουθεί την δεδομένη στιγμή την ανοιχτή τηλεόραση και αρχίσει μια τέτοια διαφήμιση, αυτή θα του κερδίσει την προσοχή?</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>51. Συνήθως το παιδί σας ΠΟΙΟ διαφημιζόμενο τρόφιμο ζητά πιο επίμονα?</b>				
<b>52. Θυμάστε κάποια διαφήμιση που το παιδί σας αναφέρει η τραγουδά?</b>				
<b>53. Έχει το παιδί σας αγαπημένο ήρωα σε διαφήμιση?</b>				
<b>54. Παίρνετε το παιδί σας μαζί σας στην υπεραγορά?</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα

<b>55. Το παιδί σας στην υπεραγορά επεμβαίνει στις αγορές σας?</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>56. Το παιδί σας στην υπεραγορά ζητά διαφημιζόμενο τρόφιμο?</b>				
Ποτέ	Σπάνια	Συνήθως Μερικές φορές	Συχνά	Πάντα
<b>57. Εσείς γνωρίζετε εάν αυτό το τρόφιμο είναι προϊόν διαφήμισης?</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>58. Πόσο συχνά σας έτυχε να σας ενημερώσει το παιδί σας ότι το τρόφιμο αυτό είναι προϊόν διαφήμισης?</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>59. Πόσο συχνά σας έτυχε να πραγματοποιήσετε αγορές τροφίμων μετά την προβολή τους από την τηλεόραση?</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>60. Σε ποιο βαθμό πιστεύετε ότι επηρεάζετε από μια διαφήμιση προκειμένου να προβείτε στην αγορά του διαφημιζόμενου τροφίμου?</b>				
Καθόλου	Λίγο	Αρκετά	Πολύ	Πάρα πολύ
<b>61. Παρόλο που ένα τρόφιμο γνωρίζετε ότι δεν είναι πλήρως θρεπτικό , θα το αγοράσετε επειδή σας άρεσε η διαφήμιση?</b>				
Ποτέ	Σπάνια	Συνήθως	Συχνά	Πάντα
<b>62. Όταν αγοράζετε ΝΕΟ είδος, ΝΕΑ μάρκα σε τρόφιμο είναι συνήθως με δική σας πρωτοβουλία?</b>				
Ποτέ	Σπάνια	Συνήθως	Συχνά	Πάντα
<b>63. Όταν αγοράζετε ΝΕΟ είδος, ΝΕΑ μάρκα σε τρόφιμο είναι συνήθως μετά από προτροπή του παιδιού σας?</b>				
Ποτέ	Σπάνια	Συνήθως	Συχνά	Πάντα

<b>64. Η προτροπή για αγορά ΝΕΟΥ είδους, ΝΕΑΣ μάρκα σε τρόφιμο γίνεται για ΠΡΩΤΗ φορά στο σπίτι (κατά την ώρα της διαφήμισης) ?</b>				
Ποτέ	Σπάνια	Συνήθως	Συχνά	Πάντα
<b>65. Η προτροπή για αγορά ΝΕΟΥ είδους, ΝΕΑ μάρκα σε τρόφιμο γίνεται για ΠΡΩΤΗ φορά στο σπίτι (μετά το τέλος της διαφήμισης)?</b>				
Ποτέ	Σπάνια	Συνήθως	Συχνά	Πάντα
<b>66. Η προτροπή για αγορά ΝΕΟΥ είδους, ΝΕΑ μάρκα σε τρόφιμο γίνεται για ΠΡΩΤΗ φορά στην υπεραγορά ?</b>				
Ποτέ	Σπάνια	Συνήθως	Συχνά	Πάντα
<b>67. Υπάρχει χρόνος για το παιδί σας για να παίζει (δραστήρια) με άλλα παιδιά?</b>				
Ποτέ	Σπάνια	Συνήθως	Συχνά	Πάντα
<b>68. Το παιδί σας ασχολείται με κάποια μορφή αθλητισμού?</b>				
Ποτέ	Σπάνια	Συνήθως	Συχνά	Πάντα
<b>69. Βρίσκετε χρόνο να προγραμματίσετε δραστηριότητες μαζί με τα παιδιά σας?</b>				
Ποτέ	Σπάνια	Συνήθως	Συχνά	Πάντα
<b>70. Ποιοι οι λόγοι που αποτρέπουν το παιδί σας να ασχολείται με μια μορφή άσκησης?</b>				
Πολύπλοκη καθημερινότητα	Κόστος	Έλλειψη πειθαρχίας	Έλλειψη κινήτρου	Έλλειψη γνώσεων για τα οφέλη της άσκησης
Δεν είναι «αθλητικός τύπος»	Δεν υπάρχει στήριξη από την οικογένεια	Η άσκηση δεν είναι διασκεδαστική		
<b>71. Ποιος πιστεύετε πως είναι ο πιο κατάλληλος τρόπος για την καλύτερη διαπαιδαγώγηση των παιδιών ως προς τις σωστές διατροφικές συνήθειες?</b>				
Τηλεόραση-Εκπαιδευτικά προγράμματα	Σχολείο-Διαλέξεις	Προγράμματα κοινότητας	Δωρεάν συνδρομητικά περιοδικά	
<b>72. Σε ποιο βαθμό ισχύει η πιο κάτω πρόταση: “Το παιδί μου ΑΡΝΕΙΤΑΙ να δοκιμάσει νέα φαγητά”.</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα

