CRANFIELD UNIVERSITY

SHELLY CHAPMAN

THE EFFECTS OF CUSTOMISED FOOD ADVERGAMES ON CHILDREN'S AFFECTIVE, COGNITIVE AND CONATIVE RESPONSES

SCHOOL OF MANAGEMENT

PHD THESIS
Academic Year: 2016 - 2017

Supervisor: Professor Stan Maklan
January, 2017

CRANFIELD UNIVERSITY

SCHOOL OF MANAGEMENT

PhD THESIS

Academic Year 2016 - 2017

SHELLY CHAPMAN

The effects of customised food advergames on children's affective, cognitive, and conative responses

Supervisor: Professor Stan Maklan
January, 2017

This thesis is submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy

ABSTRACT

The practice of promoting food to children via advergames is a highly topical issue which attracts much concern due to the low nutritional value of the promoted foods. This thesis examines the effects of customised food advergames on children's affective, cognitive and conative responses. It also investigates the role persuasion knowledge and prior brand usage have in children's interaction with advergames. In particular, whether children's persuasion knowledge acts as a barrier to those responses.

This research is situated within the domains of marketing communications, consumer behaviour and consumer socialisation. It adopts an affect transfer theory, the Dual Mediation Hypothesis (DMH), to explain the transfer of affect from an advergame to children's responses. Three versions of the same advergame were designed for the purpose of this thesis with different levels of customisation (i.e. control, low and high experimental conditions). An experiment among younger (5-7 year olds) and older (11-12 year olds) children reveals that customisation in advergames has a detrimental effect on children's affective, cognitive and conative responses. It was the control condition, without customisation options, that rendered a positive impact on brand attitudes and preferences relative to the other two experimental conditions. Persuasion knowledge does not influence children's affective, cognitive or conative responses. This implies that children's understanding of the persuasive intent of an advergame does not act as a barrier against its effects.

Age had a significant role on children's attitudes towards the advergame, but not on their other responses to it. Finally, prior brand usage has a positive impact on children's responses apart from on advergame attitudes. This thesis has implications to policy and practice. It is evident that children from two distinct age and cognitive developmental groups cannot protect themselves from advergames' effects. Therefore, regulators should broaden the scope of concern to older and younger children alike.

Keywords:

Brand preferences, consumer responses, purchase requests, persuasion knowledge, prior brand usage

ACKNOWLEDGEMENTS

On my first day at Cranfield, Professor Donna Ladkin told my cohort that a PhD "*is not a project, it is a journey*". It did not take me long to realise how right she was. This journey, however, is not solo, irrespective of the hundreds of hours glaring at a monitor screen, clicking on a mouse and forming words into paragraphs until the whole page becomes blurred. This is now the time to thank all those who helped me on this journey.

First, my supervisor, Professor Stan Maklan, for his friendship and support. His utter confidence in my ideas and challenging them, made sure that these became crystal clear in my mind. Second, my thanks go to my panel members. I feel privileged to have worked with such supportive panel. Many thanks to Professor Emma Macdonald for her constructive criticism and helpful advice; to Professor Agnes Nairn, who kindly shared her vast knowledge about children's consumer psychology with me so abundantly. I thank you for your endless patience, guidance, encouragement and support. Finally, to Dr. Radu Dimitriu, who spent time with me, in addition to the 'normal' panel meetings, to discuss different aspects of my work. Try and pass an ambiguous idea through this panel, and see what happens. I truly value their no-nonsense approach, constructive feedback, and their ability to draw my attention to the wider implications.

I am grateful to the safety net of a wonderful group of friends I met at Cranfield. My thanks go to Te, Morgan, Kamran, Bjorn, Paolo, Katherina and Anand. I am also very grateful to Angela and Martin for the kind words and endless amount of encouragement and support. My thanks also extend to Cranfield School of Management that provided me with the opportunity to pursue my PhD and to all those members of staff that made my experience more enjoyable. The space is too short to mention all of them, but those include Professor Emma Parry, Dr. Palie Smart, Dr. Colin Pilbeam, and Irena Pidlyskyj. Many thanks as well to my examiners, Professor Hugh Wilson and Dr. Haiming Hang, for the insightful comments and valuable feedback they have provided me with.

I want to thank my parents, Rosa and Aaron, for their faith in me. They have watched my progress from abroad, but their love has made this journey possible. Last, but certainly not least, I would like to thank my husband, Simon, to whose software development skills I am particularly indebted. Finally, my daughter, Abigail, to whom this work is dedicated.

You are my inspiration and the reason I started this journey in the first place. Now, that I am approaching the end of the journey, and reflecting on all the sacrifices you have made throughout the years, saying just a mere ‘thank you’, seems like a big understatement. I am indebted to you.

P.S. Abigail, when you will be conducting your PhD, please make sure it takes you considerably shorter than it took to finish mine!

"*One of the most difficult tasks people can perform, however much others may despise it, is the invention of good games*."

C. G. Jung

"*Modern marketing techniques can be used to great effect to tackle the root causes of preventable ill-health ... just as irresponsible techniques can have an opposite effect*".

D. Cameron

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

A_{ad}	Attitude towards the advertisement
A_b	Attitude towards the brand
ANCOVA	Analysis of Covariance
ATR	Awareness-Trial-Reinforcement
BMA	British Medical Association
BHF	British Heart Foundation
C_{ad}	Advertisement cognition
C_b	Brand cognition
CFC	Children's Food Campaign
CHD	Coronary Heart Disease
CI	Consumers International
DMH	Dual Mediation Hypothesis
FAO	Food and Agriculture Organisation
FIFA	Fédération Internationale de Football Association
FTC	Federal Trade Commission
HFSS	High in Fat, Sugar and Salt
HSCIC	Health and Social Care Information Centre
IACFO	International Association of Consumer Food Organisations
I_p	Intention to purchase
IMC	Integrated Marketing Communications
PCMC	Processing of Commercial Media Content Model
PKM	Persuasion Knowledge Model
PR	Public Relations
MANCOVA	Multivariate Analysis of Covariance
MMS	Multimedia Messaging Service
NCD	Non-Communicable Disease
SEM	Search Engine Marketing
SIM	Short for 'simulation'
SMM	Social Media Marketing
SMS	Short Message Service
SNS	Social Networking Sites
WHO	World Health Organisation

GLOSSARY OF TERMS

Advergames	Interactive digital video games designed by companies to promote their brands by embedding marketing messages into entertaining adventures (An and Stern, 2011; Chester and Montgomery, 2007; Culp, Bell and Cassady, 2010; Dahl, Eagle, and Cole, 2009; FTC, 2008; Moore, 2006; Moore and Rideout, 2007; Quilliam and Cole, 2009).
Assent	The affirmative agreement of a child to participate in the research (Morrow and Richards, 1996).
Attitudes	Positive or negative "*evaluations that people hold regarding themselves, other people, objects, and issues*" (Petty and Cacioppo, 1986, p.127) and are capable of guiding behaviour, affective and cognitive processes.
Between groups design	An experimental design where each participant is randomly allocated to one of a few conditions (i.e. control or experimental conditions) (Dyer, 1995). It is also referred to as 'between subjects design' and 'independent subjects design' (Field and Hole, 2003).
Consent	In the context of ethics, it means that a competent participant "*voluntarily agrees to participate in a research project based on a full disclosure of pertinent information*" (Morrow and Richards, 1996).
Consumer responses	Specific outcome measures at the individual level and include thoughts, feelings and actions that consumers generate in response to advertising (Fennis and Stroebe, 2010).
Covariate	A continuous variable that is not part of the main experimental manipulation, but has an influence on the dependent variable(s).
Cronbach's Alpha	A measure of internal consistency. In order to be considered as internally consistent, a measure should be at least above .70.
Demand characteristics	Characteristics that suggest to participants how the researcher might want them to behave, and include verbal and non-verbal cues about the purpose of an experiment (Dyer, 1995; Orne, 1969).
Dependent variable	The variable that is not manipulated by the experimenter, and so its value depends on the variable(s) that have been manipulated

	(i.e. the cause or independent variables) (Breakwell, Hammond and Fife-Schaw, 2000; Dyer,1995; Field and Hole, 2003).
Empiricism	An approach to research which relies on observation and/ or an experiment. It is a philosophy that stresses the importance of experience for our knowledge as against logical reasoning (Vogt and Johnson, 2011).
Food preferences	Includes "*both liking for specific foods and preferences between different foods*" (Hastings *et al*. 2003, p.11).
Generalisation	The ability of a statistical model to make conclusions about a population based on information from a sample (Field, 2009; Vogt and Johnson, 2011).
Independent variable	The variable which has been identified as a possible cause or predictor of the phenomenon being investigated (Dyer, 1995). In an experiment, it is the variable that is manipulated to observe whether consequent changes occur to the dependent variable(s) (Dyer, 1995; Field, 2009).
Operationalise	To define a concept or variable(s) in such a way that it can be measured or identified (Vogt and Johnson, 2011).
Persuasion knowledge	The ability to critically evaluate persuasion attempts (Friestad and Wright,1994; Wright, Friestad and Bouch, 2005).
Persuasive intent	Children's cognitive awareness and understanding of the bias and self-interest of commercial selling messages (Friestad and Wright, 1994; Wright *et al*., 2005).
Prototype	"*A first or preliminary version … from which other forms are developed*" (Oxford Dictionary).
Randomisation	The random allocation of participants to different treatment conditions (Field and Hole, 2003; Field, 2009). This technique ensures that as few differences as possible exist between participants by providing them with an equal chance to be allocated to each of the research's conditions (Breakwell *et al*., 2000; Dyer, 1995).
Reliability	The ability of a measure to produce consistent results when the same entities are measured under different conditions (Field, 2009). The most common technique for establishing reliability is by replication, and if the same design leads to the same results,

	then the experiment is said to be reliable (Breakwell *et al*., 2000; Dyer, 1995).
Standardisation	A technique which ensures that the value of variables is consistent throughout the experiment, and is the same across all experimental conditions (Dyer, 1995).
Validity	The degree to which what is being measured is what the researchers intended (Clark-Carter, 2004) and that which will provide adequate answers to the research's question(s) (Breakwell *et al*., 2000'; Field, 2009).
Variables	Anything that can be measured and can differ across entities or time (Field, 2009).

1 INTRODUCTION

This chapter outlines the boundaries of the thesis. It is presented in eight sections, commencing with the background and rationale for the research (section 1.1), followed by the research's main question (section 1.2), conceptual model and hypotheses (section 1.3), research method and design (section 1.4), summary of findings (section 1.5), the contribution this research makes to knowledge (section 1.6), and dissemination of research to date (section 1.7). This chapter concludes with an overview of the thesis' structure (section 1.8).

1.1 Research background and rationale

The background and research rationale highlight concerns relating to children's food advergames (section 1.1.1), followed by the rationale for undertaking this research from a personal perspective (section 1.1.2).

1.1.1 Research rationale

In recent years much attention has been given to the rising rates of childhood obesity from concerned professionals in health organisations (BMA, 2005; HSCIC, 2015; WHO, 2010; WHO/FAO, 2003), the public (Channel4, 2014) as well as consumer organisations, such as the International Association of Consumer Food Organisations (IACFO) (Delmeny, Hanna and Lobstein, 2003), British Heart Foundation (BHF), Children's Food Campaign (CFC) (Watts, 2009), International Obesity Task Force (IOTF)/International Association for the Study of Obesity (IASO) (Lobstein, 2006), and Consumers International (CI) (Robinson, De Vera and Witt, 2008; Shelton *et al*., 2011). The reason for the growing concern relates to the global obesity pandemic. The WHO (2010, p.4) estimates that over 42 million children worldwide under the age of five are either overweight or obese, of whom 35 million live in developing countries. The prevalence of worldwide obesity in pre-school children is expected to rise from 6.7% in 2010 to reach 9.1% (nearly 60 million) in 2020 (De Onis, Blossner and Borghi, 2010). In the UK alone, 31% of boys and 28% of girls are either overweight or obese (HSCIC, 2012). It is well acknowledged that poor diet and obesity are major contributory factors to Non-Communicable Diseases (NCD), such as Coronary Heart Disease (CHD), certain types of cancer and Type II Diabetes (BMA, 2005; HSCIC, 2012; WHO, 2010). The risks presented in a poor diet

start in early childhood, when a well-balanced diet is of paramount importance (BMA, 2005). Those risks, if not averted, can accumulate throughout life (HSCIC, 2012; 2015; WHO, 2010). Food[1] marketing to children has been identified as a contributing factor to the worldwide childhood obesity pandemic (Montgomery and Chester 2007; WHO/FAO, 2003; WHO, 2010), as the promoted food is often nutrient poor and high in fat, sugar and salt (HFSS) (BMA 2005; Cheyne *et al.*, 2011; Cairns, Angus and Hastings, 2009; Cairns *et al.*, 2012; Cairns, 2015; Dalmeny *et al.*, 2003; Harris *et al.*, 2009; Hastings *et al.*, 2003; 2006; Larson and Story 2008; McGinnis *et al*., 2006). Hastings *et al.* (2003, p.192) state that:

> "*The advertised diet varies greatly from the recommended one, and themes of fun and fantasy rather than health and nutrition are used to promote this to children. Meanwhile, the recommended diet gets little promotional support*".

McGinnis *et al.*, (2005, p.10) concur with the above and add that food marketing to children is:

> "*Out of balance with healthful diet and contributing to an environment that puts their [children's] health at risk*".

Systematic reviews on the extent, nature and effect of food promotions to children provide evidence that advertising is extensive and themes of fun, fantasy and humour are used to promote food to children (Cairns *et al*., 2009; 2012; Cairns, 2015; Hastings *et al.*, 2003; 2006; McGinnis *et al.*, 2006). Evidence from those systematic reviews also shows that advertising influences children' food category and brand preferences, behaviour (i.e. purchase and consumption), determinants of behaviour (e.g. purchase requests and intentions to do so) as well as cognitive responses (i.e. impact on brand recognition and recall). Recent evidence suggests that the link between advertising and obesity remains significant even when confounding variables, such as socio-economic status, genetic overweight tendencies (Hancox and Poulton, 2006) and low levels of physical activity (Eisenmann *et al*., 2008; Epstein *et al*., 2008) are taken into account. Increasingly, HFSS food is advertised to children online, effectively circumventing many countries' rules and

[1] The term 'food' includes, throughout this thesis, both foods and non-alcoholic drinks (i.e. carbonated and non-carbonated).

regulations about food promotions to children (Clarke and Svanaes, 2012; Dalmeny *et al.*, 2003; Hawkes, 2004; 2007). Even in countries such as Denmark, Sweden and Norway, where food advertising is restricted via traditional methods, there are no specific rules governing marketing via advergames or mobile phones (Hawkes, 2004; 2007).

Among the various techniques used to promote food digitally, such as mobile marketing or social networking sites (SNS), advergames have attracted the most attention (Cicchirillo and Lin, 2011; Clarke and Svanaes, 2014; Culp *et al*., 2010; Dahl *et al*., 2009; Lee *et al*., 2009; Moore, 2006; Moore and Rideout, 2007; Quilliam *et al.*, 2011; Staiano and Calvert, 2012). This practice is heavily criticised by both academic experts (Dahl *et al*., 2009; Livingstone, 2009; Nairn and Fine, 2008; Nairn and Hang, 2012), and the public (Channel4, 2014) for a number of reasons. First, the brands promoted in advergames are the same as those promoted via traditional methods, and therefore mirror the low nutritional value of those brands (Dhal *et al*., 2009; Moore and Rideout, 2007). There is accumulating evidence to support the effects advergames have on affective (Cauberghe and De Pelsmacker, 2010; Dias and Agante, 2011; Van Reijmersdal *et al*., 2010; 2012), cognitive (Dias and Agante, 2011; Hernandez and Chapa, 2010; Mallinckrodt and Mizerski, 2007), conative (Van Reijmersdal *et al*., 2010) and behavioural (Folkvord *et al*., 2013; Harris *et al*., 2011) responses. The concern is that playing those games "*may have a harmful impact on children's health*" (Clarke and Svanaes, 2012, p.30). Second, children are particularly vulnerable to commercial advertising messages due to their underdeveloped cognitive skills which limit their ability to understand the persuasive intent of those messages (Moore and Rideout, 2007). It should be noted that the current debate about the practice to promote food to children online follows an earlier debate over traditional advertising and reflects the issue "*whether children are active media savvy consumers or vulnerable innocents*" (Clarke and Svanaes, 2012, p.26). In this context, children's persuasion knowledge, or critical evaluation of advertising, is important to explore because children's understanding of persuasive messages may, or may not, act as a barrier against the effects of commercial messages.

Children are the focus of this study for a number of reasons. First, they are an important market segment (McNeal, 1992), particularly for interactive marketers, due to children's role as 'early adopters' of digital practices and their increasing spending power (Chester

and Montgomery, 2007; Montgomery and Chester, 2009). As a result, food companies spend large portions of their marketing budgets promoting their products to children (FTC, 2008). Second, as outlined above, there are strong concerns from different stakeholders regarding the practice to promote nutrient-poor foods to children via an immersive and engaging communication medium for unlimited periods of time. A summary of this research rationale and the social concerns it raises is presented in table 1 below.

Table 1: Research rationale (Source: Author)

Children	Advergames
Children are an important market segment	Very popular among children
Healthy diet is most important in early childhood	The promoted brands are nutrient poor
Children are particularly vulnerable to persuasive messages due to their underdeveloped cognitive skills	Advergames are a powerful medium which has potential to impact on players' various responses

Advergames have a range of unique features, and in recent years, researchers have been investigating whether those features have an impact on consumer responses. So far, interactivity (Goh and Ping, 2014; Lee *et al*., 2014; Sukoco and Wu, 2011; Van Reijmersdal *et al*., 2010), brand integration (Van Reijmersdal *et al*., 2010; Winkler and Buckner, 2006), brand prominence (Cauberghe and De Pelsmacker, 2010; Van Reijmersdal *et al*., 2012), thematic relevance (Wise *et al*., 2008) have been investigated. Kuo and Hamilton (2014) have also explored the impact of actual game mechanics. A feature of advergames which has been sparsely researched is customisation (Bailey *et al*., 2009). A further lacuna in the literature, as observed by Livingstone and Helsper (2006), is the practice in advertising effects research to study children's samples for convenience rather than on theoretical grounds. Their literature review revealed that in the majority of research, children's ages cut across developmental stages. This also seems to be the common practice in recent advergame research (e.g. Mallinckrodt and Mizerski, 2007; Van Reijmersdal *et al*., 2012). Therefore, since the impact of customisation in advergames on children's responses has not been systematically investigated, it was

deemed important to explore this phenomenon on two distinct developmental groups of children.

A particularly contested debate in children's marketing literature relates to their understanding of persuasion, and whether such understanding acts as a barrier to protect them from advertising's effects. Some scholars, in the context of television advertising (Fox, 1981; Valkenburg, 2000) and advergaming (Mallinckrodt and Mizerski, 2007; Van Reijmersdal *et al*., 2012) contend that possession of persuasion knowledge does not have an impact on children's responses. Other scholars, in the context of both television advertising (Robertson and Rossiter, 1974; Rossiter and Robertson, 1974) and advergaming (Waiguny *et al*., 2012) claim that such understanding results in negative responses towards the promoted brand. In addition, results also differ in terms of the role prior brand usage has on children's responses. Some scholars have found that prior usage or experience with the brand renders positive responses (Moore and Lutz, 2000; Waiguny *et al*., 2012). Other scholars provide contradictory results (Van Reijmersdal *et al*., 2012). In order to add to the debate, it was decided to investigate the role of prior brand usage and possession of persuasive knowledge have on children's responses to advergames.

1.1.2 Personal Perspective

My interest in food marketing to children and the concerns I have about childhood obesity pandemic date back to my MSc research, which was about the effect of pester power on parental decision making in the context of character merchandising. It was whilst conducting my dissertation that I became aware of food companies' practice to promote HSSF food to children. In the years that followed, until commencing the PhD programme, I held a number of marketing managerial positions within the digital marketing industry. Due to technological developments in the last few decades, the digital marketing industry has expanded to include permission-based email and mobile marketing (e.g. SMS and MMS), search engine marketing (SEM) and social media marketing (SMM). The marketing agencies I worked for fully utilised the constant connectivity of customers, aiming to reach them through multiple touch-points, such as mobile phones, and e-vouchers. Young people use a wide array of media platforms, such as SNS, IM, mobile phone and interactive games. It was the later platform that raised a few questions as a digital marketer and a parent, the first being, do those games have any impact on

children's responses?, and second, do children realise that those games are in fact advertising that convey commercial messages?

My concerns increased having read a number of articles about advergames, learning about their potential. Those unanswered questions and a curiosity to discover whether the use of technology, just because marketers *can* do so, were the key triggers to commence my PhD journey. Getting answers to those questions and ultimately bringing this phenomenon to public awareness, might encourage a public debate about the usage of advertising techniques that persuade implicitly rather than explicitly.

1.2 Research questions

This research explores whether a specific feature in advergames - customisation - has an impact on children's responses. As such, the overall research question is:

Does the degree of customisation in food advergames has an impact on children's affective, cognitive and conative responses?

In addition to this main question, the research attempts to answer a number of sub-questions, as follows.

(1) Does persuasion knowledge acts as a barrier to advertising effects?
(2) Is there an affect transfer from advergame and brand attitudes to other responses?
(3) Does brand attitude mediate the relationship between advergame attitude and purchase request intention?
(4) Are brand preferences positively related to the brand's exposure in an advergame?
(5) What role children's age and prior usage of the promoted brand have on their responses to the advergame?

1.3 Conceptual framework and hypotheses

Existing theory and research from the fields of consumer behaviour, children's psychology and marketing communications were used to devise the conceptual model and develop hypotheses (figure 1).

The main constructs in this research are customisation, children's age, attitudes towards the advergame and the brand, brand preferences, intentions to request purchase, persuasion knowledge and prior brand usage. Customisation is defined as "*the degree to which a technology, good or service can be created, selected or changed to comply with user preferences*" (Teng, 2010, p.1549). It has been operationalised by developing three versions of the same advergame, whereby the only difference between them is the *degree* of customisation. In the control condition there were no options to customise the game. In the low experimental condition there were two options from which to choose; while in the high experimental condition children had four options to choose from.

Children's age was operationalised by selecting children from two distinct age groups (i.e. 5-7 and 11-12 year olds) belonging to different developmental stages in order to test the theoretical underpinning of the Persuasion Knowledge Model (thereafter, 'PKM') (Friestad and Wright, 1994). The definition of attitudes towards the advergame is adopted from Lutz's (1985) definition of attitudes towards an advertisement, and is defined as a disposition to respond in a favourable or unfavourable manner to the advergame. Attitude towards the brand is defined as positive or negative evaluations towards the brand (Mitchell and Olson, 1981). Brand preference is defined as revealing the preferred brand among several other brands (Hsee *et al*., 2009; Wu, 2001); while intention to request purchase is adopted from Rossiter and Percy's (1997) definition to indicate the possibility of planning to request purchase of the brand in the future. Two aspects of persuasion knowledge were measured, being understanding that the source behind the advergame is the company that owns the brand (i.e. Jaffa Cake company), and understanding of the persuasive intent of the advergame (Van Reijmersdal *et al*., 2012). Prior brand usage is defined as the extent to which the brand has been 'used' or consumed previously.

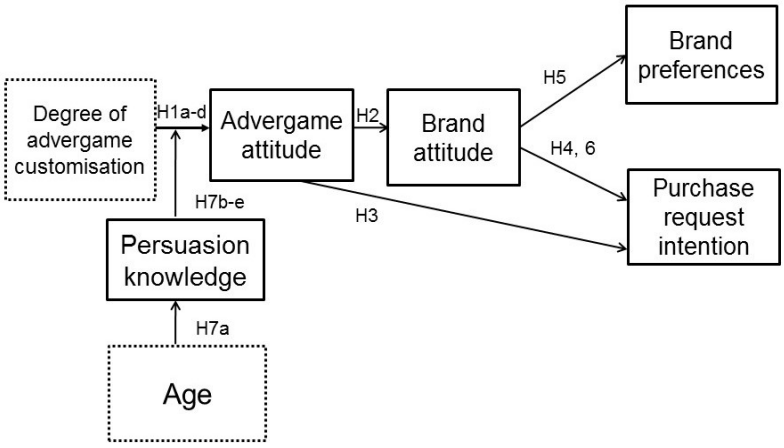


Figure 1: Main conceptual framework

Having defined the main constructs and their operalisation, the hypothesised relationships between those constructs are now introduced. For clarity, a number of effects are discussed. The first set of effects relates to the direct impact customised advergames have on children's responses (figure 2). No hypotheses are displayed on the figure, as it relates to the main research question (RQ).

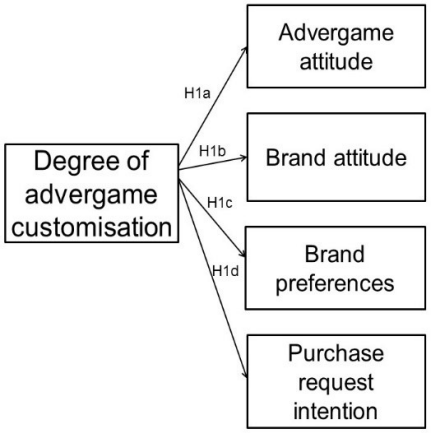


Figure 2: Conceptual framework - direct effects

The conceptual model follows the theoretical underpinning of the Dual Mediation Hypothesis (thereafter, 'DMH') in that the affect from an advertising stimulus (i.e. the advergame) transfers to consumers' predisposition to respond in a favourable or

unfavourable manner (Lutz, MacKenzie and Belch, 1983; MacKenzie, Lutz and Belch, 1986). Thus, a second set of effects examines whether an affect will transfer from attitudes towards the advergame to brand attitudes and purchase request intentions. Then, it is examined whether the affect will transfer from brand attitudes to brand preferences and purchase request intentions. In order to provide an accurate explanation about the relationship between the dependent variables, the mediating role of brand attitude on the relationship between advergame attitude and purchase request intention is explored (figure 3).

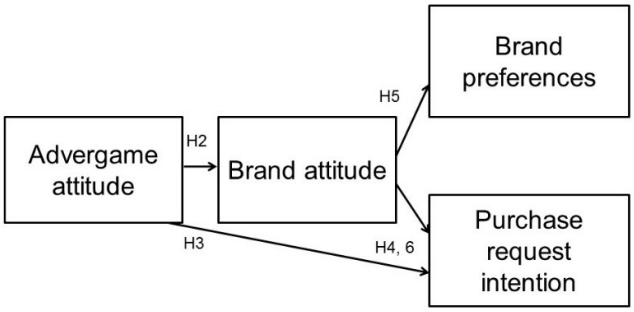


Figure 3: Mediating role of brand attitudes

Third, it is examined whether possession of persuasion knowledge (i.e. critical evaluation of advertising), acts as a barrier against advertising effects. By doing so, the theoretical underpinning of the PKM (Friestad and Wright, 1994) is tested.

1.4 Research method and design

The research's hypotheses were tested in a factorial 2 x 3 post-test experimental design and conducted in schools' computer labs. Children were told that they are participating in a study about online games and their opinions are sought after they have trialled it a few times. Children were randomly allocated into one of three conditions, being either a control condition where there were no customisation options and children had to start playing immediately; a low-level experimental condition, where children were able to choose a character and a background to customise the game space; or a high-level experimental condition,[2] where children were able to make two more choices in addition to the previous condition (i.e. children were also able to select designs for the back of the cards and a choice of cursor). There was thematic relevance between the background themes (i.e. 'winter wonderland', 'underwater world', and 'cars') and the characters from which children could choose. That is, players were not been able to choose the same character (e.g. a diver) to two different backgrounds (e.g. 'underwater world' and 'winter wonderland'). The brand used in the advergame is Jaffa Cake, which whom children are familiar with. After 6 minutes of game play participants were invited to fill a pen and paper questionnaire. Figure 4 depicts the first screen children encountered.

Figure 4: 'Jaffa Cake Challenge' advergame

[2] Please note that all those link to the game, however, the game is compatible only on Google Chrome, Internet Explorer (IE) and Safari.

Measures were adopted from well validated studies (e.g. Pecheux and Derbaix, 1999; Van Reijmersdal *et al*., 2012) either through adjustment of wording (e.g. persuasion knowledge items) or a reduction in items (e.g. brand attitudes items) to reflect the experimental context. The questionnaire was developed during a pre-test with a small group of young children. The advergame development included initial interviews with advergame developers, pre-testing with a small number of children (N = 8) which involved a cycle of testing-iteration-testing as well as with doctoral students from Cranfield School of Management. Further insights were gained from the pilot (N = 38), where both the questionnaire and stimulus were tested with children from a similar age group as those who participated in the full study. The insights gained from the pilot helped to refine the questionnaire and stimulus further. Prior to the main study (N = 144), those were reviewed by the expert advisory panel members and undergone a final round of iteration and testing by children (N = 8).

1.5 Summary of findings

The main objective of this research is to explore whether customisation in advergames has an impact on children's responses from two different age groups. A secondary objective is to investigate whether possession of persuasion knowledge and prior brand usage control those responses. Regarding the main objective, results show that customisation in advergames has no impact on children's responses. On the contrary, the control condition, relative to the other experimental conditions, generated positive attitudes towards the promoted brand and brand preferences. The low experimental condition rendered negative impact on brand attitudes and preferences and no impact on advergame or intention to request purchase. The high experimental condition rendered non-significant results. Jaffa Cake was the preferred brand with 51.4% (N = 74) children, mostly from the control condition, preferring it over other brands. Regarding the secondary objectives, the results show that possession of persuasion knowledge among children is very low as over three-quarters of them 81.3% (N = 117) did not realise that the purpose of the advergame is to persuade; and over half of the children 54.2% (N = 81) could not identify correctly the source of the advergame as the brand's company. The research also did not find a causal link between possession of persuasion knowledge,

decreased brand attitudes, preferences and intention to request purchase of the promoted brand. Age also did not have an impact on children's responses, apart from on their attitudes towards the advergame. Children from the younger age group (i.e. 5-7 year olds) displayed stronger positive attitudes towards the advergame than older children (i.e. 11-12 year olds). It was found that gender also does not have a significant role on advergames' effects. Finally, the findings suggest that prior brand usage has an important positive influence in controlling or accounting for advergames' effects. In contrast, children who did not consume the brand prior to the experiment, had significant negative effects on their responses. Table 2 provides a summary of the research questions and results.

Table 2: Summary of results

Hypothesis	Outcomes
H1a: Children in the control condition are more likely to have positive attitudes towards the advergame than children in the experimental conditions	Not supported; $p > .05$
H1b: Children in the control condition are more likely to have positive attitudes towards the brand than children in the experimental conditions	Supported; $p < .05$
H1c: Children in the control condition are more likely to prefer the brand than children in the experimental conditions	Supported; $p < .05$
H1d: Children in the control condition are more likely to intend to request purchase of the brand than children in the experimental conditions	Not supported; $p > .05$
H2: Advergame attitude has a positive effect on brand attitude	Supported; $p = .001$
H3: Advergame attitude has a positive effect on purchase request intention	Supported; $p = .001$
H4: Brand attitude has a positive effect on purchase request intentions	Supported; $p = .001$
H5: Brand attitude has a positive effect on brand preferences	Supported; $p = .001$
H6: Brand attitude mediates the relationship between advergame attitude and purchase request intention	Supported; CI [.23 - .56]
H7a: Older children are likely to have a greater understanding of persuasive knowledge than younger children	Not supported; $p > .05$
H7b: Regardless of age, possession of persuasion knowledge will influence attitudes towards the advergame negatively	Not supported; $p > .05$
H7c: Regardless of age, possession of persuasion knowledge will influence attitudes towards the brand negatively	Not supported; $p > .05$
H7d: Regardless of age, possession of persuasion knowledge will influence purchase request intentions negatively	Not supported; $p > .05$
H7e: Regardless of age, possession of persuasion knowledge will influence brand preferences negatively	Not supported; $p > .05$

1.6 Contribution to knowledge

This thesis provides new knowledge about the impact of a persuasive and engaging advertising medium on a vulnerable audience.

1.6.1 Theoretical contribution

This thesis applies key aspects of three well-validated theories in the communication (i.e. Dual Mediation Hypothesis, Weak Theory of Advertising, Awareness-Trial-Reinforcement) and consumer behaviour (i.e. Persuasion Knowledge Model) domains to explore the role of customised advergames on children's responses.

Contributions to the Dual Mediation Hypothesis (DMH) Model

The DMH model demonstrates affect transfer from a communication medium to a promoted brand. Lutz, Mackenzie and Belch (1983) describe the causal relationship between attitudes towards the advertisement, the promoted brand, and intentions to purchase it. According to the model, attitudes towards the advertisement influence brand attitudes, and those in turn, influence intentions to purchase (Lutz et al., 1983; Mackenzie, Lutz and Belch, 1986, p.131). The model has been validated in the context of television advertising with adults (Batra and Ray, 1986; Lutz *et al*., 1983; Mackenzie *et al*., 1986; Mitchell and Olson, 1981) and children (Derbaix and Bree, 1997; Moore and Lutz, 2000). Those studies show consistent support for the influence of attitudes towards the advertisement on attitudes towards the advertised brand. In the context of advergames, studies with adults (Cauberghe and De Pelsmacker, 2010; Sukoco and Wu, 2011; Wise *et al*., 2008) and children (Van Reijmersdal *et al*., 2010; 2012; Waiguny *et al*., 2012) uphold the above results from television advertising in an advergaming context. This research is the first to investigate whether a specific interactive feature of an advergame (i.e. customisation) upholds the affect transfer hypothesis. Results from this research demonstrate an affect transfer from attitudes towards the advergame to the promoted brand; and from the latter to children's brand preferences and intention to request purchase of the brand.

Contribution to the Persuasion Knowledge Model (PKM)

This study also contributes to the debate whether persuasion knowledge can defend (i.e. act as a barrier to advertising) in this modern communication era. Friestad and Wright (1994) developed the theory 20 years ago in the context of television dominated environment. The theory stipulates that the degree to which children understand and recognise the persuasive intent of commercial messages depends on their persuasion knowledge. Accordingly, when persuasion knowledge is activated, consumers, including children, become sceptical of advertisers' intentions. This leads them to resist and activate negative responses to persuasion attempts. There is a large body of literature, based on the age-stage models of Jean Piaget (1960; 1971), Roedder (1981) and John (1999) which posit that children from eight years of age can begin to understand commercial persuasive intent (Oates, Blades and Gunter, 2001; Lawlor and Prothero, 2003; Moses and Baldwin, 2005; Robertson and Rossiter, 1974). However, today's digital environment presents new cognitive challenges regarding children's processing of commercial messages (Moore and Rideout, 2007), as more pervasive yet subtle messages attempt to persuade implicitly rather than explicitly (Nairn and Fine, 2008; Nairn, 2009).

The extent to which children can harness their persuasion knowledge to assist them as a barrier against the persuasiveness of commercial implicit messages is the centre of a heated debate (Ambler, 2008; Livingstone, 2009; Nairn and Fine, 2008). This thesis contributes to the debate, and better understanding of the PKM in a digital context by comparing the persuasion knowledge of two distinct age groups and whether the existence of such knowledge acts as a barrier. The findings show that both younger and older children have difficulties to understand the persuasive intent of advergames. In addition, the possession of persuasion knowledge does not act as a barrier to defend children from the persuasive intent of advertising.

Contribution to the Weak Theory of Advertising

The correlation between prior brand usage and consumer attitudes towards the brand is well documented. Academics are divided in their views whether advertising is a strong force, which persuades brand switchers to become loyal to the brand (Jones, 1990; 1997); or alternatively, whether advertising's main function is to reinforce and nudge consumers' to purchase the brand (Bernard and Ehrenberg, 1997; Ehrenberg; 1997). Both Moore and

Lutz (2000) and Waiguny *et al*. (2012) have found that prior brand usage has yielded more favourable attitudes toward the brand. Similarly, Winkler and Buckner (2006), in a study with adults, posit that advergames work best when players are already familiar with the brand. Van Reijmersdal *et al.*'s (2010) study, however, produced opposite results. Their results indicate that children with no prior brand experience or usage were more influenced by the interactive brand placement than children who have used the brand previously. Thus, the third contribution of this study is whether an advergame acts as a reinforcer, and thus familiarity with a brand seems necessary for the advergame to have an impact. Results from this research indicate that advergames act as reinforcer rather than a tool to switch brands, as children with prior brand experience were influenced positively than those who have never used the brand before. In other words, usage of the brand acts as a mechanism to control children's responses to the advergame.

1.6.2 Contribution to practice

This study contributes to the understanding of how to design more effective advergames, by adding to practitioners' knowledge of whether creating a customised game will encourage more favourable attitudes towards the brand; and consequently increase players' preferences for the promoted brand as well as intention to request purchase. Creating immersive and entertaining games is crucial to ensure that advergames work well to engage and influence their young audiences, thereby increasing sales of the brand they promote. The results indicate that there are a number of pre-requisites for advergames to have an impact on consumer responses. First, an interactive brand placement has to be well integrated into the game mechanics. Second, players have to be involved with the game (e.g. aiming to improve their scores). Once those pre-requisites are met, such an advergame has more impact on consumer responses than one which is customised.

To conclude, advergames could, and arguably should, be developed to promote healthy rather than nutrient-poor foods, hence this thesis will inform the marketing campaigns of health campaigners and authorities as well. Table 3 below summarises the contribution of this thesis to theory, practice and policy.

Table 3: Research questions and contributions

Research questions (sub questions)	Theoretical contribution	Practical/Policy contribution
Does the degree of advergame customisation has an impact on children's affective, cognitive and conative responses?	Contribution to the DMH model by demonstrating that although devised in the context of television advertising 30 years ago, it is robust enough to be upheld in the context of interactive advergames	Developing customised advergames is cost and time consuming. This research provides evidence that it is not necessary to add customisation options for advergames to have an impact on consumer responses.
Do age, persuasion knowledge, gender and prior usage of the promoted brand control for children's consumer responses?	Contribution to the PKM literature by demonstrating that the model does not provide support for advertising mediums which persuade implicitly rather than explicitly; Contribution to the Weak Theory of Advertising by demonstrating that an advergame acts as a reinforcer rather than a persuader	This research adds to parental and public concerns regarding advergames as neither persuasion knowledge or children's age act as barriers against advertising's effects. This research has potential to have an impact on policy considerations to broaden the scope of concern and responsibility of marketers and policy makers for older as well as younger children, as playing advergames had impact on both age groups.

1.7 Dissemination of research

This section presents the dissemination of this research to date.

Academic journal article in development

An article has been written for the Journal of Interactive Marketing.

Chapman, S., Maklan, S., Nairn, S., Dimitriu, R. and Macdonald, E. (2017 - in development), "Customised Advergames: Effects on Children's Affective, Cognitive and Conative Responses", *Journal of Interactive Marketing* (Cranfield journal ranking: 3*; Chartered Association of Business Schools: 3*)

Peer-reviewed conferences

The following has been submitted and presented in peer-reviewed conferences.

Chapman, S. and Maklan, S. (2016), Customised Advergames: Effects on Children's Affective, Cognitive and Conative Responses, British Academy of Management (BAM) Conference, 6-8 September, Newcastle University Business School, Newcastle.

*** The paper received positive feedback and was awarded as the Best Paper in the Marketing and Retail track.

Chapman, S., Maklan, S., Nairn, A., Dimitriu, R. and Macdonald, E. (2014), "Effects of Customised Advergames on Children's Persuasion Knowledge, Attitudes and Food Preferences", ISM-Open (Institute for Social Marketing), *Social Marketing and Socially Responsible Management: Broadening the Scope*, Open University, Milton Keynes.

The paper received positive feedback from two anonymous reviewers, one commenting that "*it is a well written paper on an interesting topic*". Following the presentation, the paper was invited to be included in a special issue of the Social Marketing journal.

Doctoral colloquiums

Chapman, S. (2015), "Customised Advergames: Are They Effective?", *Doctoral Colloquium*, 12 November, Cranfield School of Management.

Chapman, S. (2014), "It's Child Play: The Process of Advergame Development", *Doctoral Colloquium*, 20 March, Cranfield School of Management.

Chapman, S. (2013), "The Impact of Customised Advergames on Children's Attitudes and Food Preferences", *Doctoral Colloquium*, 21 March, Cranfield School of Management.

1.8 Structure of thesis

Chapter 1 (this chapter): sets out the background and rationale for this thesis. The research questions are outlined followed by the conceptual model and hypotheses, method, design, findings, and a summary of the contributions this thesis makes to theory, practice and policy. A dissemination of the work to date is also presented. The aim of this chapter is to provide a concise but complete understanding of the research undertaken.

Chapter 2 comprises of the context for this research. It provides an overview of advergames, including definition and classification of different types of advergames as well as their unique features (i.e. brand integration into game play, limited advertising breaks, customisation and personalisation, extended game play and interactivity). The chapter contrasts advergames to other communication mediums (i.e. product placement and television advertising) and their impact through different theoretical lenses.

Chapter 3 presents the literature domains for this research. Those domains are scoped to explain why the focus is particularly on certain concepts, models and theories rather than on others. The first domain – marketing communications - includes the sub-domains of customisation and food promotions to children. The *consumer behaviour* domain outlines consumer responses to communications effects. It reviews consumer responses to attitudes, brand preferences, intention to purchase as well as the role prior brand usage has on consumer responses. The third domain, *consumer socialisation*, explores children's understanding of advertising via developmental and cognitive psychology. By doing so, the overlapping areas between those three domains are explored as well as the main domains. Those overlapping areas include advertising and advergames' effectiveness. The chapter ends with a discussion about the gaps the review has unveiled, which presents the research opportunity.

Chapter 4 offers a conceptualisation for this thesis. It provides definitions for all the constructs and raises hypotheses grounded in theory and previous research, followed by the development of the conceptual model. The main model is presented as well as focusing on a specific mediating relationship within the model to explore the relationship within the dependent variables in greater detail.

Chapter 5 presents the research philosophy and methodology. The chapter builds on the research's main question and sub-questions by considering philosophical assumptions which underpin and justify the research design. The choice of brand is justified, followed by describing the development of the stimulus, various considerations involved in devising the instrument, measurement and coding the variables, issues of validity and ethical considerations.

Chapter 6 provides details about data collection for this thesis, including a discussion about the technical pre-testing which was involved as part of the advergame design, and operational pilot conducted in children's schools. The insights learned and resultant iterations to the stimulus and questionnaire conclude this chapter.

Chapter 7 contains the results of the main data collection. It presents the findings from a statistical analysis of the data.

Chapter 8 discusses the results and links those back to the literature to support and explain the findings. Contributions to theory, practice and policy are discussed followed by acknowledging the limitations of the research and identifying opportunities for future research to extend this thesis. The chapter concludes with personal reflections on the research journey.

2. SETTING THE SCENE: ADVERGAMES

This chapter builds a picture on advergames and provides a theoretical explanation to the impact they have on consumer responses. Section 2.1 defines advergames and examines different types of advergames. Their unique features are examined in section 2.2, while section 2.3 contrasts advergames to other advertising mediums. The theoretical lenses, which explain the impact of advergames, are examined in section 2.4. The chapter ends with a summary and conclusions (section 2.5).

2.1 Definitions and classification

2.1.1 Definitions of advergames

The term 'advergame' was initially coined in 2000 by the entrepreneur Anthony Giallourakis who realised the vast opportunities for marketing and branding in advergames (Conde-Pumpido, 2014). A year later, advergames were defined for the first time by Keats (2001) as "*a downloadable or web-based game created solely to enable product placements*". That definition may have been accurate 15 years ago, but these days advergames are available on a variety of platforms, such as Smartphones, Tablets, PCs/laptops and even on the television. Furthermore, as posited by Conde-Pumpido (2014, p.20), advergames' purpose is not to enable solely product placement, "*but also to convey advertising messages, which do not always use product placements*".

In recent years, a growing number of scholars proposed several definitions of advergames for the purpose of their own studies (An and Stern, 2011; Cauberghe and De Pelsmacker, 2010; Chester and Montgomery; 2007; Culp *et al*., 2010; Dahl *et al*., 2009; FTC, 2008; Mallinckrodt and Mizerski, 2007; Moore, 2006; Moore and Rideout, 2007). Although all of their definitions describe advergames, none include all the necessary elements to define this practice and what differentiates it from other digital marketing strategies. The most cited definitions are presented in table 4 below. After a critical review of those definitions, my own definition of advergames is proposed.

Table 4: Definitions of advergames

Study	Definition
Moore (2006, p.6)	"*Online games in which a company's product or brand characters are featured - an advertisement and a game all at once*"
Mallinckrodt and Mizerski (2007, p.87)	"*A form of branded entertainment that features advertising messages, logos, and game characters in a game format*"
Dahl, *et al*. (2009, p.47)	Advergames comprise of "*embedded commercial messages within the content of retail; accessible video games and online electronic games*"
Cicchirillio and Lin (2011, p.484)	"*The use of branded products or images within an interactive video game*"

Moore (2006, p.6) includes in her definition that advergames are *online* games, but these days advergames are not only available online but also on other platforms (e.g. Smartphones, tablets/PCs, television). Further, Moore (2006) points to products or spoke characters as brand identifiers used in advergames. However, is it merely just one example, as there are a variety of other brand identifiers, such as brands' logo. Mallinckrodt and Mizerski (2007, p.87) focus their definition on the *way* brands are embedded in advergames, but in reality there are multiple ways by which advertising messages are embedded into a game, such as linguistically, via sounds, visually and haptically (Conde-Pumpido, 2014). Dahl *et al*.'s (2009, p.47) definition was found to be the most accurate, particularly as it emphasises the fact that commercial messages are embedded into the game. However, the medium through which advergames are available could be refined further. Finally, Cicchirillio and Lin (2011, p.484) omit to mention in their definition the sole purpose for advergames' existence - to promote brands. I propose, therefore, to define advergames for the purpose of this thesis as -

> ***Interactive*** digital games, designed by companies, to ***promote*** their brands by embedding ***advertising*** messages into entertaining content

In other words, advergames are "*the medium selected by brands to convey the advertising messages*" (Conde-Pumpido, 2014, p.40). The outcome is a medium where commercial persuasive messages merge into an entertaining gaming content, thus "*blurring the border*

lines between advertising and entertainment" (Moore and Rideout, 2007, p.208). Staiano and Calvert (2012, p.59) state that from the nature of their definition:

> "*Advergames can create positive, emotional experiences that become associated with an actual product, a branded logo, or a spokecharacter who advertises the product*".

Figure 5 below illustrates the three main components of an advergame, being the game, the promoted brand, and the player who interacts with the brand and the game. The interaction between those components encompasses players' experience from game play including the encounter with entertaining advertising messages and understanding (or not) of the commercial nature of those messages. The latter interaction is explored in section 3.4.3.3 of this thesis.