<b>73. Σε ποιο βαθμό ισχύει η πιο κάτω πρόταση: “Το παιδί μου απολαμβάνει να δοκιμάζει νέα φαγητά”.</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>74. Σε ποιο βαθμό ισχύει η πιο κάτω πρόταση: “Το παιδί μου τρώει μεγάλη ποικιλία φαγητών”.</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>75. Σε ποιο βαθμό ισχύει η πιο κάτω πρόταση: “Το παιδί μου δύσκολα ικανοποιείται με το είδος του φαγητού”.</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>76. Σε ποιο βαθμό ισχύει η πιο κάτω πρόταση: “Το παιδί μου ισχυρίζεται ότι ΔΕΝ του αρέσει ένα φαγητό ΠΡΙΝ ακόμα το δοκιμάσει”.</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>77. Σε ποιο βαθμό ισχύει η πιο κάτω πρόταση: “Στο παιδί μου αρέσει το φαγητό”.</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>78. Σε ποιο βαθμό ισχύει η πιο κάτω πρόταση: “Το παιδί μου πάντα αναζητά φαγητό”.</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>79. Σε ποιο βαθμό ισχύει η πιο κάτω πρόταση: “Στο παιδί μου αρέσει να τρώει”.</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>80. Σε ποιο βαθμό ισχύει η πιο κάτω πρόταση: “Το παιδί μου ανυπομονεί για το επόμενο γεύμα”.</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>81. Σε ποιο βαθμό ισχύει η πιο κάτω πρόταση: “Το παιδί μου τρώει περισσότερο όταν είναι..”</b>				
Αγχωμένο	Στεναχωρημένο	Βαριέται	Κουρασμένο	Χαρούμενο
<b>82. Σε ποιο βαθμό ισχύει η πιο κάτω πρόταση: “Το παιδί μου τρώει περισσότερο όταν δεν έχει τι να κάνει”.</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>83. Σε ποιο βαθμό ισχύει η πιο κάτω πρόταση: “Ακόμα και αν το παιδί μου αισθάνεται χορτάτο βρίσκει «χώρο» για το αγαπημένο του σνακ/γλυκό”.</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα

<b>84. Σε ποιο βαθμό ισχύει η πιο κάτω πρόταση: “Εάν αφήσω το παιδί μου χωρίς επιτήρηση πάντα θα έχει φαγητό στο στόμα του”.</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>85. Σε ποιο βαθμό ισχύει η πιο κάτω πρόταση: “Εάν δεν παρέμβω το παιδί μου θα φάει πολύ μεγάλη ποσότητα φαγητού”.</b>				
Ποτέ	Σπάνια	Μερικές φορές	Συχνά	Πάντα
<b>86. Το παιδί μου τρώει λιγότερο όταν είναι...</b>				
Αγχωμένο	Στεναχωρημένο	Βαριέται	Κουρασμένο	Χαρούμενο
<p>87. Έχω και αλλιά παιδιά στο ίδιο σχολείο.</p> <p>(α) ΝΑΙ, Αν ναι, Πόσα: Τάξεις:</p> <p>(β) ΟΧΙ</p>				

Σημειώσεις :

**Κανονικό Βάρος** ορίζεται αυτός/η που έχει ΔΜΣ (Δείκτη Μάζα Σώματος ):20-25

**Υπέρβαρος/η** ορίζεται αυτός/η που έχει ΔΜΣ (Δείκτη Μάζα Σώματος ): 25-30

**Παχύσαρκος/η** ορίζεται αυτός/η που έχει ΔΜΣ (Δείκτη Μάζα Σώματος ): >30

$\Delta\text{Μ}\Sigma = \text{βάρος}(\text{kg}) / (\text{ύψος})^2 (\text{m}^2)$



### Διδακτορικό Πρόγραμμα στην Διατροφή και Διαιτολογία

**Έντυπο ενημέρωσης των γονέων και κηδεμόνων για συμμετοχή των μαθητών/τριών στο 2ο μέρος της έρευνας.**

**«Η επίδραση της τηλεοπτικής διαφήμισης τροφίμων στην διατροφική συμπεριφορά των παιδιών ηλικίας 6-12 χρονών στην Κύπρο»**