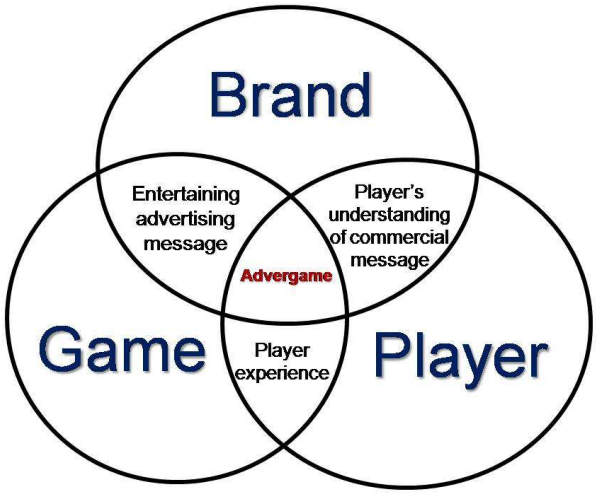


Figure 5: Components of an advergame (Adapted from Conde-Pumpido, 2014)

This form of immersive advertising is very popular amongst children (Cheyne *et al*., 2011; Moore and Rideout, 2007) and food companies, such as Burger King, Coca-Cola, Doritos, General Mills, KFC, Kellogg's[3], Kit Kat, Kraft, McDonald's, Mars, Nesquik and Skittles use it extensively (An and Stern, 2011; Clarke and Svanaes, 2012; Culp *et al*., 2010; FTC, 2008; Hernandez and Chapa, 2010; Lee *et al*., 2009; Moore, 2006). Moore (2006), who conducted a content analysis of 546 unique advergames of 96 food brands,

[3] Kellogg's have a number of advergames for each of their brands (Appendix B).

reveals that 73% of food companies' websites contain advergames. Subsequent analyses by Dahl *et al.* (2009), Culp *et al*., (2010) and Lee *et al.* (2009) report that this figure has risen to 80%, 84% and 88% respectively, implying that the practice to incorporate advergames on food companies websites is becoming the norm in the industry. Table 5 presents a summary of content analyses studies about food advergames.

Table 5: Summery of content analyses about advergames

Author(s)	Country	Sample	Main findings
Moore (2006); Moore and Rideout (2007)	USA	546 advergames 96 food brands	73% of websites include advergames 80% of games include two or more brand identifiers[4]
Lee *et al.* (2009)	USA	252 advergames 139 food brands	88% of websites include advergames, but only 2.7% educate about nutritional content 67% of advergames integrate brand identifiers as active game components 97.9% of brands were nutrient poor
Dahl *et al.* (2009)	UK	100 advergames 13 websites	80% of websites contain advergames
Culp *et al.* (2010)	USA	247 advergames	84% of websites contain advergames One healthy message for every 45 brand identifiers
Quilliam *et al.* (2011)	USA	166 advergames 119 food brands	88% of advergames had brand identifiers 79% of advergames had unhealthy content of CFBAI[5] participant companies
Paek *et al.* (2014)	USA + S. Korea	143 advergames 19 food brands	71% of advergames included ad breaks Most advergames promote unhealthy food

[4] A brand identifier includes food items, packaging, brand character or logo (Moore, 2006).

[5] Children's Food and Beverage Advertising Institute (CFBAI): food companies who participate in this programme pledged to self-regulate themselves in terms of food marketing to children.

It should be noted that not only commercial 'for-profit' organisations utilise advergames to promote their brands. Not-for-profit organisations have deployed this medium as well to promote a healthy diet for children. Cicchirillo and Lin (2011) have found two main differences between non-profit and for-profit advergames. First, the majority of non-profit advergames (87.5%) focus on health-related messages while the majority of for-profit advergames (55%) focus on product-related information. Second, in terms of game design, non-profit organisations use memory, quiz, and puzzle game; while for-profit use action and role-playing games. Further, for-profits advergames include more character representation in their advergames than non-profit organisations.

2.1.2 Classification of advergames

Console advergames

The first advergames in the market were console advergames from the early 1990s. For example, in 'MC Kids', which was available through Nintendo NES, players had to find Ronald's bag of bricks stolen by Hamburger, the villain in the game (Virgin Games, 1992). Conde-Pumpido (2014) and Vedrashko (2006), who conducted extensive reviews on the history advergames, conclude that companies during the 1990s were not particularly innovative regarding advergame development. Thus, most advergames were inspired by successful commercial video or console games.

Online advergames

At the same time that console advergames were evolving, internet technologies enabled advergames to be played online. This ability provided distinct advantages for advertisers. First, there are no geographical or physical limitations as one might have with console games. Thus, online advergames are accessible at any time worldwide to anyone with an internet connection (Conde-Pumpido, 2014). Second, online advergames can be distributed via multiple formats, such as micro-sites, on brands' official websites, gaming portals, presentation as banners; or via social media (Conde-Pumpido, 2014; Vedrashko, 2006).

Mobile advergames

In the early 2000s advances in wireless technology enabled the design of mobile advergames (Roto and Kaikkonen, 2003). The advantage of mobile over online advergames is that mobile phones are carried everywhere and allow convenient access, such as playing on the sofa while watching television (Koivisto, 2007). More importantly, with the introduction of General Packet Radio Service (GPRS) and 3G technologies, mobile phones are location-sensitive and can provide customised experiences, such as location-based advergames.

Pervasive advergames

Pervasive mobile advergames "*incorporate into the gameplay spatial parameters, as players' location, their orientation or the speed of their movements*" (Winter *et al*., 2011). Pervasive games exist online as well as on mobile devices. Those games incorporate reality into the game by requiring the player to receive text messages or phone calls with hints to follow the storyline. However, according to Conde-Pumpido (2014), not many advergames exist with that level of pervasiveness. The author summarises those type of advergames by positing that "*they have opened up new possibilities to provide meaningful branded experiences*" (Conde-Pumpido, 2014, p.57).

2.2 Unique features of advergames

Moore (2006) has found that the most common types of advergames are arcade, sport and adventure games with the majority of them being animated with images and sound effects. Further studies have revealed that certain elements are common to all advergames while other features exist in just a few of them. In other words, while every advergame contains at least one element of brand integration, not every advergame offers options to customise or personalise the game. The elements that exist in some of the advergames are limited use of advertising breaks (An and Kang, 2013; An and Stern, 2011; Moore and Rideout, 2007), personalisation and customisation (Moore, 2006), brand integration (Lee *et al*., 2009; Van Reijmersdal *et al*., 2012), and the use of game mechanics to extend game play (Cicchirillio and Lin, 2011; Culp *et al*., 2010; Gun, 2001; Moore, 2006; Moore and

Rideout, 2007). The section below provides an overview of features which advergames have in common, and those are explored below with illustrative examples of advergames[6].

2.2.1 Brand integration

Chen and Ringel (2001, pp.3-4)[7] identified three levels of product or brand integration: associative, illustrative and demonstrative. Those levels range from low to high integration and are discussed below.

Associative integration

In this type of integration, the brand has a presence in the advergame, forming part of the background, but without any gaming function (e.g. billboard type advertising). By doing so, players associate the brand with the game. For example, Ritz Bits billboards in the scenery of a football game could trigger an association of consuming snacks while watching a football game. As such gamers do not interact actively with the brand on those type of advergames. Winkler and Bucker (2006) have found that even this low level of brand integration has a strong impact on brand recall. Figures 6 below provide an example of associative integration.

Figure 6: Example of associative integration (McDonald's)

[6] Food companies tend to update their advergames, and therefore the links provided in this thesis have been operational at the time of writing.

[7] Jane Chen and Matthew Ringel produced a report on brand integration in advergames, while working for the consultancy firm KPE. Their highly cited report, however, is no longer available online (see Conde-Pumpido, 2014).

Illustrative brand integration (medium integration)

In this type of integration (figure 7), the brand is embedded as an active part of the game components (Nelson, 2002). Lee *et al*. (2009), in their content analysis of 251 food advergames, have found that 67.1% of advergames integrated the brand as an active component in the game. Illustrative integration can increase brand recall (Nelson, 2002; Van Reijmersdal *et al*., 2012), recognition (Van Reijmersdal *et al*., 2012), brand preferences (Dias and Agante, 2011; Mallinckrodt and Mizerski, 2007), positive attitudes towards the game and the brand (Van Reijmersdal *et al*., 2012), as well as purchase requests (Van Reijmersdal *et al*., 2010).

From the literature, it seems that the majority of advergames use this form of brand integration, and therefore it was also used to design the stimulus for this thesis.

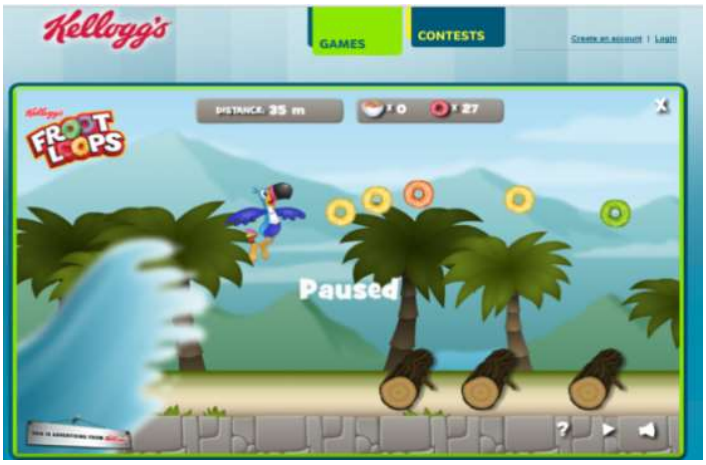


Figure 7: Example of illustrative integration (Kellogg's Froot Loops)

Demonstrative brand integration (highest integration)

This integration occurs where the advergame allows for purposeful integration with the product, meaning that the player can experience the product or brand in its natural environment. For example, McDonald's SIM[8] strategic game (figure 8) requires players to manage a McDonald's franchise restaurant from different aspects.

Figure 8: Example of demonstrative integration (McDonald's)

2.2.2 Limited use of advertising breaks

Contrary to television advertising, the majority of advergames do not have advertising breaks or any other separation devise which distinguishes advertising from gaming. In the absence of such boundaries, the commercial intent is camouflaged which makes it difficult for children to detect. In a content analysis of websites with advertising breaks, An and Kang (2013) report that many websites do not provide any advertising breaks. Amongst those who do provide them, the content and features of the breaks have issues of low visibility, readability and deficiency by not explicitly stating the commercial intent of advergames, as is seen in figure 9. Moore and Rideout (2007) add that those advertising breaks are static in comparison to the other animated content.

[8] A SIM game is a computer or video game that simulates or artificially creates the feeling of experiencing an activity, such as flying an aircraft.

Figure 9: Example of an advertising break (Source: Kellogg's)

An and Stern's (2011) study provides evidence that advertising breaks decrease brand recall and preferences for the promoted brand, although they did not assist children to detect the advertising source or the commercial nature of the advergame.

2.2.3 Interactivity

Steuer (1992, p. 84) defines interactivity as "*the extent to which users can participate in modifying the form and content of a mediated environment in real time*". This perspective includes users' ability to customise the advertising message and is further discussed in section 3.2.3.2. In the context of digital games, 'interactivity' is defined as a continuous exchange between the game and players where they can influence the course of events in the game (Klimmt and Vorderer, 2007). In contrast, in a movie or a television advert, events on the screen are neither caused by viewers nor affected by them. Another, broader definition is proposed by Heeter (1989) as comprising of six elements being (1) complexity of choices available; (2) the amount of efforts players must exert; (3) the extent of responsiveness to the player; (4) the capacity of monitoring information use; (5) the ease of adding information; and (6) the potential to facilitate interpersonal communications. For a medium to be considered as interactive only one or more of the elements needs to be present.

Interactivity in advergames includes clicking, dragging or moving characters or game features. As such, most advergames, by their nature, are interactive (Lee, Park and Wise,

2014). In fact, the term is used in this thesis as well as by other scholars as part of advergames' definition (An and Stern, 2011; Hernandez *et al*., 2004; Lee *et al*., 2009; Winkler and Buckner, 2006). A related concept to interactivity in advergames is brand interactivity, which is defined by Lee *et al*. (2014) as the degree of control and consumers' ability to modify brand-related features. It has been found that interactivity in advergames has positive impact on brand perceptions and preferences (Mallinckrodt and Mizerski, 2007), and it results in favourable attitudes towards the advergame (Sukoco and Wu, 2011; Van Reijmersdal *et al*., 2010; 2012). Lee *et al.* (2014), however, produced contradictory results where brand interactivity had a negative effect on advergame attitudes. Nevertheless, there is agreement amongst scholars regarding the positive impact brand interactivity has on attitudes towards the promoted brand (Lee *et al*., 2014; Waiguny *et al*., 2012; Van Reijmersdal *et al*., 2010; 2012).

2.2.4 Customisation and personalisation

Figures 10 and 11[9] illustrate customisation options Kellogg's provides in their Apple Jacks advergame. Players are given a choice of avatar to be either 'Cinnaman' or 'Apple Jacks'. Further details about various personalisation and customisation options in advergames are in appendix A. As the feature of customisation is the context for this research, it is discussed in greater detail in section 3.2.3, as part of the literature review.

One of the ways to increase consumer involvement and enhance brand immersion is to either customise or personalise the web space (Moore, 2006; Tam and Ho, 2005). Food companies leverage customisation technologies and design advergames that are geared to increase the players' engagement. According to Moore (2006), some of the customisation techniques in advergames include:

- Choice over the game player or opponent (e.g. spoke or animated character)
- Choice over the level of game difficulty
- Options to design aspects of the game space (e.g. colours, background, music/ sound effects)

Figure 11: Example of character customisation in an advergame (Source: Kellogg's' Apple Jacks, 2009)

Figure 10: Example of customisation in an advergame (Source: Kellogg's Apple Jacks, 2009)

[9] As companies update advergames on their websites regularly, those images and links exist online at the time of writing.

2.2.5 Extended game play

This feature aims to retain children's attention over an extended period of time by challenging them to improve their scores. It also encourages, during which time brand exposure is enhanced (Moore, 2006; Moore and Rideout, 2007). Figure 12 illustrates examples of advergames from Kellogg's and Nesquik that use this feature. Moore (2006), who conducted an extensive content analysis on advergames (N = 546), reveals that this feature includes:

- Multiple levels (45%)[10]/ points (69%)/ time limits (40%)
- Explicitly asking players at the end of a gaming session if they would like to play again (71%)
- Public display of scores which drives competition and encourages players to return back to the game and see how they are positioned against other players (39%)
- Prize giving (e.g. badges) (5%)

Figure 12: Examples of advergames with extended game play

[10] The percentage of advergames that include such features out of the authors' sample.

2.3 Contrasting between advergames and other communication mediums

In this section advergames are compared to television advertising, and product placement. Although there are similarities between these mediums (e.g. all are enjoyable and entertaining activities), there are also fundamental differences between them, as is summarised in table 6.

Advergames versus product placement

Product placement, also known as 'brand placement', is a "*paid inclusion of branded products or brand identifiers, through audio and/ or visual means, within mass media programming*" (Karrh, 1998, p.33). This inclusion can be seen in movies, television programmes, computer/ video games, and even in blogs and video sharing websites. Unlike television advertising, a product placement disguises its commercial intent by being seen in its natural environment, or used by a character (Nelson, 2002). Balasubramanian *et al.* (2006) posit that when a brand is associated with a character, it may infer an endorsement of the brand by that character. Product placement was practiced from the 1940s (Nelson, 2002; Karrh, McKee and Pardun, 2003), but it was in Spielberg's E.T. movie from 1982 that it captured marketers' attention with Hershey's Reese's Pieces. Within three months of the movie's releases, the candy's sales increased by 65% (Balasubramanian *et al*., 2006). Product placement in video games allows for increased exposure and interaction (Grigorovici and Constantin, 2004; Hang and Auty, 2011; Nelson, 2002) as well as adding realism to the gaming experience (Chester and Montgomery, 2007). In contrast to brand placements purchased in entertainment media, an advergame is designed specifically to promote the brand itself and as such it is the *central feature* of the game (Cicchirillio and Lin, 2011; Culp *et al*., 2010; Lee, *et al*., 2009; Winkler and Buckner, 2006; Wise *et al*., 2008).

Advergames versus television advertising

In an advergame, commercial messages are integrated into the storyline of the game, which makes it extremely difficult to separate advertising from entertainment (Moore and Rideout, 2007). In television advertising, commercial messages are separated from entertaining programmes via advertising breaks. Those, however, do not exist in the majority of advergames (An and Kang, 2013; An and Stern, 2011). Another important

distinction relates to time exposure. In advergames, there are no restrictions for time exposure as there are for the 30-second television advert (Moore, 2006). Unlike television advertising, children may play the same advergame many times, and indeed Gunn (2001) reports that children may play the same game 100 times or more. One of the strongest differences between the two relates to interaction. In an advergame, players interact directly with the brand whereas television is more passive. The Advertising Standards Authority Code on Advertising Practice (CAP) has introduced over the years various restrictions on television advertising with regard to the promotion of HSSF food to children. Those restrictions include audience type restrictions (i.e. that there should be no advertising of HSSF food to children in programmes where the audience is 20% more children than adults), content restrictions (e.g. ads should not encourage excessive consumption of HSSF food or 'pestering' for such foods from parents or guardians) (Committee of Advertising Practice, 2010a; 2010b).

Advergames relate to non-broadcast advertising and as such, there are far less regulations relating specifically to this medium. There are content restrictions that include display advertising, yet many advergames do not contain such features. Table 6 below summarises those contrasts between advergames, product placement and television advertising.

Table 6: Contrasting between advergames and other communication mediums

Features	Advergames	Product placement	TV advertising
Time exposure	No limits on advertising exposure	Limits on time exposure in movies/ TV; no limits in video/ console games	30-second adverts during programmes
Interaction	Active participation and interaction by playing the game	Passive viewing	Passive viewing
Persuasion potential	Implicit persuasion	Implicit persuasion	Explicit persuasion
Customisation	Increased level of engagement through customisation (e.g. design of the game space)	N/A	N/A
Repeat visits	Public display of scores invites competition to encourage repeat visits and extended stay	TV - N/A; Computer/ video games - more likely	N/A
Corporate research	Tracking online behaviour to assess various variables (e.g. number of visitors)	N/A	N/A
Legal restrictions	Content restrictions for HFSS products that include display advertising, but nothing specific for advergames without display advertising (the majority of advergames do not contain display advertising)	Restrictions for food advertising in children's programmes and for HFSS foods	Timing restrictions; products should not encourage excessive consumption or pestering; the use of promotions for HFSS foods is banned

Moore (2006, p.6) summarises the distinction between advergames and conventional media by saying that:

> "*Online games can provide a more highly involving and entertaining brand experience than is possible with conventional media*".

2.4 The impact of advergames through theoretical lenses

Part of the concern regarding children's exposure to advergames is that due to their underdeveloped cognitive skills, they find it challenging to detect the commercial intent behind it. The section below explains, through theoretical models, how children interact with advergames.

The Food Marketing Defence Model

Harris, Brownell and Burgh (2009) developed the Food Marketing Defence model, in which three attributes are required to resist food marketing. Those are awareness (i.e. including attention and comprehension of the advertising message), understanding (of the processes of how advertisements work and how to resist them), and motivation (i.e. the desire to resist the advertised message). There is much evidence to support the proposition that children, as well as adolescents, lack the necessary attributes as outlined above to resist many traditional food marketing strategies, let alone implicit techniques used in digital marketing (Harris *et al.,* 2009).

Information Processing Model (IPM)

This model, which was developed in the early 1950s, consists of three main components and those are sensory, working and long-term memory (Hovland, Janis and Kelley, 1953). Sensory and working memories help individuals leverage information during initial processing, while long-term memory acts as a knowledge repository. The IPM helps to understand how new data is processed from a cognitive developmental perspective (Halford and Andrews, 2011; Hovland *et al*., 1953). The model can be used to explain how children develop defences against persuasive messages, and that young consumers are less equipped to process advertisements than adults (Staiano and Calvert, 2012). In particular, that children have limited cognitive resources to win a game and simultaneously defend against the persuasive intent of commercial messages. Children may be so distracted by playing an advergame (e.g. choosing characters, devising strategies to win) that they cannot draw on their defences and recognise that the game is trying to persuade (Grigorovici and Constantin, 2004). Thus, children have limited processing resources that do not allow for various complex processing tasks to take place simultaneously.

2.5 Summary and conclusions

Advergames, the context of this thesis, have been introduced. This chapter critically reviewed different definitions for advergames and proposed a new one. In addition, different classifications of advergames and their unique features were explored. Finally, two theoretical models (i.e. the Food Marketing Defence Model and the IPM) were discussed to explain children's interaction with advergames. Those models do not act as the theoretical underpinning for this thesis because neither model directly relates to the research's main question, although both advance knowledge regarding children and advergames. The Food Marketing Defence Model proposes the required attributes to resist food marketing, while the IPM advances understanding regarding how data is processed cognitively. The PKM, on the other hand, which is discussed in the following chapter, explains how consumers develop *persuasion knowledge* and how this knowledge acts as a defence against advertising. Persuasion knowledge is one of the main constructs of this thesis, and therefore it was deemed appropriate to test the theoretical underpinning of the PKM, which directly relates to it, in a digital context.

It seems that there are distinct advantages for marketers to promote their brands via advergames. Sukoco and Wu (2011, p. 7405), who defined advergames as "*the new type of internet entertainment*", argue that by developing engaging advergames marketers can advertise their brands for unlimited time to specified target audience while investing on it the equivalent to a 30-second advertisement on prime-time television. Advergames fuse together brand promotion with the interactive entertainment feature of product placement in video games. It is those features that make it such a powerful tool to deliver a communication message in a way which was never possible before.

3. LITERATURE REVIEW

3.1 Introduction

This thesis is informed by three major literature domains which shape and inform the research question. Those domains are vast and overlap between them. Mapping them links together the multidisciplinary areas of marketing communications, consumer behaviour and consumer socialisation (figure 13). The *marketing communications* domain (section 3.2) includes customisation and food promotions to children. The *consumer behaviour* domain (section 3.3), originally developed from the field of social psychology, focuses on consumer responses which encompass attitudes towards the advertisement and the promoted brand, brand preferences, purchase request intention and the role of prior brand usage. The final domain is *consumer socialisation* (section 3.4), which focuses on the process through which children become consumers and the development of their persuasion knowledge (i.e. critical evaluation of advertising). Also discussed in this chapter are the theories and models underpinning this research, including the ATR, DMH, and PKM. Section 3.5 concludes this chapter and provides justification as to why certain concepts and theories were followed rather than others (i.e. the scoping of the thesis).