Αγαπητοί γονείς/ κηδεμόνες,

Ονομάζομαι Ξάνθη Σοφοκλέους, είμαι κλινική διαιτολόγος και φοιτώ στο University of Nicosia όπου και κάνω την Διδακτορική μου έρευνα με το πιο πάνω θέμα. Για την διεκπεραίωση της έρευνας η συνεισφορά σας θεωρείται πολύτιμη. Έχω ήδη ζητήσει από εσάς τους γονείς/ κηδεμόνες την συμπλήρωση ενός ερωτηματολογίου όπως και έγινε.

Κατόπιν ανάλυσης των δεδομένων από τα ερωτηματολόγια τα οποία δοθήκαν Παγκύπρια, το σχολείο του παιδιού σας έχει τυχαία επιλεγεί για να λάβει μέρος στο 2<sup>ο</sup> μέρος της έρευνάς που σκοπό έχει να αξιολογήσει την επίδραση κάποιων διαφημιζόμενων τροφίμων και λογοτύπων στην διατροφική συμπεριφορά των παιδιών.

Έπειτα από την δική σας συγκατάθεση θα συσταθεί μια ομάδα παιδιών που θα λάβουν μέρος σε δραστηριότητες που θα αξιολογήσουν(τεστ) τις διατροφικές τους προτιμήσεις. Συγκεκριμένα θα λάβουν μέρος στις πιο κάτω δραστηριότητες (τεστ, αναγνώρισης λογοτύπων φαγητών, ανάκληση διαφημίσεων τροφίμων, δραστηριότητες γνώσης τροφίμων, προτίμηση τροφίμων με λογότυπο η χωρίς). Κάποιες δραστηριότητες θα περιλαμβάνουν επιλογή και κατανάλωση μικρής ποσότητας τροφίμων τα οποία θα προσφερθούν σε κλειστές συσκευασίες χορηγία συγκεκριμένων εταιριών τροφίμων όπως δημητριακά προγεύματος, πατατάκια, φρούτα, σοκολάτα, των οποίων όλα τα συστατικά θα σας δοθούν σε μεταγενέστερο στάδιο.

Στην παρούσα έρευνα αποκλείονται παιδιά με οποιαδήποτε τροφική αλλεργία και παρακαλώ μην συμπληρώσετε το παρόν έντυπο σε αυτή την περίπτωση. Η συμμετοχή είναι εθελοντική και διασφαλίζεται η ανωνυμία των συμμετεχόντων και θα ληφθούν τα απαραίτητα μέτρα για την ασφαλή φύλαξη των δεδομένων της έρευνας Όλοι οι συμμετέχοντες έχουν το δικαίωμα να αποσυρθούν σε οποιοδήποτε στάδιο των δραστηριοτήτων.

Τα δεδομένα της αξιολόγησης είναι άκρως εμπιστευτικά και μπορούν να χρησιμοποιηθούν μόνο από την υποφαινόμενη κύρια ερευνήτρια, και την επιβλέπουσα καθηγήτρια ή Δρ. Ελένη Ανδρέου και θα μπορούν να χρησιμοποιηθούν μόνο για σκοπούς της παρούσας έρευνας. Είμαι στην διάθεσή σας για οποιαδήποτε διευκρίνιση σχετικά με τα όσα προαναφέρθηκαν.

Η παρούσα επιστολή θα θεωρηθεί έγκυρη μόνο εάν επιστραφεί **ΜΟΝΟ** το **ΈΝΤΥΠΟ ΣΥΓΚΑΤΑΘΕΣΗΣ** υπογεγραμμένο από τον γονέα/κηδεμόνα για συμμετοχή του παιδιού σας στην παρούσα έρευνα.

Ημερ. / 2017, Τηλ. Επικοινωνίας :99 475906 (Ξάνθη Σοφοκλέους).