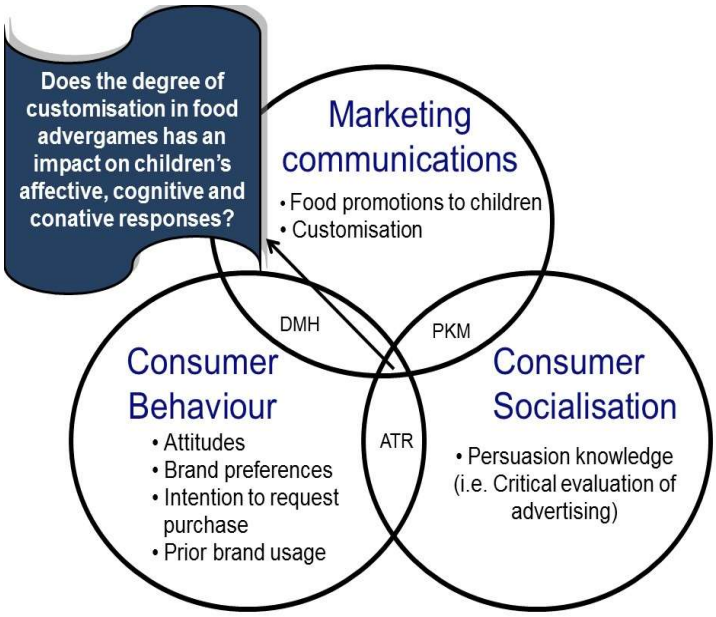


Figure 13: Literature domains (Source: Author)

3.2 Marketing communications

This section commences with an introduction to marketing communications (section 3.2.1), followed by an overview of the key models governing the domain (section 3.2.2), customisation (section 3.2.3) and the topical area of food marketing to children (section 3.2.4).

3.2.1 Introduction to marketing communications

Marketing communications, also referred to as 'marketing promotions', is one of the four elements of the marketing mix which includes price, place, product and promotion (Kotler *et al*., 2013). Fill (2013, p.18) defines marketing communications as a -

> "*Management process through which an organisation attempts to **engage** with its various **audiences** ... by conveying messages that are of significant value, **audiences** are encouraged to offer attitudinal and behavioural **responses***."

Accordingly, three main aspects are associated with this definition. Those are engagement (i.e. deciding whether to engage customers using one-way, two-way, or dialogical communications), audiences (i.e. deciding on the type of audiences to communicate as well as learning about their needs), and responses (i.e. deciding upon the desired goals of communication campaigns (Fill, 2013). Marketing communications comprises of five set of tools which are advertising, sales promotions, personal selling, direct marketing and public relations. Out of those tools, the focus of this thesis is on advertising.

Advertising is defined by Kotler *et al.* (2013, p.447) as -

> "*Any form of non-personal presentation and promotion of ideas, goods or services by an identified sponsor*".

The ultimate goal of marketing communications is to achieve purchase of the promoted product, brand or service. Other goals include eliciting certain responses from consumers, such as recalling and recognising it, increasing brand awareness, positive attitudes towards the brand, choosing and preferring it to other brands and expressing intention to purchase it (Fill, 2013). This thesis focuses on the later responses.

3.2.2 Marketing communications models

Different models explain how marketing communications works and its relationship with consumer responses. Those include the sequential models, such as Attention - Interest - Desire - Action (AIDA), Hierarchy of Effects (HoE) models, the Strong and Weak theories of advertising and the ATR model.

Sequential models of marketing communications

One of the most well-known models is AIDA, which was developed by Strong (1925) to understand personal selling but soon after was adapted to explain the communication process in advertising. It explains how consumers progress through a series of linear stages, and that each step is a logical consequence of the one preceding it. The process commences with gaining customers' attention and generating interest in the offering (i.e. informing). Those first two stages are presumed to drive desire from which action, such as purchase, will emerge (i.e. persuading). Fill (2013) points that the model provides only a broad explanation of the sales process, omitting to provide insights as to *how* advertising works. 36 years later, Lavidge and Steiner (1961) developed the Hierarchy of Effects (HoE) approach, which classifies message outcomes into cognitive, affective and conative responses. The model stipulates that advertising cannot induce immediate behaviour responses. Instead, a series of six stages occur. The process starts with raising customers' awareness about the offering. Following this, customers have to be provided with product-specific information (i.e. features and benefits) to improve their knowledge about it. This knowledge should be developed into liking the offering and preferring it to others. The conviction stage is a consequence of customers developing pre-purchase intentions about the offering. Lavidge and Steiner (1961) contend that only after the above stages have been accomplished, customers will display action and purchase the offering.

The ATR (Awareness-Trial-Reinforcement) model, devised by Ehrenberg (1974) reflects a similar process to the abovementioned sequential models. The model suggests that awareness is a pre-requisite prior to any purchase. The next stage is to try the product or service (i.e. trial purchase), which is followed by reinforcement to maintain awareness and provide reassurance. The model has been revised in 1997 by the addition of a new stage which is nudging customers (i.e. reminding them of the brand and encouraging repeat purchase). The revised model is presented below in figure 14.

Figure 14: The ATR Model (Source: Ehrenberg, 1997)

Those stages correspond to the cognitive, affective and conative categories. Another model is the DRIP model, which contains the main tasks of marketing communications, which are to differentiate (i.e. to make the offering stand out in the category), reinforce (i.e. strengthen previous experiences and reassure customers), inform (i.e. make customers aware of products' features and availability) and persuade (i.e. encourage positive purchase-related behaviour) (Fill, 2013). In common to all sequential models of advertising is that they propose that consumers progress logically through these linear models in a number of stages, and that purchase is not a direct result of an advertising message. Fill (2013) claims that those sequential models have a number of limitations. Consumers do not always make a purchase as a result of following a number of linear steps. In addition, this logical progression is not reflected in reality regarding impulse purchases. Table 7 below provides a summary and comparison of the sequential models according to desired cognitive, affective and conative responses.

Table 7: Sequential models of marketing communications (Adapted from Fill, 2013)

Stage	AIDA	HoE models
Cognitive		Awareness
	Attention	Knowledge
	Interest	Liking
Affective		Preferences
	Desire	Conviction
Conative	Action	Purchase

The Strong and Weak theories of advertising

In response to criticism about the sequential models, two approaches have been suggested. Those are the Strong (Jones, 1991) and Weak (Ehrenberg, 1974) theories of advertising. The Strong theory posits that the power of advertising is so strong that it acts as a converter and is capable of increasing sales for both brands and a category. This theory regards advertising as using persuasive psychological techniques (Jones, 1990; 1997), which manipulate individuals to purchase products that they have not used previously. Baines, Fill and Page (2011) suggest that the Strong theory of advertising corresponds to the HoE models referred earlier. The authors point that this theory is closely related to product-oriented advertising style where "*features and benefits are outlines clearly for audiences*" (*ibid*, p. 391). In contrast, the Weak theory of advertising posits that consumers' purchasing is driven by prior purchase and product or brand trial(s) rather than exposure to advertising (Castlebery and Ehrenberg, 1990; Ehrenberg, 1974; 1997). Ehrenberg (1974) devised the ATR model to explain how the Weak Theory works. Accordingly, advertising's role is customer retention, increase product or brand usage, and reinforce customer's attitudes rather than change them.

Baines *et al.* (2011) suggest that both the Strong and Weak theories explain the way advertising works. Much, however, depends on the role of involvement in the purchase process. For those purchase decisions where involvement is high, the Strong theory is the most applicable. In contrast, for low involvement purchases, "*the decision-making is likely to be driven by habit,* [where] *advertising's role is to maintain a brand's awareness with the purchase cycle*" (*ibid*, p. 392).

3.2.3 Customisation

A thorough understanding of customisation's impact is critical to explore, especially in the media-rich current digital landscape. The psychological responses of customers to customisation is still in its nascent stages. Advances in technology have made customisation easily achievable, yet as Kalyanaraman and Sundar (2006) observe, there is scant literature to provide evidence regarding its effects on consumer responses. This thesis helps to fill a gap on the effects of a specific feature of advergames on communication responses.

Gilmore and Pine (1997) distinguish between four types of customisation: adaptive, cosmetic, transparent and collaborative. According to those authors, *adaptive customisation* is where a standard product or service is offered to customers with the option for them to alter it themselves. *Cosmetic customisers* present the same basic product or service differently to diverse customers. *Transparent customisation* is where some customers are provided with unique products or services, without the knowledge that those have been customised for them. Finally, *collaborative customisation* occurs when customers are engaged in a dialogue with the company where they can express their specific needs and receive a customised offering tailored to their needs. Previous studies about customisation have focused on mass customisation (Davis, 1987; Gilmore and Pine, 1997; Kumar, 2007), which is defined by Hart (1996) as providing customised products and services instead of mass-produced alternatives. This section focuses on the differences between customisation/ personalisation (section 3.2.3.1) and customisation/ interactivity (section 3.2.3.2).

3.2.3.1 Distinction between customisation and personalisation

In the marketing literature, the concepts of 'personalisation' and 'customisation' are used interchangeably (e.g. Kalyanaraman and Sunder, 2006). Scholars have not yet reached a commonly agreed conceptualisation, let alone a precise definition of either concept (Sunikka and Bragge, 2009; Wind and Rangaswamy, 2001). Advances in technological developments in the past 30 years have made customisation an affordable strategy for enhancing communications with customers (Chester and Montgomery, 2007; Montgomery and Chester, 2009; Sunikka and Bragge, 2009). Due to the relative ease with which customisation can be achieved, scholars and practitioners alike have high

expectations from it (Ansari and Mela, 2008; Sheth and Sisodia, 1999) and are interested to learn more about it (Syam, Ruan and Hess, 2005).

Amongst those researchers that distinguish between personalisation and customisation, an agreement has emerged. Personalisation is used in those instances when it is system-driven and tailored by the company, often without customers' awareness (Serino, Furner and Smatt, 2005; Sundar and Marathe, 2010). In order to provide an effective personalisation experience, customers have to consent to share personal information and use personalisation services, such as Cookies (Chellapa and Sin, 2005).

Customisation, on the other hand, is defined as a user-driven buyer-centric process, initiated and controlled by customers where they can decide about a products' or services' specifications (e.g. configuration of website content) (Ho, 2006; Serino *et al*., 2005; Wind and Rangaswamy, 2001). Although customers are provided with choices, those are not targeted since marketers are not aware of customers' preferences. Table 8 below contrasts the definitions of personalisation and customisation by key scholars.

Table 8: Distinction between personalisation and customisation

Personalisation	Customisation
The process that "*changes the … interface or distinctiveness of a system to increase its personal relevance to an individual*" (Blom, 2000, p.313; Blom and Monk, 2003)	The degree to which goods or services can be selected or modified in accordance with user preferences (Teng, 2010)
"*Tailoring a product or service to a buyer's preferences … involves decisions made by the company often without the knowledge of the customer"* (Serino *et al*. , 2005, p.3)	"*Configuring a product or service to a buyer's specification .. [and] requires the customer to make the decisions"* (Serino *et al*., 2005, p.3)
"*Personalisation is a process of providing relevant content based on user's preferences*"; those preferences were previously determined using technology, such as Cookies (Ho, 2006)	Customisation occurs when "*a website provides an array of choices for the users to modify its look and feel*" (Ho, 2006) (i.e. it is a user-driven process)
"*Personalisation refers to the tailoring of products … to the tastes of individual customers based upon their personal and preference information*" (Chellapa and Sin, 2005)	"*Customisation is under the control of customers. It is initiated by them, and focuses on helping [them] to identify … what they want*" (Wind and Rangaswamy, 2001)
"*Personalisation is customising some features … in order for customers to benefit from more convenience.* [It] *can be initiated by the customer or by the firm*" (Peppers and Rogers, 1998)	Customisation offers more control. Marketers, however, still influence customers' choices by providing them with choice options (Wind and Rangaswamy, 2001)

Sunikka and Bragge (2012), who conducted an extensive literature review about the differences between personalisation and customisation, indicate the top five subject categories for both areas. The authors have ranked the order of subjects according to the amount of publications in each of them as is seen in table 9 below.

Table 9: Top five subjects of personalisation and customisation research (Source: Sunikka and Bragge, 2009)

Personalisation	Customisation
Computer science (information systems)	Operations research (Management science)
Engineering (electrical and electronic)	Engineering (manufacturing)
Computer science (artificial intelligence)	Management (marketing)
Computer science (software engineering)	Engineering (industrial)
Telecommunications	Computer science (interdisciplinary applications

To summarise the distinction between the two concepts, personalisation involves the existence of individualised content chosen for customers by marketers based on customers' past usage which indicates on personal preferences (Chellapa and Sin, 2005). Customisation, on the other hand, includes initiation and selection by customers of options proposed by marketers *without* the latter's knowledge of customers' preferences. Thus, the main difference between the two concepts is whether marketers are aware of customers' existing preferences, in which case marketers can tailor propositions accordingly. Customisation occurs in the absence of such awareness. Hence, personalisation is more targeted than customisation as it allows customers to receive information that might be more relevant to them since it matches their existing preferences (Ho, 2006). In the present research, children were able to choose their game space (e.g. colours, themes) without the researcher's prior knowledge about their existing interests and preferences, and therefore customisation and not personalisation is investigated.

3.2.3.2 Distinction between customisation and interactivity

As discussed in section 2.2.3, interactivity in advergames is a broad concept which encompasses players' modifying or controlling features related to brands, such as logos, shapes or brand characters. Customisation in advergames occurs when players make choices to change the appearance of their screen or characters (e.g. by modifying their hair style or colour), level of difficulty or choice of opponent in the game.

Roehm and Haugtvedt (2010) contend that interactivity and customisation are related. The authors posit that there are four types of interactivity, being customer-controlled content-oriented interactivity (i.e. customer-driven where the focus is on the message, such as when customers can customise a news portal according to their interests), customer-controlled, form-oriented interactivity (i.e. customer-driven where customers can customise the medium or form of message delivery by choosing to view a video or read an online article), marketer-controlled, content-oriented interactivity and marketer-controlled form-oriented interactivity, where options for customers are made based on the latter's prior preferences (e.g. suggestions made by Amazon.com based on customers' previous browsing or purchase activity).

According to the distinction between personalisation and customisation, as discussed in the previous section, the first two types of interactivity, which are customer-controlled, relate to customisation; while the latter two, which are marketer-controlled, relate to personalisation. It seems that the greater degree of customised interactions between customers and companies lends itself to a greater degree of interactive exchanges. To summarise, customisation falls within the broader definition of interactivity relating to Heeter's (1989)[11] first element of interactivity as the 'complexity of choices available to consumers'.

[11] The full list of Heeter's six elements that comprise interactivity are discussed in section 2.2.3.

3.2.4 Food promotions to children

A large body of research (Cairns *et al*., 2009; Hastings *et al*., 2003; 2006; McGinnis *et al*., 2006) claims that evidence regarding the impact of product, place and price on children's consumer responses is scant. The vast majority of studies focus on the impact food marketing communications, or promotions, has on children's responses. Therefore, this thesis refers to 'marketing promotions' rather than 'marketing' per se. This section presents the spending by the food industry (section 3.2.4.1), the different types of marketing promotions techniques and channels used to target children (section 3.2.4.2) and the effects of food promotions on children's consumer responses (section 3.2.4.3).

3.2.4.1 Promotional spending by the food industry

In the UK, advertising spending has been relatively stable since 2006. In 2009, marketers spent £863 million on food advertising, with the majority being on television advertising (61%) (OFCOM, 2010). The FTC (2008), based on data from 44 participating food and beverage companies in 2006, report that advertisers spent approximately $1.6 billion to promote food to children in the US. New media has become an important component in the marketing communications mix. However, in terms of expenditure, companies spent only 4% ($76 million) of their budget on new media. Data collected from 48 participating food and beverage companies in the US in 2009 reveals that companies spent $1.79 billion on youth (2-17 years) marketing, an inflation-adjusted 19.5% drop compared to 2006; whilst spending on new media increased by 50% ($122.5 million), which is 7% of the food marketing budget (FTC, 2012).

Figure 15 below compares how companies allocated their budget for youth-directed marketing in 2006 vs. 2009 across six promotional activity groups, being traditional measured media, new media, in-store, packaging/labelling, premiums, other traditional marketing and in-store marketing.

Figure 15: Expenditure by promotional activity group (2006 vs. 2009) (Source: FTC, 2012)

3.2.4.2 Food promotions techniques and channels

Food marketers use a wide variety of techniques and channels, such as mass media advertising (Borzekowski and Robinson, 2001; Boyland *et al*., 2011; Boyland and Halford, 2013; Boynton-Jarrett *et al*., 2003; Gorn and Goldberg, 1980; 1982; Moore and Lutz, 2000; Oates, Blades and Gunter, 2002; Stoneman and Brody, 1982), character merchandising (Kraak and Story, 2015; Ulger, 2008), sponsorship of sport and school events (Kelly *et al*., 2008; Maher *et al*., 2006) and interactive websites (Clarke and Svanaes, 2012; 2014; Jones and Reid; 2010; Jones, Wise and Fabrianesi, 2008; Moore, 2006; Moore and Rideout, 2007) to promote food to children (Cairns *et al*., 2012; 2009; Cairns, 2015; Cheyne *et al*., 2011; Hastings *et al*., 2003; 2006; Larson and Story; 2008; McGinnis *et al*., 2006). According to Hastings *et al.* (2003; 2006), Cairns *et al.* (2009; 2012) and Livingstone (2004), most available research has been conducted in the context of television advertising in the USA with very little emphasise on other communication channels or cross-promotion.

Those and other scholars (e.g. Staiano and Calvert, 2012) recommend widening the research agenda to include other communication techniques other than television advertising (e.g. advergames, social media).

Table 10 presents a summary of the main communication channels used to target children in the broadcast and non-broadcast media, although many other techniques exist, such as vending machines, school's participation in promotions and sampling programmes (Lobstein, 2006). The table includes definitions of the media as well as key studies that investigated each media channel.

Table 10: Summary of food promotions to children

Category	Media	Definition	Key studies
Broadcast	Mass media advertising	Those include TV, radio and cinema advertising and is directed to a large group of people when a commercial message is repeatedly displayed	Atkin (1975); Borzekowski and Robinson (2001); Boyland *et al*. (2011); Boyland and Halford (2013); Boynton-Jarrett *et al*., (2003); Brucks *et al.* (1988); Derbaix and Bree (1997); Eisenmann *et al*.(2008); Epstein *et al.* (2008); French *et al.* (2000); Galst and White (1976); Gorn and Goldberg (1980; 1982); Halford *et al.* (2008); Moore and Lutz (2000); Oates *et al.* (2002); Pecheux and Derbaix (1999); Robertson and Rossiter (1974); Robinson *et al.* (2007); Stoneman and Brody (1982)
Non-Broadcast	Product placement	Placing a product within a programme (i.e. TV or cinema) or a game to disguise the commercial intent of advertising (e.g. a character drinking Pepsi)	Balasubramanian, Karrh and Patwardhan (2006); Grigorovici and Constantin (2004); Hang and Auty (2011); Karrh (1998); Karrh, McKee and Pardun (2003); Nelson (2002)
	Sponsorship	Sponsorship of global events (e.g. Olympic games or FIFA), school activities and competitions	FTC (2008; 2012); Kelly *et al*. (2008); Maher *et al*. (2006)
	Interactive websites	Companies websites that contain features designed to engage visitors to interact with the content (e.g. video, advergames, blogs)	Clarke and Svanaes (2012; 2014); Jones and Reid (2010); Jones, Wise and Fabianesi (2008); Moore (2006); Moore and Rideout (2007)
	Advergames	Interactive digital games designed by companies to promote their brands by embedding advertising messages into entertaining content	An and Stern (2011); An and Kang (2013); Bailey, Wise and Bolls (2009); Dias and Agante (2011); Folkvord *et al.* (2013); Harris *et al.* (2011); Mallinckrodt and Mizerski (2007); Pempek and Calvert (2009); Redondo (2012); Van Reijmersdal *et al*. (2010; 2012); Waiguny *et al*. (2011; 2012)

3.2.4.3 The effects of food promotions on children's responses

Wright-Isak and Faber (1997, p.4) point that 'effectiveness' needs to be distinguished from 'advertising effects'. The later are "*related to the short-term influence that specific elements have on players' responses*". Advergame effectiveness does not equal to accumulation of effects. In order to understand effectiveness, data about specific advergames' effects should be combined with information about players' accessibility to the game, any other moderating factors that may have a role on advergames' impact, as well as the "*net impact of those phenomena on tangible benefits*" (Wright-Isak and Faber, 1997, p.6). Advergames are considered effective when they bring tangible benefits to a brand, and therefore contribute to long-term brand equity. It is beyond the scope of this thesis to explore customised advergames' effectiveness, as it focuses on exploring, in the first instance, whether advergames have any effects on their target audience.

This section commences by exploring the range of effects food promotions triggers on children's responses followed by focusing more narrowly on the impact of food advergames. As previously discussed in section 1.1.1, one of the main reasons food promotions to children has been the centre of a heated debate is due to it being a *probable* causal factor to childhood obesity (WHO/FAO, 2003, p.75).

The effects of food promotions on children's responses

Cairns *et al.* (2009; 2012), Hastings *et al.* (2003; 2006), and McGinnis *et al.* (2006) reviewed between them 555 studies on the nature and extent of food promotions to children, and 421 studies on the effects those promotions have on children's responses with the vast majority of studies being in the context of television advertising (table 11).

Table 11: Content analyses on the extent, nature and effects of food promotions

Study	The extent and nature of food promotions	Effects of food promotions
Cairns *et al.* (2012)	*N = 312*[12]	*N = 83*
Cairns *et al.* (2009)	*N* = 115	*N* = 90
Hasting *et al.* (2006)	*N* = 63	*N* = 70
McGinnis *et al.* (2006)	*N* = N/A	*N* = 123
Hastings *et al.* (2003)	*N* = 65	*N* = 55

Those studies cover a wide age range (i.e. 2-18 years), although the majority of them have been conducted with primary school children between 7-12 years. Evidence from experimental studies, capable of inferring causality, demonstrates a statistically significant link between food advertising and the effects it has on children's food preferences (e.g. Boyland and Halford; Gorn and Goldberg, 1980; Halford *et al*., 2008; Ross *et al.,* 1984), consumption (e.g. Boynton-Jarrett *et al*., 2003; Halford *et al*. 2004, Gorn and Goldberg, 1982), purchase and purchase-related behaviour (Galst and White 1976; Stoneman and Brody, 1982). Studies have further shown that food promotions can encourage unhealthy eating habits (Gorn and Goldberg, 1982; Robinson *et al*., 2007), and have an impact on children's nutritional knowledge (i.e. what constitutes a healthy diet) (e.g. Harrison and Marske, 2005). Both Cairns *et al.* (2009) and Hastings *et al*. (2003) claim that the effect of food marketing on children is in fact understated, since the vast majority of studies focus on television advertising. Therefore, it is likely that the cumulative effect of Integrated Marketing Communications (IMC) may even be greater. Hite and Eck (1987) argue that advertising is actually beneficial to children as it provides them with product information, assist them in their consumer socialisation process, and enhances their consumption learning experience (Robertson, 1979). This contention is the basis of a debate between the advertising industry (Paliwoda and Crawford, 2003) and consumer organisations (Dalmeny *et al*., 2003; Robinson *et al*., 2008), and which has spread to the academia (Ambler, 2008; Livingstone, 2009; Nairn and Fine 2008). The consensus that emerges from this debate is that food promotions to children needs a closer scrutiny (Livingstone, 2004).

[12] The authors based their review from previous systematic literature reviews, and updated those with current research.