Email: xanthiso@cytanet.com.cy

Για οποιοδήποτε παράπονο που αφορά την έρευνα μπορείτε να επικοινωνήσετε στο 22841656 κ. Άνθος Σιεκκερής (Αναπληρωτής Διευθυντής γραφείου έρευνας και καινοτομίας Πανεπιστήμιο Λευκωσίας )

Email:shekeris.@unic.ac.cy

## **Διδακτορικό Πρόγραμμα στην Διατροφή και Διαιτολογία**

**Έντυπο ΣΥΓΚΑΤΑΘΕΣΗΣ των γονέων και κηδεμόνων για συμμετοχή των μαθητών/τριών στο 2ο μέρος της έρευνας.**

**«Η επίδραση της τηλεοπτικής διαφήμισης τροφίμων στην διατροφική συμπεριφορά των παιδιών ηλικίας 6-12 χρονών στην Κύπρο»**

Αγαπητοί γονείς/ κηδεμόνες,

Ονομάζομαι Ξάνθη Σοφοκλέους, είμαι κλινική διαιτολόγος και φοιτώ στο University of Nicosia όπου και κάνω την Διδακτορική μου έρευνα με το πιο πάνω θέμα. Για την διεκπεραίωση της έρευνας η συνεισφορά σας θεωρείται πολύτιμη. Έχω ήδη ζητήσει από εσάς τους γονείς/ κηδεμόνες την συμπλήρωση ενός ερωτηματολογίου όπως και έγινε.

Κατόπιν ανάλυσης των δεδομένων από τα ερωτηματολόγια τα οποία δοθήκαν Παγκύπρια, το σχολείο του παιδιού σας έχει τυχαία επιλεγεί για να λάβει μέρος στο 2<sup>ο</sup> μέρος της έρευνας που σκοπό έχει να αξιολογήσει την επίδραση κάποιων διαφημιζόμενων τροφίμων και λογοτύπων στην διατροφική συμπεριφορά των παιδιών.

Έπειτα από την δική σας συγκατάθεση θα συσταθεί μια ομάδα παιδιών που θα λάβουν μέρος σε δραστηριότητες που θα αξιολογήσουν(τεστ) τις διατροφικές τους προτιμήσεις. Συγκεκριμένα θα λάβουν μέρος στις πιο κάτω δραστηριότητες (τεστ, αναγνώρισης λογοτύπων φαγητών, ανάκληση διαφημίσεων τροφίμων, δραστηριότητες γνώσης τροφίμων, προτίμηση τροφίμων με λογότυπο ή χωρίς). Κάποιες δραστηριότητες θα περιλαμβάνουν επιλογή και κατανάλωση μικρής ποσότητας τροφίμων τα οποία θα προσφερθούν σε κλειστές συσκευασίες χορηγία συγκεκριμένων εταιριών τροφίμων όπως δημητριακά προγεύματος, πατατάκια, φρούτα, σοκολάτα, των οποίων όλα τα συστατικά θα σας δοθούν σε μεταγενέστερο στάδιο.

Στην παρούσα έρευνα αποκλείονται παιδιά με οποιαδήποτε τροφική αλλεργία και παρακαλώ μην συμπληρώσετε το παρόν έντυπο σε αυτή την περίπτωση. Η συμμετοχή είναι εθελοντική και διασφαλίζεται η ανωνυμία των συμμετεχόντων και θα ληφθούν τα απαραίτητα μέτρα για την ασφαλή φύλαξη των δεδομένων της έρευνας Όλοι οι συμμετέχοντες έχουν το δικαίωμα να αποσυρθούν σε οποιοδήποτε στάδιο των δραστηριοτήτων.

Τα δεδομένα της αξιολόγησης είναι άκρως εμπιστευτικά και μπορούν να χρησιμοποιηθούν μόνο από την υποφαινόμενη κύρια ερευνήτρια, και την επιβλέπουσα καθηγήτρια ή Δρ. Ελένη Ανδρέου και θα μπορούν να χρησιμοποιηθούν μόνο για σκοπούς της παρούσας έρευνας. Είμαι στην διάθεσή σας για οποιαδήποτε διευκρίνιση σχετικά με τα όσα προαναφέρθηκαν.

Η παρούσα επιστολή θα θεωρηθεί έγκυρη μόνο εάν επιστραφεί το **ΈΝΤΥΠΟ ΣΥΓΚΑΤΑΘΕΣΗΣ** υπογεγραμμένο από τον γονέα/κηδεμόνα για συμμετοχή του παιδιού σας στην παρούσα έρευνα.

### **Έντυπο Συγκατάθεσης**

Ευχαριστούμε για την συμβολή σας στην πραγμάτωση αυτής της προσπάθειας.

Διάβασα το πιο πάνω κείμενο και συμφωνώ να συμμετέχει το παιδί μου στην πιο πάνω έρευνα.