The effects of advergames on children's responses

As stated in the introductory chapter, the use of advergames as a marketing technique causes much concern (Cicchirillo and Lin, 2011; Culp *et al*., 2010; Dahl *et al*., 2009; Hernandez and Chapa, 2010; Moore, 2006; Moore and Rideout, 2007). The concern is that the popularity of those nutrient-poor advergames may cause a "*harmful impact on children's health*" (Clarke and Svanaes, 2012, p.30). In the last few years, a growing amount of research efforts were focused on advergames' effects. Results reveal that food advergames have an impact on children's brand preferences (Dias and Agante, 2011; Mallinckrodt and Mizerski, 2007), consumption (Folkvord *et al.*, 2013; Harris *et al*., 2012; Pempek and Calvert, 2009), choice (Hernandez and Chapa, 2010; Pempek and Calvert, 2009), purchase requests intentions (Lee *et al*., 2014; Van Reijmersdal *et al*., 2010), brand recognition (Van Reijmersdal *et al*., 2012) and recall (Hernandez and Chapa, 2010; Van Reijmersdal *et al*., 2012). In addition, advergames have a particular impact on affective responses. Advergames positively influence children's attitudes towards it (Hernandez *et al*., 2004; Hernandez and Chapa, 2010; Van Reijmersdal *et al*., 2010; 2012) and the brand it promotes (Dias and Agante, 2011; Hernandez and Chapa, 2010; Van Reijmersdal *et al*., 2010; 2012; Waiguny *et al.*, 2011; 2012). Players who reported positive affect toward the advergame and its promoted brand, also performed better in recognising and recalling the brand (Hernandez and Chapa, 2010).

3.3 Consumer behaviour

This section commences with an introduction to consumer responses (section 3.3.1), followed by an overview about attitudes (section 3.3.2), brand preferences (section 3.3.3), purchase request intention (section 3.3.4). AS the role of prior brand usage is utilised in this thesis as a covariate, it is discussed in section 3.3.5.

3.3.1 Introduction to consumer responses

Consumer responses reside within the larger domain of consumer behaviour, which draws mainly from the disciplines of psychology, economics and sociology (Grunert, 1988). Consumer behaviour research is defined by Solomon (1995, p.7) as the study of -

> "*The processes involved when individuals or groups select, purchase, use or dispose of products, services, ideas, or experiences to satisfy needs and desires*".

According to Fennis and Stroebe (2010) consumer responses are customer measures at the individual level which include cognitive (e.g. thoughts), affective (e.g. feelings) and behavioural (e.g. actions) responses. Cognitive responses include beliefs and thoughts about the brand that consumers generate in response to an advertising stimulus. This includes brand awareness, recall, recognition, and brand preferences.

3.3.2 Attitudes

3.3.2.1 Definition of attitudes

Attitudes have been conceptualised by major social psychologists as important determinants (Eagly and Chaiken, 1993; Petty and Cacioppo, 1986) and moderators (Ajzen, 1991; Fishbein and Ajzen 1975) of behaviour. To emphasise the significance of consumer attitudes, social psychologists cite Gordon Allport's statement that attitudes are:

> "*Probably the most distinctive and indispensable concept in ... social psychology".*
>
> (Allport, 1935, p.798, cited in Armitage and Christian, 2003, p.187; Fennis and Stroebe, 2010, p.196)

Table 12 summarises definitions of attitudes provided by key scholars. From those definitions, attitudes seem to be a predisposition to evaluate positively or negatively a generic entity, such as a product, brand, service or a person.

Table 12: Definitions of attitudes

Authors	Definition
Mitchell and Olson (1981, p.318)	"*An individual's internal **evaluation** of an object ... [and] often are considered relatively stable and enduring presuppositions to behave*"
Petty and Cacioppo (1986, p.127)	"*General **evaluations** people hold in regard to themselves, other people, objects and issues*"
Eagly and Chaiken (1998, p.268)	"*Psychological tendency which is demonstrated through **evaluating** a relevant entity with a certain level of positivity or negativity*"

Attitudes have been the focus of social psychology research for many decades, from LaPiere (1934), Wicker (1969), Fishbein and Ajzen (1975), Bagozzi *et al.* (1979), Petty and Cacioppo (1986), to Eagly and Chaiken (1993). According to Fennis and Stroebe (2010), there are two types of attitudes: implicit and explicit. Consumers are largely not aware of implicit attitudes over which they have no control. Explicit attitudes, on the other hand, are evaluations over which consumers are consciously aware and can report. Over the years, different models and theories were devised to understand attitude formation and change, and whether attitudes are linked to a subsequent behaviour or intention to perform it. Attitude formation is explained particularly within the expectancy-value models. According to those models, consumers respond to an attitudinal object by developing beliefs and evaluations about it. Then, they assign a positive or negative value to each attribute. From this, according to Eagly and Chaiken (1998), an expectation is formed based on the interaction of expectancy and value. Thus:

Attitude = Expectancy x Value

This approach to understand attitudes was originally proposed by social psychologists, such as Edwards (1954) and Rosenberg (1956). Later, it was developed significantly by Fishbein (1965), Fishbein and Ajzen (1975), Ajzen and Fishbein (1980) and Ajzen (1991). Eagly and Chaiken (1993) expressed concern regarding the accurate measurement

of such evaluations. There is a debate amongst scholars regarding the content of an attitude. Some scholars maintain that the attitude construct is multi-component (i.e. consists of separate affect, behaviour and cognition dimensions) (Bagozzi *et al*., 1979). Others consider an attitude as a single dimension of affect for or against an attitudinal object (Eagly and Chaiken, 1998; Petty and Cacioppo, 1986). Those who are in the later camp consider attitudes to comprise of beliefs and evaluations (Ajzen and Fishbein, 1980; Ajzen, 1991; Fishbein and Ajzen, 1975). Bagozzi and Burnkrat (1980) point that although a vast literature exists in support of a single component model of attitude, little is known about the multicomponent models' validity. It is beyond the scope of this thesis to contribute to such a debate, but merely to indicate that such a debate exists and to emphasise that attitudes are complex, fluid, and conceptually challenging to measure.

3.3.2.2 The attitude-conation relationship through theoretical lenses

An abundance of models, theories and hypotheses from the field of social psychology were devised to understand and predict consumers' attitudinal responses. All those models suggest that there is a significant relationship between attitudes and behaviour through behavioural intentions (i.e. conation). This section provides an overview of the most prominent theories, such as the Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975), Theory of Planned Behaviour (TPB) (Ajzen, 1991), the Elaboration Likelihood Model (ELM) of Persuasion (Petty and Cacioppo, 1981; 1986; Petty, Cacioppo and Schumann, 1983) and the Affect Transfer Models (MacKenzie *et al*., 1986; Mitchell and Olson, 1981; Shimp, 1981). Section 3.5 provides justification for adopting certain models and not others as the theoretical underpinning of this thesis.

Theory of Reasoned Action (TRA)

The TRA attempts to improve the predictability of attitudinal models (Armitage and Christian, 2003; Pachauri, 2002) and posits that behaviours follow the beliefs, attitudes and intentions to perform those behaviours (Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975). According to the TRA (figure 16), behaviour intention consists of two determinants. The first is of a personal nature (i.e. attitude toward behaviour), which is an individual's positive or negative evaluations of performing that behaviour. Attitude towards the behaviour is split into two further determinants which are beliefs towards the

behaviour and evaluations of the outcome of performing that behaviour. The second determinant relates to social influence (i.e. subjective norms), which is an individual's perceptions about the social pressures or other people's views about performing a particular behaviour (Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975). Subjective norms also have two determinants which are normative beliefs and motivation to comply. Many studies in the food marketing domain support the TRA's predictive validity (e.g. Shepherd and Stockley, 1985; Thompson, Haziris and Alekos, 1994). However, it was noted that it predicts certain classes of behaviour and not others. Those limitations were acknowledged and addressed by Ajzen who modified the model and extended it to the Theory of Planned Behaviour (TPB) (Ajzen, 1991; Armitage and Christian, 2003).

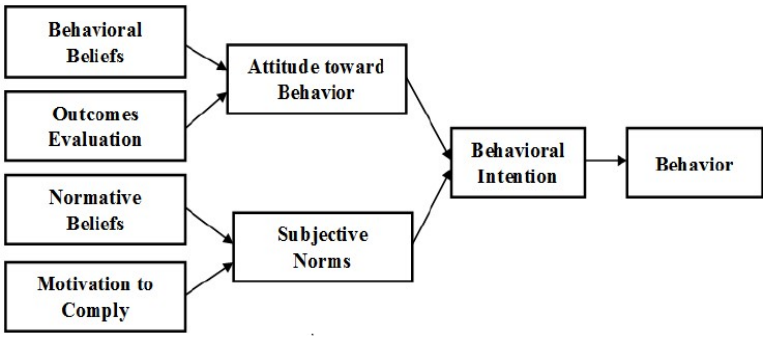


Figure 16: Theory of Reasoned Action (TRA) (Source: Fishbein and Ajzen, 1975)

Theory of Planned Behaviour (TPB)

The TPB extends the TRA by including Perceived Behaviour Control (PBC) as a determinant of behavioural intention and behaviour (figure 17). Specifically, that an individual's behaviour is subject to their volitional control (i.e. an individual's confidence about their ability to perform specific behaviour will influence that behaviour) (Ajzen, 1991). This modification made the TPB much more versatile. Armitage and Conner (2001) reviewed 185 studies and found that the TPB accounts for 27% of the variance of subsequent behaviour, which makes it one "*of the most dominant models of attitude-behaviour relations*" (Armitage and Christian, 2003, p.192). Ajzen and Madden (1986) constructed two versions of the model. In the first version, PBC influences indirectly

behaviour via intention (solid line in figure 16). An alternative version suggests that PBC can also have a direct effect on behaviour (broken line).

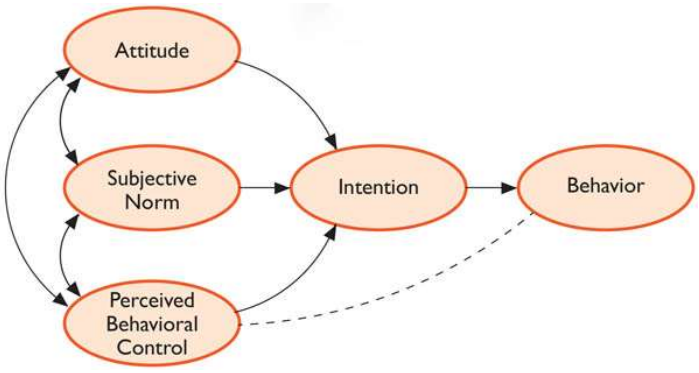


Figure 17: Theory of Planned Behaviour (TPB) (Source: Ajzen ,1991)

The model has been successfully validated and applied to food studies with children. For example, Hewitt and Stephens (2007) in New Zealand investigated parental influence on healthy eating habits among 10-13 year olds; Berg, Jonsson and Connor (1999) explored in Sweden the reasons for choosing bread and milk for breakfast among 11-15 year olds; and Kassem, Lee, Modeste and Johnson (2003) in the USA identified the factors that influence 13-18 year old females to consume soda drinks.

The Elaboration Likelihood Model (ELM)

Petty and Cacioppo's ELM (1986), illustrated in figure 18 below, is a conceptual framework for understanding the processes underpinning the effectiveness of persuasive communications. It offers two distinct routes to persuasion and attitude change. The start of the journey is a persuasive communication message, and in the context of the ELM, 'elaboration' refers to recipients' activities in relation to a communication message. Both routes lead to persuasion, but the route which is taken depends on the individual's degree of involvement (Petty and Cacioppo, 1986; Petty *et al*., 1983). When the likelihood of elaboration is high, the central route is taken. However, when an individual lacks the motivation or the ability to elaborate is low, a different process takes place. Here, the individual relies on simple heuristic devices which include credibility, liking, and consensus. The ELM has been applied many times to studies in different contexts. For example, it has been applied to a study that investigated attitude change in the context of

web personalisation (i.e. preference matching, recommended set size and sorting cue) on behavioural outcomes, such as consumer choice (Tam and Ho, 2005). More relevant to this thesis, the model has been applied in a number of studies about children's persuasion knowledge and advergames. Moore and Lutz (2000) tested television advertising's impact and prior brand experience in an experiment with younger (7-8 year olds) and older (10-11 year olds) children. The ELM was used to guide hypotheses that the greater cognitive ability of the older children will result in them using the central route to persuasion. Yates (2001) used the model to determine whether children's persuasion knowledge can act as a mediator to persuasion. The ELM was also utilised as the theoretical underpinning in a study about thematic relevance in advergames utilising its central and peripheral routes (Wise *et al*., 2008).

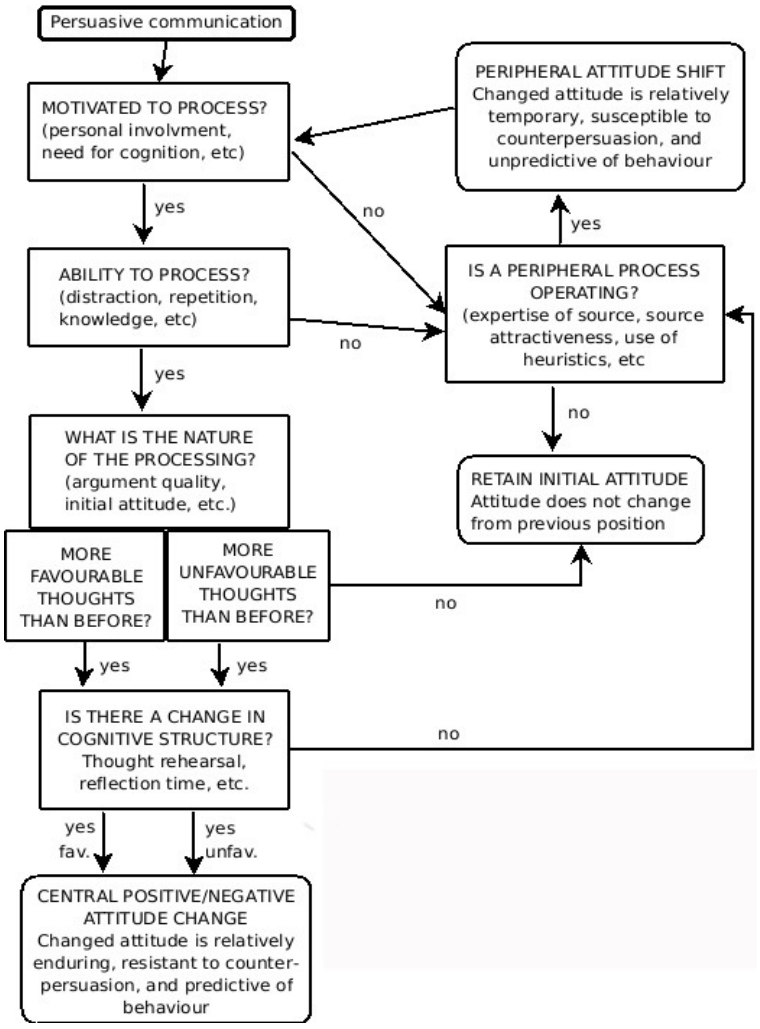


Figure 18: The Elaboration Likelihood Model (ELM) (Source: Petty and Cacioppo, 1986)

Affect transfer models

One of the aims of this thesis is to discover the association between advergames and children's attitudes towards it and the brand it promotes. There is strong evidence from well-validated studies to support the presupposition that communication impact is determined by evaluative thoughts (i.e. cognitive responses) and feelings (i.e. affective responses) as consumers process information and those internal responses mediate the attitudes and subsequent behaviours (MacKenzie *et al*., 1986; Sicilia *et al*., 2006). McKenzie and Lutz (1989, p.49) define the attitude towards the ad (Aad) construct as one that represent consumers' -

> "*Predisposition to respond in a favourable or unfavourable disposition to a particular advertising stimulus during a particular exposure occasion*".

The Aad was found to be a strong factor of advertising effects, correlating strongly with brand attitude (Ab), intention to purchase (Ip)[13] and actual sales (Brown and Stayman, 1992). The effect of affective reactions to advertising on brand attitudes and purchase intentions were first explored 36 years ago by Mitchell and Olson (1981) and Shimp (1981)[14]. MacKenzie *et al.* (1986), in their seminal study, established not only the importance of the Aad construct but also the dominance of the DMH as the most reliable model than the other three affect transfer models (figure 19). The authors drew on previous research to propose four plausible alternative models which purport to explain the effects of advertising on consumers' purchase intentions (figures 19 and 20). There is strong empirical and conceptual support for this relationship from the extended Fishbein model and prior HoE models. There is strong support to the Cad → Aad (Lutz *et al*., 1983); Cb → Ab, (Mitchell and Olson, 1981; Wright, 1973); and Ab → Ip paths, which draws support from the extended 'Fishbein Model' (Fishbein, 1967) as validated by Ryan and Bonfield (1975). All those three paths are incorporated into the four explanations (i.e. the ATH, RMH, IIH and DMH models). Those paths reflect the belief that cognition

---

[13] Note that in the affect transfer models (figures 19 and 20) the authors refer to intention to purchase as Ib (i.e. intention to buy), while in this research Intention to purchase is referred to as Ip.

[14] This thesis adopts the terminology used by the above studies when discussing the relationship between attitudes towards the ad and the promoted brand. Those abbreviations appear in the List of Abbreviations and in figure 20.

precedes affect, which in turn precedes conation. MacKenzie *et al.* (1986) tested all four competing models and those are briefly introduced. The DMH (figure 20), which provides the theoretical underpinning for this thesis, is discussed in greater detail below.

The affect Transfer Hypothesis (ATH) posits a direct one-way causal effect from Aad → Ab, and has received strong empirical support (Mitchell and Olson, 1981; Moore and Hutchinson, 1985; Shimp, 1981). This direct path represents the peripheral route to persuasion in the ELM (Petty and Cacioppo, 1981; Petty *et al*., 1986).

The Reciprocal Mediation Hypothesis (RMH): is a Balance Theory account of the causal linkage of Aad → Ab, with causation flowing in both directions.

The Independent Influences Hypothesis (IIH) assumes no causal relationship regarding Aad → Ab, instead those constructs are posited to be independent determinants of Ib.

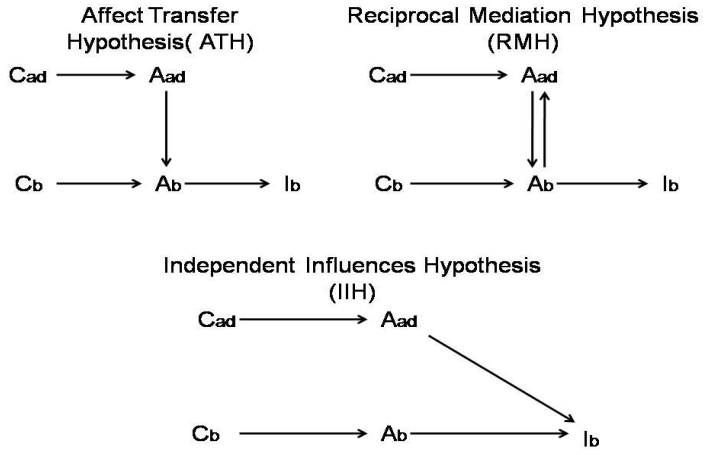


Figure 19: Three alternative structural specifications of the mediating role of Aad (Source: MacKenzie *et al*., 1986)

The Dual Mediation Hypothesis (DMH) proposes that Aad influence Ab both directly and indirectly via brand cognitions (broken line in figure 19). The model starts with the paths of Cad → Aad and Cb → Ab, as in the other three affect transfer models. The paths show how thoughts (i.e. cognitions) are presumed to impact attitudes as predicted by the TRA (Fishbein and Ajzen, 1975). According to MacKenzie *et al.* (1986), the DMH incorporates *both* the central and peripheral routes to attitude change as proposed in the ELM (Petty and Cacioppo, 1981; 1986; Petty *et al*., 1983). The central route to persuasion

is represented by the indirect path via brand cognitions (i.e. Aad → Cb → Ab). In the first step in the central route, exposure to an advertisement is presumed to lead to brand relevant thoughts. In other words, the effects of A_{ad} on A_b are mediated by brand cognitions. In contrast, the direct Aad → Ab route represents the ELM's peripheral route to persuasion, as in the ATH and the RMH models. Petty and Cacioppo (1981; 1986) assert that when users need for cognition is high (which occurs more likely with adults), attitudes are formed via the central route (e.g. Aad → Cb → Ab). However, when consumers' need for cognition is low (such as the case with children), attitudes are formed via the shorter route, also known as the peripheral route (i.e. Aad → Ab). The DMH is validated in studies with both adults (MacKenzie *et al*., 1986; Batra and Ray 1986; Lutz *et al*., 1983; Mitchell and Olson, 1981) and children (Moore and Lutz, 2000; Pecheux and Derbaix, 1999; Derbaix and Bree, 1997) showing consistent support for the influence of attitudes towards the ad on attitudes towards the brand promoted in the ad.

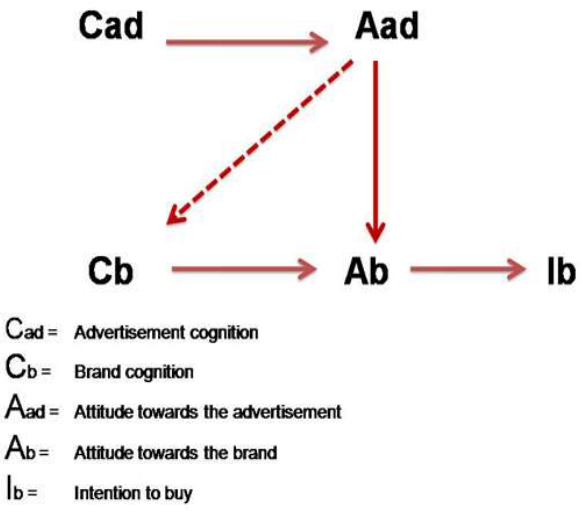


Figure 20: DMH model (Source: Mackenzie *et al*., 1986)

3.3.3 Brand preferences

This section presents definitions of brand preferences (3.3.3.1), distinguishes between brand preferences and other brand constructs (3.3.3.2) and discusses the theories governing brand preferences (3.3.3.3).

3.3.3.1 Definitions of brand preferences

The notion of preferences has been considered by different disciplines, including the field economics (Sagoff, 2003; Samuels, 1978), psychology (Albanese, 1987), consumer behaviour (Bass and Talarzyk, 1974) and marketing (e.g. Dias and Agante, 2011; Mallinckrodt and Mizerski, 2007; Ross *et al*., 1984). The American Marketing Association (AMA) defines a brand as:

> "*A name, term, design, symbol or any other feature that identifies one sellers' goods or services as distinct from those of other sellers*".

De Chernatony and McDonald (2003, p.5) argue that a successful brand is a -

> "*Identifiable product, service, person or place, augmented in such a way that a buyer or user perceives relevant and unique added values which match their needs more closely*".

There is, however, no agreed definition in the marketing literature of brand preferences, and table 13 summarises some of the more prominent ones.

Table 13: Definitions of brand preferences

Study	Definition
Wu (2001)	The preferred brand is the ***chosen*** brand among several brands of the same quality
Hellier, Geursen, Carr and Rickard (2003)	The extent to which consumers ***favour*** one brand over another
Cairns *et al.* (2009)	***Liking*** for specific foods and ***preference*** between different foods

Hsee, Yang, Gu and Chen (2009) differentiate between two types of brand preferences. The *liking preferences* reflect the hedonic responses towards the brand, while the *revealed preferences* reflect the behavioural responses toward the brand. Tomer (1996) categorises four types of consumer preferences. '*Actual preferences*' is the degree to which consumers appreciate and develop the capacity to use certain goods; '*meta preferences*' are preferences about actual preferences that reflect one's normative judgement; '*true preferences*' are a set of preferences which are best suited for specific individuals; and '*unrestricted preferences*' are those which accommodate physical needs.