**Ερευνήτρια**

**Γονέας/ κηδεμόνας του/της**

**Επικεφαλής Προγράμματος**



-----

Δρ Ελένη Π. Ανδρέου-Γεωργάκη

Ξάνθη Σοφοκλέους Τάξη-----

Κλινική Διαιτολόγος, Επίκουρη καθηγήτρια

**Υπογραφή γονέα/ κηδεμόνα**

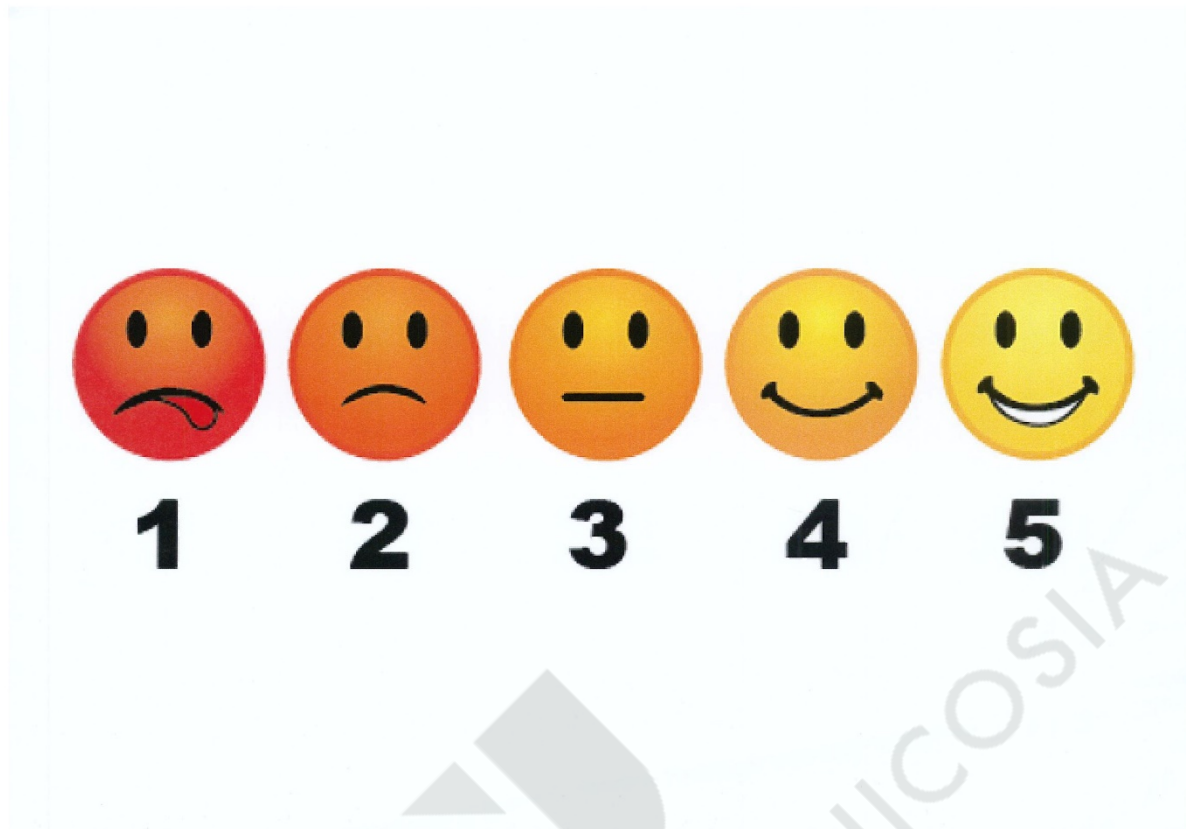
Πανεπιστήμιο Λευκωσίας



**Τηλ. Επικοινωνίας γονέα/κηδεμόνα**

-----

Hunger scale.



Test 1: Product Recognition test- photos used.











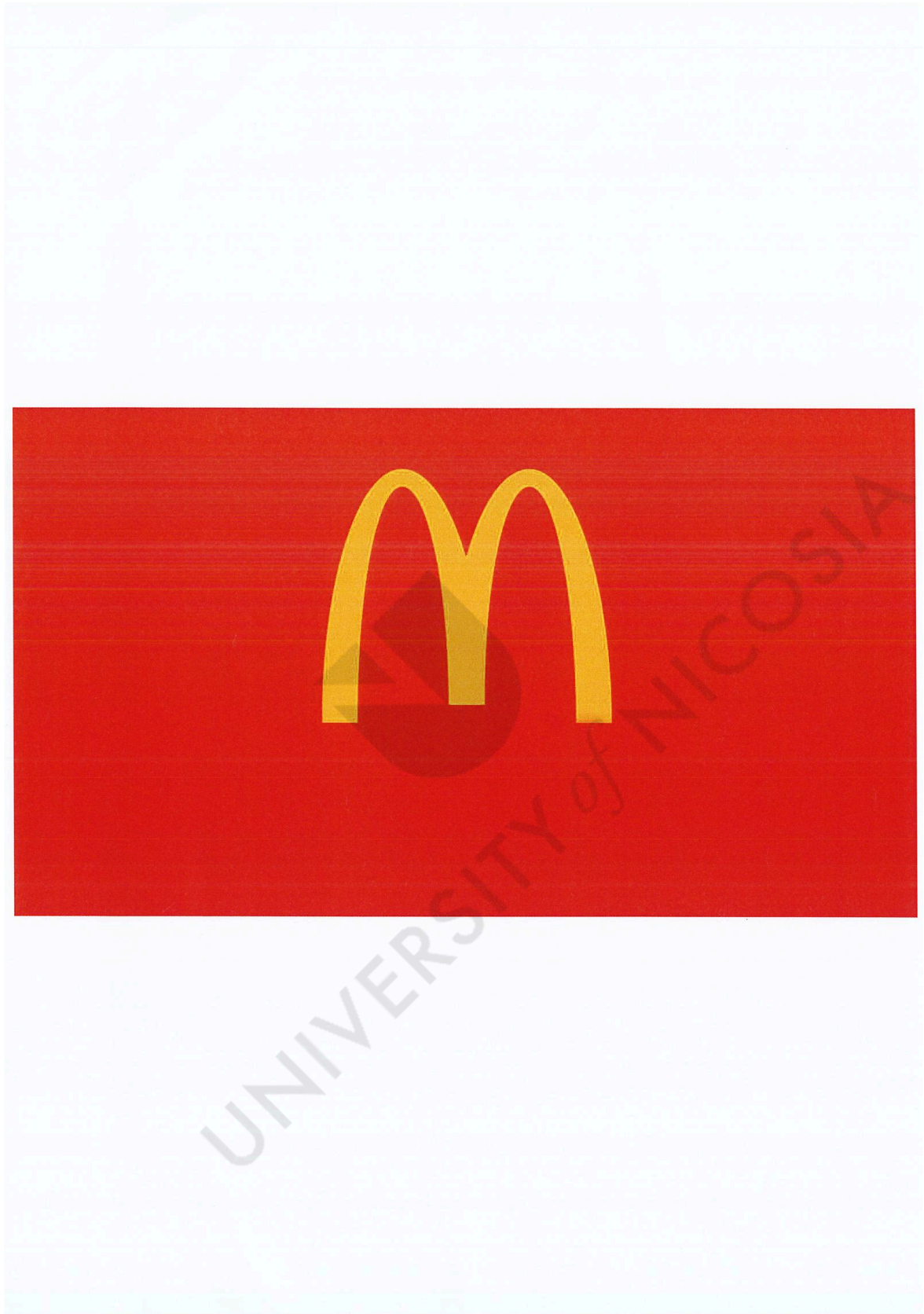
















































UNIVERSITY of NICOSIA









**Test 2: Brand logo recall-recognition measurement test- photos used.**













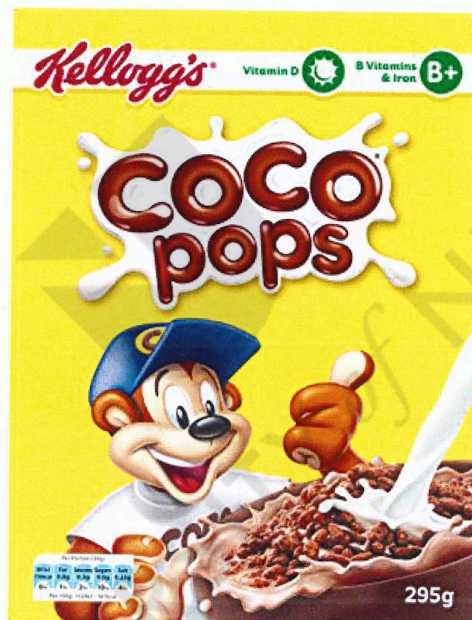
