There is disagreement among scholars whether preferences is a cognitive or behavioural dimension of consumer responses. Zajonc and Markus (1982, p.128) propose that preferences are behavioural tendencies "*that exhibit itself not so much in what the individual thinks or says about the object, but how he acts toward it*". Sagoff (2003, p.593), on the other hand, maintains that "*not a single psychological theory ... identifies preferences as a cause or reason for any action*". Skinner (1953, p.30) himself claims that preferences are "*invented on the spot to provide spurious explanations*". Finally, Fennis and Stroebe (2010) categorise preferences as cognitive responses. This thesis adopts the position held by Sagoff (2003), Skinner (1953) and Fennis and Stroebe (2010) and upholds brand preferences as cognitive responses.

3.3.3.2 Distinction between brand preferences and other brand constructs

Brands have a number of constructs such as brand loyalty (Oliver, 1999), brand choice (Beach, 1993; Bettman, Luce and Payne, 1998), brand attachment (Thomson, MacInnis and Park, 2005), brand attitude (Batra and Ray, 1986; Lutz *et al*., 1981; Mackenzie *et al*., 1986; Mitchell and Olson, 1981; Moore and Lutz, 2000), brand affect (Mano and Oliver, 1993) and brand liking (Anselmsson, Johansson and Persson, 2008). Brand preferences can be related and yet distinct from those constructs. Differentiating brand preferences from other similar constructs can enhance understanding of its meaning. This section addresses the distinction between brand preferences, attitude, affect, liking and choice as those constructs are particularly closely related.

Brand preferences are distinct from brand attitudes as the latter is considered as stable presuppositions to behave (Mitchell and Olson, 1981), while preferences refer to the comparative judgement of a few alternatives products' or brands in the decision making

process (McFadden, 1996). Both brand affect and liking relate to emotional factors. Brand affect reflects a balanced feeling state of mind (Mano and Oliver, 1993), while brand liking is related to positive brand assets (Anselmsson *et al*., 2008). In contrast, brand preferences relate to behavioural (Zajonc and Markus, 1982) or cognitive responses (Fennis and Stroebe, 2010; Sagoff, 2003; Skinner, 1953). Finally, brand choice is defined by Beach (1993) as the process of preference consolidation, which in turn facilitates choice. Bettman *et al.* (1998) and Bither and Wright (1997) add that while choice is concerned with the actual physical selection of a brand, brand preferences is the bias customers possess towards particular brands (Chang and Liu, 2009). Table 14 summarises the above distinctions between the various brand constructs and brand preferences.

Table 14: Distinguishing brand preferences vs. other brand constructs

Branding constructs		Brand preferences
Construct	**Definition**	
Brand attitude	Positive or negative evaluations without the element of comparison between brands (MacKenzie *et al*., 1986); regarded as stable antecedents to behave (Mitchell and Olson, 1981)	Comparative judgement between different offerings (McFadden, 1996); not regarded as an antecedent to behaviour (Sagoff, 2003)
Brand affect	Reflects the balanced positive or negative feeling state of mind (Mano and Oliver, 1993)	Relate to behavioural (Zajonc and Markus, 1982) or cognitive (Fennis and Stroebe, 2010; Sagoff, 2003; Skinner, 1953) responses
Brand liking	Relate to positive brand assets (Anselmsson *et al.,* 2008)	
Brand choice	Actual physical selection of the brand (Bettman *et al*., 1998)	The inclinations customers have towards specific brands (Chang and Liu, 2009)

3.3.3.3 Brand preferences through theoretical lenses

The theoretical foundations for investigating brand preferences are the expectancy-value models, and although they were developed over 50 years ago, they are still applied these days (e.g. Allen *et al.*, 2005). In particular, Rosenberg's (1956) and Fishbein's (1965) models are the most widely used by marketers studying brand preferences (Bass and Talarzyk, 1972; Harrell and Bennett, 1974). Rosenberg's (1956) model posits that brand preferences are derived from brand benefits followed by the degree of satisfaction with the brand's value. More commonly used is the attitude formation model proposed by Fishbein, and named after him as the 'Fishbein model' (Fishbein, 1965). The model posits that brand preferences are a function of consumers' cognitive beliefs about the brand's weighted attributes.

Bass and Talarzyk (1972) introduced an attitude model for the study of brand preferences based on the Fishbein attitudinal model (1965). Their seminal study strongly supports the relation between brand preference and attitude measurement. The authors claim (p.95) that their model resulted in "*higher percentage of correct brand preference predictions than other models tested*". This model has been criticised by Park and Srinivasan (1994) who claim that as brand preference is measured by a single value, it is limited in its scope to certain types of products.

3.3.4 Purchase request intention

According to Zeithaml *et al.* (1996) consumer intentions are predictors of actual purchase choices, and thus are desirable to study. It is particularly important to understand purchase intentions as according to Ajzen (1991), consumer behaviour can be predicted by their intentions. Fishbein and Ajzen (1975) define intention as a decision to act in a certain manner. According to the TRA and TPB, a predictor of consumers purchase behaviour is their intentions to do so. For a more detailed discussion about the relationship between attitudes and purchase intention please refer to section 3.3.2.2.

Several theories such as the TRA (Fishbein and Ajzen, 1975), TPB (Ajzen, 1991), Social Cognitive Theory (Bandura, 1986), Goal Setting Theory (Locke and Latham, 1990) and the DMH (Lutz *et al*., 1983; MacKenzie *et al*., 1986) posit that there is a significant positive relationship between attitudes and intentions. Accordingly, purchase intentions indicate the possibility of planning to purchase a brand, product or service in the future (Rossiter and Percy, 1997). Bagozzi *et al.* (1979) define purchase intention as personal action in relation to the brand. Spears and Singh (2004) add that it is an individual's conscious plan to make an effort to purchase a brand. The difference between intention and behaviour is that intention represents a subjective judgement as to how one should behave in the future; whilst behaviour is the actual act (Blackwell, Engel and Miniard, 2006). There are several types of behavioural intentions and those are summarised in table 15 below.

Table 15: Categorisation of behavioural intention (Source: adapted from Blackwell *et al*., 2006, p.411)

Behavioural intention	Definition
Consumption intention	Consumers' intentions in a particular consumption activity
Purchase intention	Represent what consumers think they will buy
Repurchase intention	Indicate whether consumers believe they will purchase the same product or brand again
Shopping intention	Indicates where consumers plan to purchase

As the unit of analysis are children, who are not generally able to make purchase transactions themselves, this research focuses on a specific aspect of behavioural intention - to request purchase.

3.3.5 The role of prior brand usage

The strong correlation between brand usage and consumers' attitudes towards it is well documented (Barwise and Ehrenberg, 1985; Castleberry and Ehrenberg, 1990). According to Riley, Rink and Harris (1999), this evidence mainly relates to highly branded products, such as breakfast cereals, which receive an ample amount of advertising support. The authors suggest that it could be a contributing factor to the high correlation between usage and attitudes. Bernard and Ehrenberg (1997) interpret this phenomenon by explaining that advertising has a supportive and reinforcing role, keeping brand salient in consumers' minds, and "*occasionally nudging consumers' existing propensities to buy*" (*ibid*, p.21).

Academics are divided in their views about the role of prior brand usage and advertising on consumer responses. The Strong Theory of Advertising presupposes that advertising persuades and converts brand switchers to become loyal to the brand (Jones, 1990; 1995; 1997). The Weak Theory of Advertising, on the other hand, posits that advertising's main function is to reinforce and nudge consumers to purchase the brand (Bernard and Ehrenberg, 1997; Ehrenberg, 1997). Ehrenberg (1974), who developed the ATR model, claims that brand or product awareness is required before any purchase could be made. This is supported by Derbaix (1995) who provides evidence that the impact of advertising is generally weaker when consumers have had prior experience with a brand. This can be explained by the fact that brand evaluations formed by personal experience with the brand are so powerful that a single exposure to an advertisement is not able to change those evaluations (Castlebery and Ehrenberg, 1990). Waiguny *et al*. (2012) as well as Moore and Lutz (2000) in a study with children provide further support to the Weak Theory of Advertising. The authors have found that prior brand experience yields more favourable attitudes towards the brand. Similarly, Winkler and Buckner (2006), in a study with adults, posit that advergames work best when players are already familiar with the brand. Van Reijmersdal *et al*.'s (2010) presents contradictory results which indicate that younger children with no prior brand experience were more influenced by the interactive brand placement than children who had used the brand previously with regard to their affective, cognitive and conative responses.

3.4 Children's consumer psychology

3.4.1 Introduction to consumer psychology

This section addresses the question of whether children's advertising knowledge make any difference to the effects of advertising on them. In other words, does persuasion knowledge acts as a defence mechanism or barrier against the effects of a persuasive commercial messages? Thus, if children understand persuasive intent, does it make them less susceptible to the effects of advergames? Many terms have been used in the literature to describe children's evaluation of advertising, including 'cognitive defences' (Robertson and Rossiter, 1974),'advertising literacy' (Livingstone and Helsper, 2006), and 'persuasion knowledge' (Wright *et al.,* 2005). In order to maintain consistency in this terminology pluralism, the term 'Persuasion Knowledge' is used in this thesis in line with the PKM terminology. The chapter discusses how children develop the necessary cognitive skills to process advertising messages (3.4.2) followed by a discussion about children's development of persuasion knowledge (section 3.4.3) and the role persuasion knowledge plays as a barrier on advertising effects (section 3.4.4). This section concludes with a summary and conclusions (section 3.4.5).

3.4.2 Children's consumer socialisation through theoretical lenses

Much research has been devoted to children's understanding of advertising, and the theoretical models build on age-stage models from cognitive approaches to children's development. Children's understanding of persuasive intent is key to any discussion about advertising, because if children are not aware of persuasive intent, it might be argued that advertisers take advantage of children's naivety. Kunkel and Roberts (1991, p.63) state that:

> *"The degree to which children are able to recognise persuasive intent has been a dominant focus of research and advertising. Its importance derives from the legal argument that if young children are unaware of persuasive intent, then all commercials aimed at them are ... unfair and/or misleading*".

This section provides an overview of the main theories governing the field of children's consumer socialisation, being the Piagetian age-stage cognitive development model (1960; 1971) upon which subsequent children's socialisation theories are built, children's

information-processing skills model (Roedder, 1981) and children's consumer socialisation model (John, 1999).

Piagetian age-stage cognitive developmental model (Piaget, 1960)

Jean Piaget's (1960; 1971) work from the field of developmental and cognitive psychology provides the foundation for the theoretical framework in this literature domain. Piaget proposed an age-stage model which categorises children according to their cognitive development. Piaget's model proposes a linear sequence of four broad stages through which children progress on their journey to adulthood. These stages, summarised in table 16, are 'Sensori-motor' (from birth to two years), 'pre-operational' (two to seven years), 'concrete operational' (seven to eleven years), and 'formal operations' (11 years to adulthood). Piaget's model has been based upon to inform a categorisation of the main stages of gaining advertising knowledge (Hastings *et al.,* 2003; Oates, Blades and Gunter, 2002; Valkenburg and Cantor, 2001; Young, 1990).

Table 16: Piagetian age-stage developmental model (Source: Author, adapted from Piaget, 1960; 1971)

Children's age (years)	Developmental stage	Description
Birth – 2	Sensori-motor	Children use basic skills to learn about the world
2 – 7	Pre-operational	Cognition is characterised by 'perceptual boundness' (i.e. tendency to focus only on the immediate aspects of an object) and 'centration' (i.e. tendency to focus only on a limited amount of information)
7 - 11	Concrete operations	Children are more capable of considering multiple aspects simultaneously and can reflect in a more thoughtful way
11 +	Formal operations	Children begin to hypothesise and think critically, abstractedly and reflectively

Moses and Baldwin (2005), who criticised the Piagetian age-stage approach, contend that it is not clear beyond the pre-operational stage how the model can contribute to the understanding of how children interpret advertising. In addition, Goswami (2008, p.1-2) reports in the Byron review that the field of cognitive development has changed dramatically since Piaget devised his age-stage model, and -

"*It is now recognised that children think and reason in the same way as adults from early in childhood, but they are less efficient reasoners than adults because they are more easily misled in their logic by interfering variables ... and because they are worse at inhibiting irrelevant information*".

Children's information processing skills model (Roedder, 1981)

Roedder (1981) built on the Piagetian model, adopting an information processing approach from cognitive psychology, to develop an age-stage model of children's understanding of advertising. According to this model (table 17), children in their first developmental stage (under the age of seven) are termed 'limited processors' and have not acquired yet efficient storage and retrieval skills; 'cued processors' (seven-eleven years) already exhibit those skills, but only when prompted to do so; 'strategic processors' (11 years and older) spontaneously deploy storage and retrieval skills, and can think from a different perspective (e.g. from that of a friend) which allows them to make more thoughtful decisions.

Table 17: Children's information processing skills model (Source: Author, adapted from Roedder, 1981)

Children's age (years)	Developmental stage	Description
< 7	Limited processors	Children are unable to use advertising knowledge even when prompted
7 - 11	Cued processors	Children need to be given a cue in order to retrieve their persuasion knowledge
11 +	Strategic processors	Children process high levels of persuasive information

Roedder's (1981) model fits with the PKM (Friestad and Wright, 1994), which posits that as children grow older and possess more advanced levels of processing capacity, they develop knowledge about persuasion, products and advertisement (i.e. persuasion knowledge), which helps them remember past persuasion attempts (Friestad and Wright, 1994; Martin, 1997; Wright *et al*., 2005). This is also supported by numerous empirical studies that young children do not have the necessary cognitive skills to protect them from promotions influence (e.g. Moore and Lutz, 2000).

Persuasion Knowledge Model (PKM) (Friestad and Wright, 1994)

Friestad and Wright (1994) devised a model (figure 21) which explains how individuals' persuasion knowledge influences their responses to commercial persuasion attempts. The authors describe 'persuasion knowledge' as the knowledge which individuals develop about advertisers' tactics and one which helps them to critically evaluate persuasion attempts. It also helps them to identify "*how, when and how marketers try to influence them*" (Friestad and Wright, 1994, p.1). According to the PKM's terminology 'an agent' is the organisation, or a group from an organisation, responsible for the advertisement or persuasion episode; while 'target' refers to the recipients of the advertising message (i.e. the audience). According to the model, consumers gradually develop cognitive defences against advertising, which are similar to mental guards that allow them to recognise the source and intent of commercial messages. Once persuasion knowledge is activated, consumers become skeptical of advertisers' intentions. This leads them to resist persuasion and develop negative attitudes to persuasion attempts. Thus, the recognition of advertising or a persuasive episode is pivotal to the activation of persuasion knowledge and the coping skills involved with it (Friestad and Wright, 1994; Wright *et al*., 2005).

Consumers are likely to use their persuasion knowledge when they possess high cognitive capacity which provides them with the ability to understand marketers' intentions. Due to life-long experience of being the target of persuasion attempts by advertisers, by the time they have reached adulthood, consumers have developed solid coping skills (Friestad and Wright, 1994). Accordingly, two elements play a role on persuasion knowledge development. Those elements are individuals' cognitive and information processing ability as well as experience which develops with age (Friestad and Wright, 1994; Wright *et al*., 2005). Due to those elements adults are better equipped to infer the selling and persuasive intent compared to children (John, 1999; Kunkel *et al*., 2004; Roedder, 1981). The PKM stipulates that children learn to cope with persuasion attempts gradually as they grow up. Children who only understand the assistive intent of advertising (i.e. that advertising provides information) are more likely to accept advertising messages without questioning advertisers' motives (Friestad and Wright, 1994). The next stage is when children understand that in addition to the assistive intent, advertising aims to persuade (i.e. that advertisers have an ulterior motive in persuading customers to purchase products, brands or services). Research suggests that the "*acquisition of persuasion*

knowledge may heighten suspicion or skepticism and negatively influence the ... attitude toward the tactic itself" (Nelson, Wood and Paek, 2009, p.223). Previous research has found that similarly to adults, children's understanding of persuasive intent is linked to less trust and an increased dislike of advertising (Robertson and Rossiter, 1974; Rossiter and Robertson, 1974).

The PKM stipulates that persuasion knowledge activation requires an explicit understanding of persuasive intent, as without such recognition the coping defences will not be activated. The PKM was devised in the context of traditional advertising formats, however, this digital era presents new challenges. For example, covert advertising techniques, such as advergames (Mallinckrodt and Mizerski, 2007; Van Reijmersdal *et al*., 2010; 2012; Waiguny *et al*., 2012) and product placement (Grigorovici and Constantin, 2004; Hang and Auty, 2011; Nelson, 2002) which persuades implicitly rather than explicitly and blurs the border lines between advertising and entertainment (Moore, 2006; Moore and Rideout, 2007). This integration between the two can potentially bypass consumer skepticism and reduce the likelihood of persuasion knowledge activation (Evans and Park, 2015; Petty and Andrews, 2008). This and other challenges the PKM faces are discussed in greater detail in section 3.4.3.

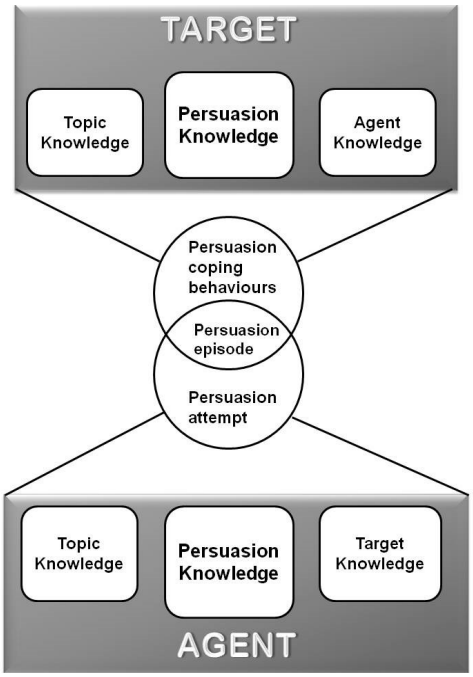


Figure 21: Persuasion Knowledge Model (PKM) (Source: Friestad and Wright, 1994)

Children's Consumer Socialisation model (John, 1999)

The leading theoretical model regarding children's understanding of persuasive intent is John's (1999) three-tier consumer socialisation model (table 18). In devising it, she has built on previous age-stage children's models, such as the classical Piagetian model (1960; 1971), Selman's (1980) model of social perspective as well as her own Information Processing Skills model discussed earlier (table 17). John (1999) synthesised those and other empirical findings over the past 25 years of children's consumer socialisation research. Her resulting work is a highly influential framework which consists of three stages (i.e. perceptual, analytical and reflective) that explain the development of children's understanding of commercial messages.

Children in the perceptual stage (three-seven years) have a very limited understanding of advertising; and although they can identify advertisements, they do not distinguish between entertainment and a selling intent. However, by pre-school age children begin to recall brands (John, 1999). The analytical stage (7-11 years) contains critical milestones with regard to the development of children's consumer knowledge, skills and consumption motivation. At this stage, John (1999) posits that children can analyse stimulus on multiple levels, which is when comprehension of advertising intent begins to emerge (around seven-eight years). Children recognise the existence of bias and deception in advertising and their attitudes towards it become more negative. Thus, "*children over the age of eight are often viewed as having a 'cognitive defence' against advertising*" (John, 2008, p.229). Children's knowledge about marketplace concepts, such as shopping knowledge or branding, becomes more sophisticated at the reflective stage (11-16 years), when they regard advertising with further scepticism. Nevertheless, even at this stage children still find adverts entertaining and a "*valued device for social interaction*" (John, 1999, p.233).

Table 18: Children's consumer socialisation model (Source: Author, adapted from John, 1999)

Perceptual stage (3 – 7 years)	Analytical stage (7 – 11 years)	Reflective stage (11 – 16 years)
• Can distinguish between adverts and television programmes based on perceptual features • Believe advertisements are funny, truthful and interesting • Positive attitudes about advertising	• Can distinguish between advertising and television programmes based on persuasive intent • Believe adverts lie and contain bias and deception, but do not use their 'cognitive defences' • Negative attitudes towards advertising	• Children understand the persuasive intent of advertising as well as specific tactics and appeals • Believe adverts lie and know how to spot specific instances of bias or deception in adverts • Sceptical attitudes towards advertising

Processing of Commercial Media Content (PCMC) model (Buijzen, Van Reijmersdal and Owen, 2010)

Most theories describing children's processing of advertisements are based on studies from traditional advertising formats, particularly television advertising. However, these days the media environment differs strongly from that which existed 30 years ago, where television commercials were considered to be the most persuasive medium. In response to the marketing environment, which includes more engaging and interactive platforms, such as branded websites, brand placements in films and computer games, social media and advergames (Clarke and Svanaes, 2012; 2014; Montgomery and Chester, 2009), Buijzen *et al.* (2010) developed the PCMC model, which aims to predict children's processing of commercial messages (table 19).

Similarly to the other models which were discussed, the PCMC is also based on children's cognitive and developmental psychology (Piaget 1960; 1971), social development (Selman, 1980), information processing (Roedder, 1981), and consumer socialisation (John, 1999). It consists of four stages in children's processing of persuasive messages, starting with the *early childhood* stage (younger than five years), where children perceive advertising as entertainment and are not aware of persuasive intent due to their lack of information-processing skills (John, 1999; Moses and Baldwin, 2005; Roedder, 1981). In

the *middle childhood* stage (six-nine years) children develop a basic understanding of advertising' selling intent. However, they are unlikely to apply their newly acquired persuasion knowledge, unless prompted or cued to do so (Brucks *et al*., 1988; John, 1999; Roedder, 1981). As children enter *late childhood* (ten-twelve years), their cognitive and social abilities continue to evolve. They are capable "*to evaluate advertising systematically and critically*" (Buijzen *et al*., 2010, p.433). However, as peer influence becomes more important at this stage, children pay more attention to status appeal (Livingstone and Helsper, 2006). From age 13 and over, the *adolescence stage*, children's cognitive processing skills reach adult-like levels, and they are able of critical systematic processing (Buijzen *et al*., 2010; John, 1999). This group are still developing in terms of identity, and peer influence (e.g. sub-culture and self-presentation) are very important (Buijzen *et al*., 2010). To sum, in every stage of childhood, there are significant pressures on children that weaken their defences against commercial advertisements (Buijzen *et al*., 2010).

Table 19: Processing of Commercial Media Content (PCMC) Model (Source: Author, adapted from Buijzen *et al*., 2010)

Early childhood (under 5 years)	Middle childhood (6-9 years)	Late childhood (10-12 years)	Adolescents (13-16 years)
Advertisements are perceived as entertainment due to limited cognitive ability. Bright colours, lively sounds and animated characters can create positive attitudes toward the promoted brand	Advertising is differentiated from entertainment, children understand the persuasive intent of a commercial message. However, they still find this differentiation difficult to accomplish, and simple cues (e.g. spokes character) can override their cognitive defences	Children are more critical of persuasive messages. However, peer influence can interfere with their ability to defend against commercial messages	Children achieve adult levels of cognitive processing skills including criticism of commercial messages. However, peer pressure and identity formation can distract them, particularly towards products related to social status and physical attractiveness

3.4.3 Children's development of persuasive knowledge

The age at which children understand the persuasive intent of advertising is regarded as a developmental milestone (Moore, 2000; Young, 1990) as prior to the acquisition of such knowledge children are considered as particularly vulnerable to advertising. Young (1990) argues that only *after* children have acquired persuasion knowledge, it is safe to assume that they understand what advertising is and how it works. According to John's framework (1999), children develop persuasion knowledge in stages throughout their childhood and adolescence. There is much disagreement among scholars about the age or stage children understand advertising's persuasive intent; and what is meant by such 'understanding'.