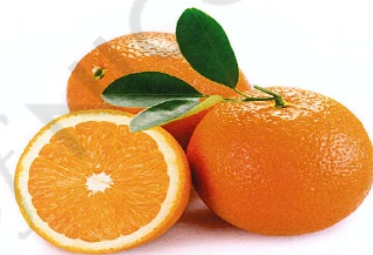


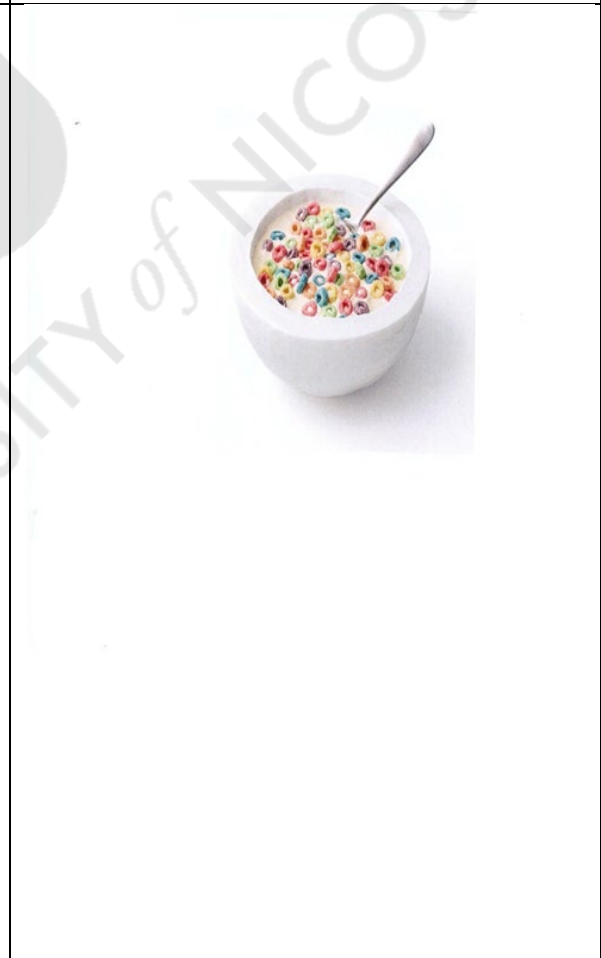






**Test 3: Food preference test-photos used.**













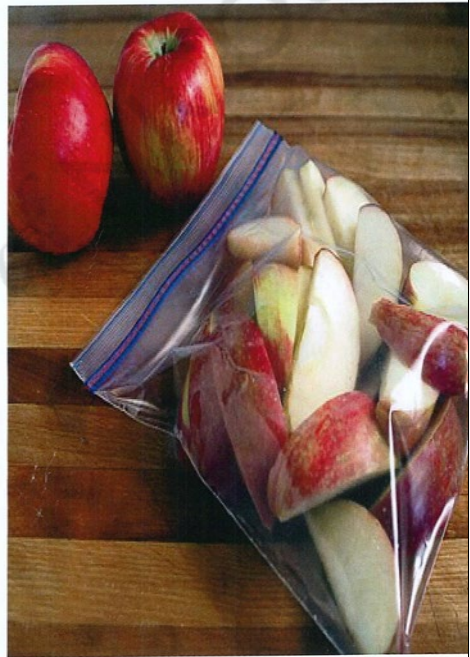
**Test 4: Food preference using branded and unbranded food products- photos used.**