This section explores the criteria for possessing persuasion knowledge (section 3.4.3.1), followed by a discussion about children's acquisition of persuasion knowledge in the context of television advertising (section 3.4.3.2) and digital advertising (section 3.4.3.3). At the moment, there is no magic age at which one can say with certainly that children understand advertising. Results vary according to the methodology researchers used. Even when children have the knowledge that could assist them to resist advertising messages, they do not draw on this knowledge unless probed to do so (Brucks *et al*., 1988).

3.4.3.1 Criteria for possessing persuasion knowledge

In a seminal and highly quoted study, Robertson and Rossiter (1974) have classified two types of intent, being assistive and persuasive. 'Assistive intent' is where children consider commercial messages as informative; while 'persuasive intent', which demands a higher level of understanding, occurs when children understand that advertising messages aim for people to purchase things. Many studies explored the concept of persuasive intent (Mallinckrodt and Mizerski, 2007; Martin, 1997; Moses and Baldwin 2005; Oates *et al*., 2001; Ross *et al*., 1984; Van Reijmersdal *et al*., 2012; Waiguny *et al*., 2012), and yet there is no consensus among scholars about what is the pre-requisite knowledge a child has to possess in order to understand it. Even the definition of the term and what is meant by understanding is polarised. Young (1990, p.68) summarises the situation by saying that there is:

> "*A lack of theoretical precision about what it means to say the child 'understands' the purpose of 'intent' of advertising, and the lack of theory in the field led to much muddled thinking"*.

According to Kunkel and Roberts (1991), there are a number of elements in recognising persuasive intent. The first is the recognition of the selling intent. Children should recognise that the needs of the advertising source and receiver differ (i.e. that advertiser's goal is for people to purchase the advertised product or brand). The second element is recognition of the persuasive intent. Children have to understand that advertisers persuade consumers by "*inducing a change in their mental state*" (Moses and Baldwin, 2005, p.191). Specifically, that advertisers wish to change children's desires, liking, and preferences for the promoted product or brand. Understandably, this second element is more challenging for children to understand as the motives of the advertiser are more subtle and complex. Finally, children must recognise that biased messages require different interpretation strategies than those used for educational or entertainment messages. Moses and Baldwin (2005) summarise the above criteria into three widely accepted stages: (1) distinguishing between television advertising and programming; (2) recognition of bias and deception in advertising messages; and (3) understanding advertising's persuasive intent. Each of these stages will be explored in the next sub section, first in the context of television advertising followed by the steps required for attaining persuasion knowledge in a digital advertising context.

3.4.3.2 Children's understanding of television advertising

Distinguishing between television advertising and programming

This distinction is an initial pre-requisite step before children can critically evaluate persuasive messages. Scholars generally accept that children differentiate between advertising and programming towards the middle of John's (1999) perceptual stage or Roedder's (1981) equivalent limited processors stage, that is four to five years (Gunter and Furnham, 1988). Children under five years often view advertisement as entertainment or an information source about products (Blosser and Roberts, 1985; John, 1999; 2008; Kunkel, 2001; *Kunkel et al*., 2004; Livingstone and Helsper, 2006). Children use a range of heuristics to help them distinguish between advertising and programming, such as, the notion that advertisements are funnier than programmes (affective characteristic); or that

advertisements are repetitive and shorter than programmes (perceptual characteristic) (John, 1999; Kunkel, 2001; Kunkel *et al*., 2004).

Recognition of bias and deception in advertising

At approximately eight years children begin to recognise bias and deception in advertising as well as advertiser's selling intent (John, 1999). However, they need to be cued to use this knowledge (Brucks *et al*., 1988; John, 1999; Roedder, 1981). Hence, children at this stage are termed 'cued processors' by Roedder (1981).

Understanding advertising's persuasive intent

By 11-12 years most children are capable to attribute persuasive intent to advertising messages (Martin, 1997; John, 1999; 2008). Scholars are strongly divided regarding the age at which children gain a full understanding of advertising's persuasive intent. Some scholars provide evidence that such understanding emerges by the time children are between seven-eight years old (Robertson and Rossiter, 1975; Rubin, 1974). Robertson and Rossiter (1974) have found that such understanding increased dramatically from 52.7% of six-seven year olds, to 87.1% of eight-nine year olds, to 99% of ten-eleven year olds. As mentioned earlier, much depends on the methodology used in research (Moses and Baldwin, 2005). Researchers who used verbal tests, such as Blosser and Roberts (1985), discovered that children understand such persuasive intent later (i.e. 9-10 years) than researchers using non-verbal tests (i.e. when children had to tick boxes or circle pictures) (Brucks *et al*., 1988). For example, Bijmolt, Claassen and Brus (1998), found that while 90% of 5-8 year olds could distinguish between advertising and programming when using non-verbal measures, only 20% of that age group recognised the distinction when using verbal measures.

3.4.3.3 Children's understanding of digital advertising

Most studies about children's understanding of advertising have been carried out with traditional forms of advertising, mostly television advertising (e.g. Bijmolt *et al*., 1998; Brucks *et al*., 1988; Robertson and Rossiter, 1974; Rubin, 1974; Young, 1990). Much less is known about persuasion knowledge activation in digital advertising formats regarding adults (Evan and Park, 2015; Tutay and Van Reijmersdal, 2012), let alone children. Van Reijmersdal *et al.* (2012) claim that due to their interactive and immersive nature, recognition and understanding of digital advertising needs more research as it is a complex process which remains in development for much time after initial exposure. The sections below discuss the stages for acquiring persuasion knowledge where the communication message is conveyed digitally.

Distinction between digital advertising and programming

Research shows that it is challenging to discriminate between subliminal messages prevalent in digital advertising, as those messages blur the borderlines between advertising and entertainment (Moore, 2006; Moore and Rideout, 2007). As a result, both older (Van Reijmersdal *et al*., 2012; Waiguny *et al*., 2012) and younger children (Mallinckrodt and Mizerski, 2007) find it challenging to understand where entertainment ends and advertising begins.

Recognition of bias and deception in digital commercial messages

At the moment, there are not enough studies to draw any conclusions regarding when children recognise bias and deception in digital commercial messages, let alone advergames.

Understanding digital advertising's persuasive intent

Mallinckrodt and Mizerski (2007), in a study with five to eight year old Australian children, found that just over half of the children (54%) recognised that the intent of the Froot Loop advergame was either to persuade them to purchase or eat the promoted brand. Conversely, An and Stern (2011) found that only one out of 112 participants identified the selling intent. Owen, Lewis, Auty and Buijzen (2013), who compared children's understanding of television advertising with that of digital advertising (e.g. in-game brand placement, advergames), found that children show a significantly more sophisticated

understanding of television advertising than for non-traditional formats, including advergames. Table 20 presents the findings of children's understanding of persuasive intent in advergames.

Table 20: Summary of children's knowledge of advergame's persuasive intent

Study	N	Children's age	Persuasion knowledge
Waiguny *et al.* (2012)	101	7 - 10	38.6% identified persuasive intent
Van Reijmersdal *et al.* (2012)	105	7 - 12	40% identified the game's source 57% identified persuasive intent
An and Stern (2011)[15]	112	8 - 11	10% identified the game's source 0.9% identified selling intent
Mallinckrodt and Mizerski (2007)	295	5 - 8	25% identified the game's source 54% identified selling intent 47% identified persuasive intent

[15] The authors used open-ended questions (i.e. verbal indicators) rather than a Likert-type scale as this and other studies did.

3.5 Summary and conclusions

This chapter reviewed the domains of marketing communications, consumer behaviour, and consumer socialisation. Advergames are a new format of digital advertising, hence a number of communication models were reviewed to explain its influence, including AIDA, ATR, DRIP, the HoE models, the Weak and the Strong theories of advertising. A few models were explored from the consumer behaviour domain to provide the theoretical foundation to consumer responses and explain the relationship between attitudes and conation. Those models include the TRA, TPB, ELM, and the Affect Transfer Models (IIH, RMH, DMH and ATH). Amongst those it was decided to follow the theoretical underpinning of the DMH. Both the TRA and TPB relate to attitudes towards behaviour, whereas the affect transfer models explain communication or advertising stimulus effects on consumer responses. Amongst the four affect transfer models, it was decided to follow the theoretical underpinning of the DMH, as MacKenzie *et al.* (1986) have found it to be the most reliable of the four alternative models.

Theories from the field of consumer socialisation reviewed the Piagetian age-stage cognitive developmental model (Piaget, 1960; 1971), children's information processing skills model (Roedder, 1981), the PKM (Friestad and Wright, 1994; Wright *et al*., 2005), consumer socialisation framework (John, 1999) and the PCMC (Buijzen *et al*., 2010). The latter model predicts children's processing of persuasive messages rather than focuses on their cognitive defences, or persuasion knowledge activation, which is more relevant to this thesis. Therefore, amongst those models it was decided to test the theoretical underpinning of the PKM. It is a highly validated model, which has been cited 2,119 times according to Google Scholar[16], and directly relates to the phenomena investigated in this thesis (i.e. children's understanding of and protection from advertising by activating persuasion knowledge defences). The PKM has been applied extensively to studies with adults (Cauberghe and De Pelsmacker, 2010; Rozendaal, Buijzen and Valkenburg, 2010; Tutaj and Van Reijmersdal, 2012) as well as children (An and Stern, 2011; An, Jin and Park, 2014; Mangleburg and Bristol, 1998; Waiguny *et al.*, 2012), and

[16] This citation number is applicable at the time of writing.

it will be interesting to examine whether the model, which was devised 22 years ago in the context of broadcast media, still applies today in a different media environment.

Both cognitive and behavioural theoretical models reflect a common theme. Young children do not understand the persuasive intent of commercial messages. Therefore, young children may be vulnerable to advertising messages, particularly when those are communicated implicitly rather than explicitly, as in the case of many digital marketing techniques, such as advergames. The understanding of persuasive intent is the critical factor for cognitive defences to engage, as only once consumers have realised the purpose for which advertising was created, they will be able to defend themselves against it. Summarising children's consumer socialisation literature, it seems that children can differentiate between advertising and television programmes between 4-5 years (Gunter and Furnham, 1988). Prior to that age, they regard advertising as entertainment or an information source (Blosser and Roberts, 1985; John, 1999; Kunkel, 2001; Kunkel *et al*., 2004; Livingstone and Helsper, 2006). By 7-8 years, children identify bias and deception in advertising (John, 1999) but need to be reminded to use such knowledge, as they do not do so independently (Bucks *et al*., 1988; John, 1999; Roedder, 1981). From 12 years, most children are capable to understand advertising's intent (John, 1999; Martin, 1997). Those models, however, have been investigated in the context of traditional rather than digital advertising. Due to the fact that research has established that younger children are less media literate, they are consequently assumed to be particularly vulnerable to the effects of advertising (Friestad and Wright, 1994; John, 1999; Wright *et al*., 2005).

In this digital era, however, older children might be as vulnerable to implicit advertising. Accordingly, a few questions are raised. First, since explicit awareness or recognition of persuasive attempts is required prior to activation of cognitive defences, would children be able to detect persuasive messages in advergames where advertising and entertainment are blurred? Second, once persuasion knowledge is activated, would it result in negative responses to the advertising stimulus?

3.5.1 Research gap and questions

A review of the main literature domains has identified a novel opportunity to pursue, which will address a number of gaps.

Gap 1: Special features of advergames

Advergames have been shown to influence a range of children's responses. However, only a small number of studies explore the specific features or mechanisms by which advergames influence consumer responses. The mechanisms which have been explored so far include interactivity (Goh and Ping, 2014; Lee *et al*., 2014; Sukoco and Wu, 2011; Van Reijmersdal *et al.*, 2010), different levels of brand integration (Van Reijmersdal *et al*., 2010; Winkler and Buckner, 2006), limited use of advertising breaks (An and Kang, 2011; An and Stern, 2013) and brand prominence (Cauberghe and De Pelsmacker, 2010; Van Reijmersdal *et al*., 2012). Moore (2006) notes that in addition to the above, other unique features exist in advergames, such as personalisation and customisation. Examining the impact of customisation in advergames is very important to peruse, because unveiling the link between a unique feature of an advergame and whether it impacts communication effects can provide practical insights for marketers and academics. Customisation is of particular interest due to its unique characteristics, such as the ability to raise players' enjoyment, enhancing brand loyalty (Teng, 2010), satisfaction and recall (Dardis *et al*., 2012).

Customisation in advergames has not been investigated adequately apart from Bailey *et al*. (2009) who have found that advergames with customisable avatars have an impact on subjective feelings of presence and arousal which makes the gaming experience more enjoyable. Their study, however, has methodological limitations due mainly to a small sample size (n = 30) of 8-12 year olds. In addition, the authors used as their stimulus three different games from different genres as well as different brands (i.e. Kellogg's, Nestle, and Fruit Roll-ups). This could have potentially increased experimental bias into their study, as having three different games may have acted as a confounding variable, limiting the internal validity of their study. To date, it is not known whether customisation in advergames has the potential to impact on consumer responses. This thesis helps to fill the gap about the effects of a unique advertising stimulus.

Gap 2: The role of children's age and persuasion knowledge

The literature is conflicted as to the role age has, as a proxy of cognitive ability, on children's responses. Studies, in the context of television advertising, have found that age has no impact on the direct effect of children's ad attitudes on their brand attitudes (Derbaix and Bree, 1997; Moore and Lutz, 2000). Studies, in the context of advergames, reveal that age does not have an impact on brand preferences (Mallinckrodt and Mizerski, 2007), or consumption (Harris *et al*. 2012; Folkvord *et al.* 2013). Van Reijmersdal *et al.* (2010), however, have found that although age does not have an impact on brand responses, it does have an impact on conative responses. Other studies, in the context of television advertising (Robertson and Rossiter, 1974), have also found that children from different ages differ in their responses to advertising. The link between children's age and effects is complicated. Livingstone and Helsper (2006), who reviewed the literature on advertising effects, have found that younger children were not more influenced by advertising than older children, despite the assumption that the latter should have higher levels of advertising knowledge and therefore less susceptible to advertising. Fox (1981) has found differences in cognitive measures (i.e. knowledge and understanding of persuasive intent and source) between 4-5 and 9-10 year olds, but no age differences were found in the effect of advertising on actual behaviour. Thus, even when children are aware of persuasive intent, this knowledge does not make them like the brand any less (Ross *et al*., 1984). Martin (1997) has found that age-related differences were much more pronounced in the pre-1974 studies. Also contested is children's ability to identify and correctly evaluate the persuasive intent of advertising in advergames.

There is also much controversy regarding the role persuasion knowledge plays as a defence mechanism. A few limitations were found in the extant literature. First, as Livingstone and Helsper (2006) point out, age as a proxy to persuasion knowledge, is rarely discussed regarding the effects of traditional advertising, let alone implicit advertising formats, such as advergames. In the majority of studies children's age cuts across developmental stages (e.g. Mallinckrodt and Mizerski, 2007) and the decision to study a particular age group seems to be taken due to convenience considerations rather than based on theoretical grounds. The exception are studies conducted by Moore and Lutz (2000), in the context of television advertising, as well as Auty and Lewis (2004), in the context of product placement. However, more research is needed to establish

differences in children's responses based on their cognitive development and persuasion knowledge. This research will add to an existing debate (Ambler, 2008; Nairn and Fine, 2008; Livingstone, 2009) and provide insights about whether children's cognitive ability and persuasion knowledge act as a barrier against advertising effects.

Gap 3: The relationship between Aad-Ab-Ip in children's advergames

The relevance of investigating this relationship between attitudes towards the advertisement (Aad), attitudes towards the brand (Ab) and purchase intentions (Ip) stems from research with adult participants. This line of research indicates that Aad has an impact on both Ab and Ip (Moore and Hutchinson, 1985). This relationship (i.e. Aad → Ab → Ip), however, was scarcely investigated with children. Phelps and Hoy (1996) is one of the studies which does so, but in the context of traditional rather than digital or covert advertising, such as advergames. Table 21 provides a summary of studies conducted with children investigating consumer responses in the context of advergames. It also shows the gap and the contribution of this thesis. This leads to the question this study aims to answer, which is:

Does the degree of advergame customisation has an impact on children's affective, cognitive and conative responses?

Table 21: Summary of children's responses to advergame research

Study	Consumer responses										
	Affective Reponses	Cognitive responses			Behavioural responses						
	Attitudes	Preferences	Recall	Recognition	Consumption	Choice	Purchase requests			Age	Persuasion knowledge
Owen *et al.* (2013)											✓
Folkvord *et al.* (2013)					✓						
Van Reijmersdal *et al.* (2012)	✓		✓	✓							✓
Waiguny *et al.* (2012)	✓										✓
Redondo (2012)	✓				✓					✓	
Harris *et al.* (2011)					✓					✓	
Dias and Agante (2011)		✓									
Van Reijmersdal *et al.* (2010)	✓						✓			✓	
Hernandez and Chapa (2010)	✓		✓			✓					
Mallinckrodt and Mizerski (2007)		✓					✓			✓	
Pempek and Calvert (2009)					✓	✓					✓
This study	✓	✓								✓	✓

4 CONCEPTUAL FRAMEWORK & HYPOTHESIS DEVELOPMENT

This chapter presents the conceptual model that guides this research (section 4.1) and justifies the hypotheses which were developed based on theory and prior research (section 4.2). For convenience purposes, the conceptual model with its hypotheses is presented in figure 22.

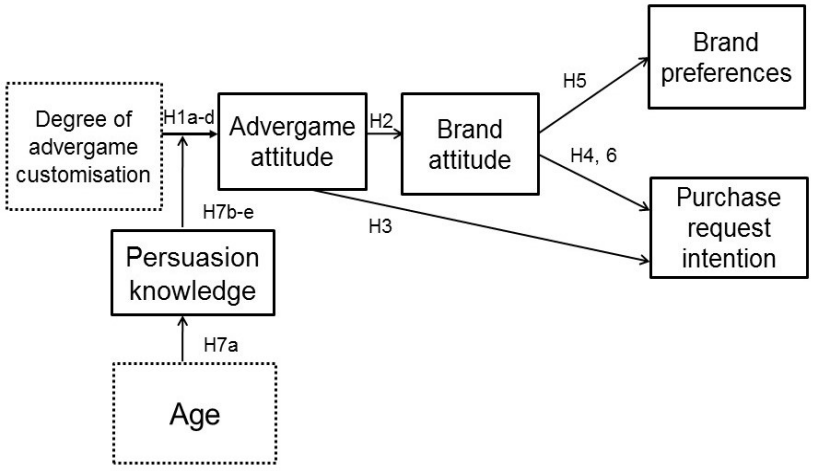


Figure 22: Conceptual framework with hypotheses

4.1 Conceptual framework

The literature that informs the conceptual model is drawn from the DMH, PKM, and children's cognitive and developmental theories as well as the Limited-Capacity Model of Attention. From this conceptual framework, hypotheses are developed. The framework commences by testing the direct impact the degree of customisation has on children's responses in terms of attitude towards the advergame, the promoted brand, intention to request its purchase and preferring it to other similar brands. Advergame attitudes are proposed to channel all other responses. There are direct links from the latter to brand attitude and purchase request intention. Then, there are two direct links from brand attitude to brand preferences and purchase request intention. Prior to presenting the model, the key constructs are defined.

4.1.1 Key constructs

This section presents and defines the main constructs in the conceptual model.[17]

Customisation

Customisation was deployed as an independent variable and refers to "*the degree to which a technology, good or service can be created, selected, or changed to comply with user preferences*" (Teng, 2010, p. 1549). Customisation occurs when users can change 'the look and feel' of a product or a website (Ho, 2006). Thus, it is a user-driven process and "*is under the control of customers and initiated by them. Its focus is to help customers to better identify or define for themselves what they want"* (Wind and Rangaswamy, 2001, p.15).

Children's age

Children's age was deployed as an independent variable since it was manipulated to examine differences in responses of children from two different age groups and developmental stages.

Some studies investigating the impact of advergames on children, such as Van Reijmersdal *et al.* (2010; 2012), include children's age as a covariate. This is because age in those studies is not part of the experimental manipulation. Indeed, those studies had participants from a wide age range cutting across different developmental stages. For example, Van Reijmersdal *et al*. (2012) had 7-12 year olds; while Van Reijmersdal *et al*. (2010) had 11-17 year old participants. This thesis follows previous studies, where children were recruited from two distinct age groups (Auty and Lewis, 2004; Harris *et al.*, 2012; Moore and Lutz, 2000), to examine differences based on cognitive development. Thus, age is used as an independent variable.

Attitude towards the advergame

Attitude towards the advergame is a dependent variable. MacKenzie and Lutz (1989, p.49) define attitudes towards the advertisement as "*a predisposition to respond in a favourable or unfavourable disposition to a particular advertising stimulus during a particular*

[17] It should be noted that the constructs discussed below relate to the full study. The pilot had the constructs of advergame and brand attitudes, brand preferences and persuasion knowledge. Purchase request intention and prior brand usage were added after the pilot.

exposure occasion". The above definition from the context of television advertising is adopted in this thesis to advergames. Thus, attitudes towards an advergame is defined as a predisposition to respond in a favourable or unfavourable manner to the advergame after game play.

Attitude towards the brand

Attitude towards the brand, a dependent variable, is defined as a "*predisposition to respond in a favourable or unfavourable manner to a particular brand after the advertising stimulus has been shown to the individuals"* (Phelps and Hoy, 1996, p.90).

Purchase request intention

Purchase intention, a dependent variable, is usually conceptualised as the likelihood that a customer would purchase a product or brand (Lutz *et al*., 1983). However, in the case of children, it also refers to the likelihood of them requesting someone else, such as parents or guardians, to make the purchase for them (Ward, Wackman and Wartella, 1977).

Brand preferences

Brand preferences, a dependent variable, is defined as the extent to which consumers favour one brand over another (Hellier *et al*., 2003). This research adopts the position held by Sagoff (2003), Skinner (1953) and Fennis and Stroebe (2010) that brand preferences represent cognitive rather than behaviour responses.

Persuasion knowledge

It is the knowledge that consumers develop about the tactics utilised by advertisers. Friestad and Wright (1994) refer to persuasion knowledge as customers' ability to critically evaluate advertising. This knowledge "*helps customers identify how, when, and why marketers try to influence them*" (Friestad and Wright, 1994, p.1).

Prior brand usage

Prior brand usage is children's previous consumption or experience with the promoted brand.

Table 22 presents a summary of the key constructs in the main conceptual model. It addresses different constructs, provides a concise definition for each, the relevant theory

and key studies guiding them, and links them to the relevant items in the instrument and hypotheses/RQ.

Table 22: Summary of constructs

Construct	Variable type	Construct definition	Theory/study	Item No.	Hypotheses/ RQ
Customisation	Independent variable	Occurs when users can change the look and feel of a product	Bailey *et al.* (2009)	N/A	RQ, H1a-d
Children's age	Independent variable	Two age groups from different developmental stages	Cognitive and developmental psychology (Piaget, 1960)	2	H7a-e
Persuasion knowledge	Control variable	This knowledge helps to critically evaluate advertising	PKM (Friestad and Wright, 1995; Wright *et al.*, 2005)	8, 9	H7a-e
Attitude towards the advergame	Dependent variable	A pre-disposition to respond in a favourable or unfavourable manner to the advergame	DMH model (Lutz, 1985; MacKenzie *et al.*, 1986)	10	RQ, H1a, H2, H3, H6, H7b
Attitude towards the brand	Dependent variable/ mediator	Positive or negative evaluations about a brand	DMH model (Lutz, 1985; MacKenzie *et al.*, 1986)	11	RQ, H1b, H2, H4, H5, H6, H7c
Brand preferences	Dependent variable	Preferences between different foods (Cairns *et al.*, 2009)	Brand preferences model (Bass and Talarzyk, 1972)	7	RQ, H1c, H5, H7e
Purchase request intentions	Dependent variable	Conscious plan to make a purchase (Spears and Singh, 2004)	DMH model (MacKenzie *et al.*, 1986)	13	RQ, H1d, H3, H4, H6, H7d
Prior brand usage	Control/ covariate variable	When a brand has been used in the past (author)	ATR, Weak theory of adverting	12	RQ

4.2 Hypothesis development

This section presents and explains the development of the hypotheses, which are based on theory and prior literature.