 <hr/>	 <hr/>
 <hr/>	 <hr/>













**PhD Photos**





UNIVERSITY of Nicosia















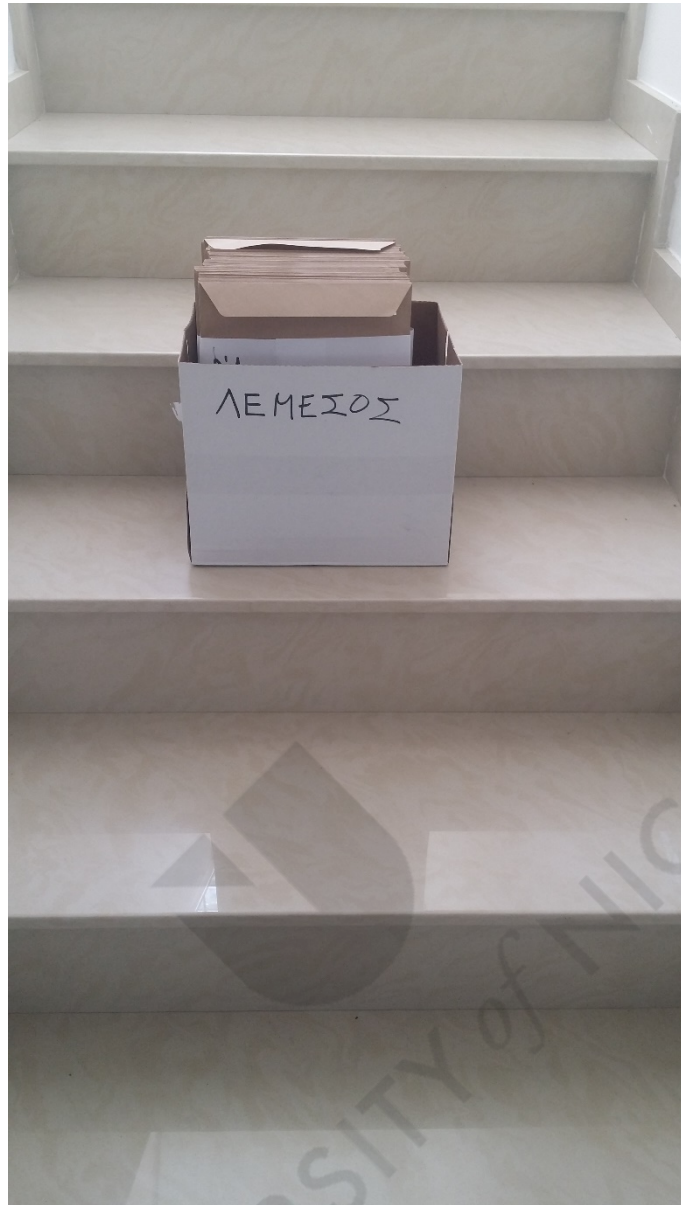






















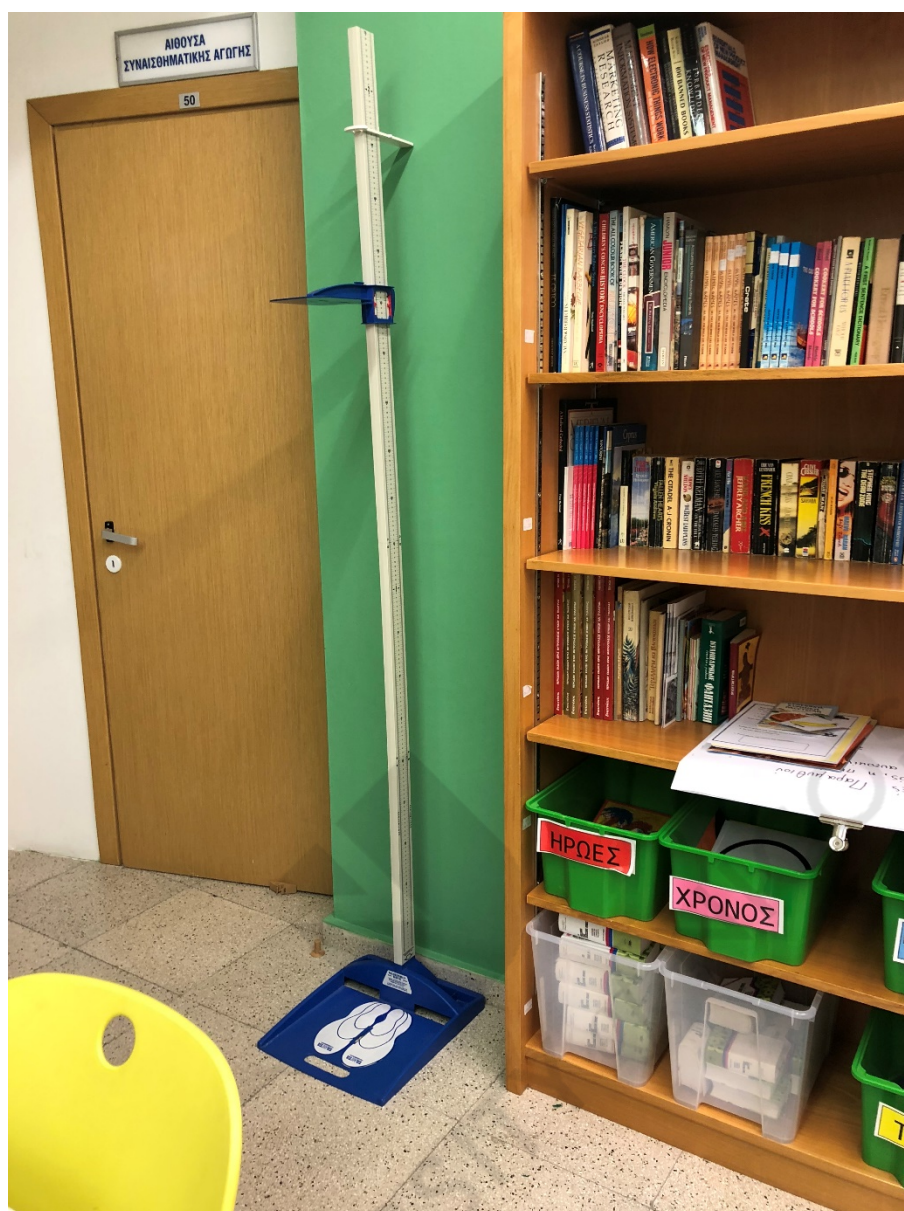


















Children featuring in the following photos are my daughter and son.