Customisation and consumer responses

Franke and Piller (2004) have found higher willingness to pay for customised goods, while Schoder *et al.* (2006) produced contrary results. Overall, the extant literature indicates much promise in utilising customisation. Providing individuals with choices, as is the case with customisation, leads to better performance, intrinsic motivation (Cordova and Lepper, 1996; Deci and Ryan, 1985), sense of personal control (Tylor and Brown, 1988), enjoyment and increase learning (Cordova and Lepper, 1996). Research on customisation in video games shows that it enhances usability (Pinelle, Wong and Stach, 2008), learning (Gee, 2005), increased recall of integral brand placement (i.e. one which is central to the game play) (Dardis, Schmierbach and Limperos, 2012) and serves as a motivation to play games (Yee, 2006) by raising player satisfaction, enjoyment and brand loyalty (Teng, 2010). In addition, Bailey *et al.* (2009), have found that an advergame with customisable avatars have a positive impact on subjective feelings of presence, which makes the gaming experience more enjoyable.

Research about the role customisation plays on consumers responses, either in video games or advergames, is sparse. Kalyanaraman and Sundar (2006), in a study with adults, (N = 60) reveal that customisation affects positive attitudes towards a news portal via perceived relevance, involvement and interactivity. However, there is an alternative view. According to the Limited-Capacity Model of Attention (Kahneman, 1973), individuals possess a limited amount of attention which draws from their cognitive capacity. The more capacity a specific task demands, the less capacity is available to accomplish other tasks. The requirement for customisation in the experimental conditions is in fact a different task from playing the advergame. Children in the experimental conditions will need to draw from their cognitive capacity resources in order to aim win the game (i.e. match as many pairs of cards as quickly as possible) as well as make decisions regarding customisation; while children in the control condition, without customisation options, could spend all of their cognitive efforts on the game itself which could lead to stronger responses.

In addition, it may make a difference whether customisation is relevant and integrated into the storyline of the game. According to the Incongruity Processing theory (Mandler, 1982), an incongruent stimulus triggers elaboration, as it is challenging to understand. Incongruity is "*unexpected information that disrupts … knowledge structures*" (Yoon, 2013, p. 363) and could cause disturbances in one's cognitive system (Lee and Schumann, 2004). Some of the customisation options, such as choice of cursor shape, had no relation to the brand or the progress of the game. Cacioppo and Petty (1985) add that individuals tend to spend their cognitive resources sparingly due to limitations in cognitive attention and information processing. Thus, children who are exposed to the low and high experimental conditions, where customisation is loosely connected to the brand (i.e. incongruent), will spend their limited cognitive resources to process customisation options. It is, therefore, hypothesised that:

H1a: Children in the control condition are more likely to have positive attitudes towards the advergame than children in the experimental conditions

H1b: Children in the control condition are more likely to have positive attitudes towards the brand than children in the experimental conditions

H1c: Children in the control condition are more likely to prefer the promoted brand than children in the experimental conditions

H1d: Children in the control condition are more likely to intend to request purchase of the promoted brand than children in the experimental conditions

Affect transfer hypotheses: indirect effects

The following set of hypotheses presents the indirect effects of the stimulus on children's responses. Lutz *et al.* (1983) describe the causal relationship between attitudes towards the advertisement, the promoted brand, and intention to purchase it through the DMH model. The model, as discussed in the previous chapter, acts as the theoretical underpinning in this thesis to explain the relationship between three dependent variables, being attitude towards the advergame, attitude towards the brand and intention to request purchase. Studies in the context of television advertising uphold the model with adults (Batra and Ray, 1986; Mackenzie *et al*., 1986; Mitchell and Olson, 1981) and children (Derbaix and Bree, 1997; Pecheux and Derbaix, 1999; Moore and Lutz, 2000). In the context of advergames, studies

with adults (Cauberghe and De Pelsmacker, 2010; Sukoco and Wu, 2011; Wise *et al*., 2008) and children (Van Reijmersdal *et al*. 2010; 2012; Waiguny *et al*. 2012) uphold the above results from television advertising by showing that positive attitudes towards the brand are influenced by attitudes towards the advergame which promotes that brand.

Studies have similarly provided support for the influence of the advertisement towards both familiar and unfamiliar brands as well as on purchase intentions (Phelps and Hoy, 1996; Shimp, 1981; Spears and Singh, 2004). Brown and Stayman (1992) conducted a meta-analysis about the Aad → Ab → Ip relationship, but none of their 47 studies included children. Phelps and Hoy (1996) addressed this gap by investigating the abovementioned relationship in a sample with children and found that attitudes towards the ad positively influence brand attitudes as well as purchase request intentions. The Aad → Ab draws from the ATH model[18] and as such has received good empirical support (Brown and Stayman, 1992; MacKenzie *et al*., 1986; Mitchel and Olson, 1981; Moore and Hutchinson, 1985; Shimp, 1981).

Based on the DMH and previous research, the following hypothesis is formulated:

H2: Advergame attitude has a positive effect on brand attitude

The second causal relationship is Aad → Ip draws from the IIH model (MacKenzie *et al*., 1986). It should be noted that unlike the very strong relationship between Ab → Ip, discussed next, Aad → Ip did not receive consistent support in the literature, hence it appears just in one of the four competing affect transfer models. Nevertheless, it still has a considerable amount of support in the context of television advertising (MacKenzie *et al*., 1986) websites (Karson and Fisher, 2005), advergames (Aldas-Manzano *et al*., 2015; Goh and Ping, 2014) as well as with children (Phelps and Hoy, 1996). It is therefore posited that:

H3: Advergame attitude has a positive effect on purchase request intentions

The causal link of brand attitude on purchase request intention (Ab → Ip) is considerably stronger than the previous one (i.e. Aad → Ip), as it is presented in all four explanations in the competing affect transfer models (MacKenzie *et al.*, 1986). It appears in the ATH,

[18] All those models are depicted in figure 17, and discussed in greater detail in the previous chapter, section 3.3.2.2.

RMH, IIH and DMH models, and received a particularly strong amount of support (Brown and Stayman, 1992; MacKenzie *et al*., 1986; Mitchell and Olson, 1981; Moore and Hutchinson, 1985; Shimp, 1981). Hence:

H4: Brand attitude has a positive effect on purchase request intention

The seminal studies by Bass and Talarzyk (1972) and Bass and Wilkie (1973), which support the relationship between attitudes and brand preferences, provide support to postulate that:

H5: Brand attitude has a positive effect on brand preferences

Mediation analysis

In order to understand in greater detail the relationship between the dependent variables and the causal sequences an exposure to a communication message initiates, a mediation analysis was conducted. Mathieu and Taylor (2007, p.142) define mediators as variables through which "*the influence of an antecedent is transferred to a criterion*". Here, advergame attitude is postulated to exert an effect on intention to request purchase through brand attitudes (i.e. an intervening variable). Recent studies provide evidence on the mediating role of brand attitudes. Adis *et al*. (2015) report that brand attitude in advergames mediate the relationship between self-congruity and entertainment on purchase intention. In addition, Sallam and Algammash (2016) have found that attitudes towards the brand partially mediate the relationship between ad attitude and purchase intention in a sample with adults. For a mediation, as is depicted in figure 23, to take place, a number of causal relationships have to be tenable (Aad → Ab; Aad → Ip; Ab → Ip). In other words, attitudes towards the ad influence brand attitudes, which in turn influence purchase request intention. There is strong support for the existence of the Aad → Ab → Ip relationship (Batra and Ray, 1986; Homer, 1986; MacKenzie *et al*., 1986; Mitchell and Olson, 1981; Phelps and Hoy, 1996). In addition, there is also support to the existence of the direct path between Ab → Ip (see H3). It is therefore hypothesised that:

H6: Brand attitudes mediate the relationship between advergame attitude and purchase request intention

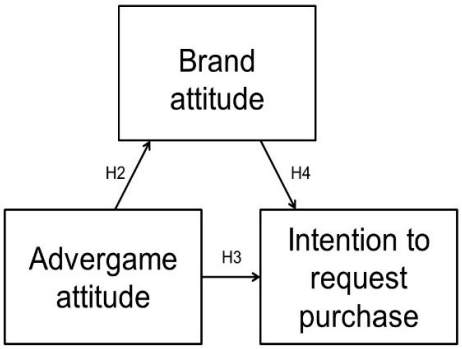


Figure 23: Meditation model with hypotheses

The impact of persuasion knowledge and children's age on consumer responses

Scholars disagree between them about the question at what age persuasion knowledge occurs (Livingstone and Helsper, 2006; Moses and Baldwin, 2005). There is broad agreement, however, that such understanding occurs as children grow older (John, 1999; Martin, 1997; Roedder, 1981). Studies in advergaming context produced mixed results. 47% of 5-8 year olds in Mallinckrodt and Mizerski (2007) study recognised persuasive intent in advergames compared to 57% of 7-12 year olds in Van Reijmersdal *et al.*'s (2012) study, but only 38% of 7-10 year olds in Waiguny *et al.*'s study. It is acknowledged, though, that much depends on the methodology and measures involved to examine such knowledge (Moses and Baldwin, 2005). As this research followed largely the method and measures adopted by Mallinckrodt and Mizerski (2007) and Van Reijmersdal *et al.* (2012), it is posited that:

H7a: Older children are likely to have a greater understanding of persuasive knowledge in advergames than younger children

One of the main themes of the PKM is that persuasion knowledge is stored in individual's memories, but once it is activated, it acts as a defence mechanism against advertising (Friestad and Wright, 1994). Thus, once activation has occurred, individuals tend to show decreased liking for advertising. Regardless of how understanding of advertising is interpreted or at which age it occurs, research provides evidence that as children become older and gain a more comprehensive understanding of advertising, their negative attitudes towards it increases. As a result, they become sceptical and distrustful of advertising (John,

2008; Livingstone and Helsper, 2006; Oates *et al*., 2001; Robertson and Rossiter, 1974; Rossiter and Robertson, 1974). Robertson and Rossiter (1974) report that 64.8% of six-seven year olds trusted all advertisements compared to only 7.4% of ten-eleven year olds. The results of their study indicate that when children become more sceptical of advertising, they like it less, and therefore "*the development of persuasion attributes acts as a cognitive defence to persuasion*".

There is little consensus among scholars about whether children's possession of persuasion knowledge renders different results in a digital marketing context. Some scholars have found that there is no evidence that age or persuasion knowledge have an impact on children's responses to the advertised brand. Mallinckrodt and Mizerski (2007) have found that possession of persuasion knowledge does not have an impact on brand preferences. Van Reijmersdal *et al.* (2012) add that persuasion knowledge does not influence either cognitive or affective responses. These findings challenge the idea that children belonging to John's (1999) 'reflective' developmental stage (i.e. 11-16 years) have the cognitive defences to resist advertising's persuasive attempts better than younger children from the 'perceptual' stage (i.e. 3-7 years). Waiguny *et al.* (2012), however, have found that identification of persuasion knowledge result in significant negative attitudes towards the promoted brand. In order to add to the above debate and to test the theoretical underpinning of the PKM, it is posited that:

H7b: Regardless of age, possession of persuasion knowledge will influence attitudes towards the advergame negatively

H7c: Regardless of age, possession of persuasive knowledge will influence attitudes towards the brand negatively

H7d: Regardless of age, possession of persuasive knowledge will influence purchase request intention negatively

H7e: Regardless of age, possession of persuasion knowledge will influence brand preferences negatively

Brand preferences

In their review of 421 studies on the effects of food promotions, Cairns *et al.* (2009; 2012), Hastings *et al.* (2003; 2006) and McGinnis *et al*. (2006) conclude that children's branded

food preferences are influenced by the promoted sugary food. McGinnis *et al*. (2006) add that it is also influenced by familiarity. The authors report that children are likely to prefer unhealthy foods due to their beliefs that it tastes better than healthier foods. Robinson *et al*. (2007) have found that children displayed preferences for branded products over identical but non-branded food items. In addition, children tend to prefer an advertised brand over a non-advertised food item of the same product type (Borzekowski and Robinson, 2001; Gorn and Goldberg, 1980). Evidence from experimental studies, in the context of television advertising, demonstrate a significant link between exposure to a promotional stimulus and the impact on children's preferences for the promoted brand (Borzekowski and Robinson, 2001; Boyland and Halford, 2013; Boyland *et al*., 2011; Chernin, 2008; Clarke, 1984; Goldberg, Gorn and Gibson, 1978; Gorn and Florsheim, 1985; Gorn and Goldberg, 1980; Halford *et al*., 2008; Haslop and Ryans, 1980; Kaufman and Sandman, 1983; Neeley and Schumann, 2004; Norton, Falciglia and Ricketts, 2006; Peterson *et al*., 1984; Ritchey and Olson, 1983; Robinson *et al*., 2007; Ross *et al*., 1984; Stoneman and Brody, 1982). A review of the empirical literature reveals that to date there has been only two studies which examined the impact of food advergames on brand preferences, and both conclude that playing a food advergame has a significant impact on children's branded food preferences (Dias and Agante, 2011; Mallinckrodt and Mizerski, 2007).

The brand in this research appears dominantly in all conditions, as this research does not have a fourth control condition where children are not exposed to Jaffa Cakes. Nevertheless, it is still interesting to explore whether brand preference is positively related to its exposure in an advergame. In other words, whether children will prefer the promoted brand amongst other similar brands.

For clarity, table 23 summarises the proposed hypotheses which were developed earlier in this chapter.

Table 23: Summary of hypotheses

Hypothesis	Outcomes
H1a: Children in the control condition are more likely to have positive attitudes towards the advergame than children in the experimental conditions	Not supported
H1b: Children in the control condition are more likely to have positive attitudes towards the brand than children in the experimental conditions	Supported
H1c: Children in the control condition are more likely to prefer the brand than children in the experimental conditions	Supported
H1d: Children in the control condition are more likely to intend to request purchase of the promoted brand than children in the experimental condition	Not supported
H2: Advergame attitude has a positive effect on brand attitude	Supported
H3: Advergame attitude has a positive effect on purchase request intention	Supported
H4: Brand attitude has a positive effect on purchase request intention	Supported
H5: Brand attitude has a positive effect on brand preferences	Supported
H6: Brand attitude mediates the relationship between advergame attitude and purchase request intention	Supported
H7a: Older children are likely to have a greater understanding of persuasive knowledge than younger children	Not supported
H7b: Regardless of age, possession of persuasion knowledge will influence attitudes towards the advergame negatively	Not supported
H7c: Regardless of age, possession of persuasion knowledge will influence attitudes towards the brand negatively	Not supported
H7d: Regardless of age, possession of persuasion knowledge will influence purchase request intention negatively	Not supported
H7e: Regardless of age, possession of persuasion knowledge will influence brand preferences negatively	Not supported

5 RESEARCH PHILOSOPHY & METHODOLOGY

5.1 Introduction

This chapter describes the methodology adopted in this thesis and as such it commences with an identification of the philosophical positioning to answer the research's question (section 5.2). Then, building on that positioning it explains the research design (section 5.3), the choice of brand used in the thesis is justified (section 5.4), followed by describing the development and design of the stimulus (i.e. the advergame) (section 5.5). This chapter also provides a thorough explanation about the instrument design (section 5.6), measurements and coding of constructs (section 5.7). Issues relating to validity are addressed in section 5.8, and those are followed by sampling (section 5.9) and ethical considerations (section 5.10) are explained, whilst a summary and conclusions are provided in section 5.11.

5.2 Philosophical positioning

Easterby-Smith, Thorpe and Jackson (2008), Partington (2000), and Blaikie (2007) recommend developing a philosophical perspective at the outset of research to assist the researcher understand what data is required and how it should be collected and interpreted. Furthermore, Easterby-Smith *et al.* (2008) posit that philosophical knowledge can provide an appreciation of the limitations of a particular approach, and hence enable the researcher make informed decisions. Blaikie (2007) adds that the position and views of the research community to which the researcher belongs should also be taken into account. This section presents the research philosophy for this thesis (section 5.2.1) followed by ontological, epistemological and methodological assumptions (section 5.2.2) which will guide this research journey. This section ends by discussing the implications and limitations of the chosen research philosophy (section 5.2.3).

5.2.1 Research philosophy

Research strategies exist within a framework of broader philosophical perspectives known as paradigms. The term came into prominence due to the seminal work of Thomas Kuhn who defined paradigms as "*shared techniques by the members of a given community*" (1996, p.175). Paradigms act as a compass to guide scholars in each research discipline and provide them with frameworks and tools to use (i.e. methodologies) in order to collect data. According to Deshpande (1985), scholars are largely concerned with the question '*how do we know what we know?*' The search of an answer to this question has divided scholars into two contrasting schools of thought. There is little consensus among scholars regarding categorisation and terminology in social sciences research. This terminology pluralism is acknowledged by Blaikie (2007) who provides a detailed map of ten philosophical paradigms or positions, which are positivism, critical rationalism, classical hermeneutics, interpretivism, critical theory, ethnomethodology, social realism, contemporary hermeneutics, structuration theory and feminism. It is beyond the scope of this thesis to consider those in detail, merely to acknowledge that such terminology and categorisation pluralism exists. It was decided to follow Easterby-Smith *et al.*'s (2008) broad categorisation of two contrasting positions of positivism and social constructionism[19].

5.2.2 Ontological, epistemological and methodological assumptions

The acceptance of a particular ontology and epistemology will lead the researcher to adopt methododologies that are typical of that position (Easterby-Smith *et al*., 2008). In other words, ontology, epistemology and methodology are inter-linked together, and -

> "*As ontology involves the philosophy of reality, epistemology addresses how we come to know that reality while methodology identifies the particular practices used to attain knowledge of it*".
>
> (Krauss, 2005, p.758)

[19] The authors note that they use the term *social constructionism* rather than *social constructivism*, which is preferred by Guba and Lincoln (1989) (as cited by Easterby-Smith *et al*., 2008).

The different research paradigms make linkages between ideas, experiences and social reality. Those are explored in the ontological and epistemological assumptions below, followed by the methodological implications of those assumptions.

Ontology

Ontology is the starting point in research, and is defined by Blaikie (2007, p.13) as "*a branch of philosophy that is concerned with the nature of what exists*". According to Easterby-Smith *et al.* (2008), the social sciences reality is commonly reduced to two opposing ontologies, being Representationalism and Nominalism with Relativism between them. The ontological position of Representationalism is the ontology associated with the positivist epistemology and assumes that what is observed is what exists. Representationalism believes in the external reality, which consists of objects or events that can be observed. This ontological position further assets that there are patterns in those observable events, which should be unveiled. Thus, "*only that which can be observed, i.e. experienced by the human senses, can be regarded as real*" (Blaikie, 2007, p.14). Blaikie's (2007) refers to Representationalism as 'shallow realism', however this term is also referred to as 'Naive Realism', 'Empirical Realism' and 'Actualism' (Collier, 1994, as cited in Blaikie, 2007, p.14). Researchers who adopt the Relativist ontology believe that both natural and social phenomena exist in total independence from the researcher (Blaikie, 2007). Finally, Nominalism, according to Easterby-Smith *et al.* (2008), or Idealism as referred to by Blaikie (2007), is an ontological position which believes that the external world consists of representations that are creations of individual minds. Table 24 summarises the ontological positions in social sciences and provides a link to corresponding epistemological positions.

It should be noted that those are merely the main ontological/epistemological positions in social sciences. A number of other positions exist between Representationalism/Positivism, and Nominalism/Social Constructionism, such as Conceptual Realism/Rationalism and Cautious Realism/Falsification. The purpose of table 24 below is to present the most opposing positions with a third one - Relativism - in their midst.

Table 24: Summary of ontology and epistemology (Source: Easterby-Smith *et al*., 2008)

Ontology	Representationalism	Relativism	Nominalism
Truth	Requires verifications of predictions	Determined through consensus between different viewpoints	Depends on who establishes it
Facts	Concrete	Depends on the viewpoint of the observer	Are all human creations
Epistemology	**Positivism**	**Relativism**	**Social constructionism**

Epistemology

Epistemology is referred to as '*the theory of knowledge'*, which explains how we know what we know, and it provides the philosophical foundations for the types of knowledge that are possible (Blaikie, 2007). Every ontology has its corresponding epistemology. For example, Shallow Realism or positivism is matched with Empiricism, a Depth Realist is matched with Neo-Realism, and the Idealist is matched with Constructionism. Trademarks of positivism include external and internal validity, reliability, ability to generalize to the wider population and measurement (Blaikie, 2007; Creswell, 2003; Easterby-Smith *et al.,* 2008). The term 'Positivism' was first coined by the French social philosopher Auguste Comte (1798-1857) (Arndt, 1985), and later became associated with the 'Vienna Circle", which is the term used for a group of logical positivists who met in Vienna during the 1920s-1930s (Chia, 2002). At its cornerstone is the notion that "*the social world exists externally, and that its properties should be measured through objective methods*" (Easterby-Smith *et al.*, 2008). The positivist researcher usually assumes independence from the data and raises hypotheses to test them via an experiment or an instrument (e.g. a questionnaire). Normally, the research is conducted with a statistically representative sample of the population in order to draw generalizations about social and human behaviour (Deshpande, 1983; Arndt, 1985; Chia, 2002; Blaikie, 2007).

A central tenet, which is linked with the Shallow Realism ontology, is that anything we claim to know about the world is true only if it can be tested independently (Blaikie, 2007; Easterby-Smith *et al*., 2008). Blaikie (2007) claims that Empiricism allows researchers to be neutral observers and to have an undistorted contact with reality. Within the broader

framework of paradigms, ontology, epistemology and methodology co-exist together. Gupta and Lincoln (2000) identified four paradigms, being positivism[20], realism, critical reality and constructivism. Table 25 provides a summary of the contrasting positions of positivism and social constructionism.

Table 25: Contrasting positivism and social constructionism (Source: Author, adapted from Easterby-Smith *et al*., 2008, p.59 and Blaikie, 2007, p.70)

	Positivism	Social constructionism
The observer	Must be independent	Is part of what is being observed
Outcomes	To demonstrate causality	To increase general understanding and analysing social structures
Research progresses through	Hypotheses testing and deductions	Gathering rich data from which ideas are induced
Unit of analysis	Groups that are compared to each other	May include the complexity of 'whole' situations
Sample	Large numbers selected randomly	Small numbers of cases chosen for specific reasons

Methodology

Methodology is concerned with *how* research is conducted (Blaikie, 2007; Easterby-Smith *et al*., 2008), and it is the researcher's responsibility to determain the appropriate methods, techniques and tools needed to conduct a research. Easterby-Smith *et al.* (2008) outlines the methodological implications for the three main epistemologies and those are presented in table 26.

[20] It is interesting to note that Gupta and Lincoln (2000) refer to positivism as a paradigm, while Easterby-Smith *et al.* (2008) refer to it as an epistemology.

Table 26: Methodological implications of epistemologies (Source: Easterby-Smith *et al*., 2008)

Elements of methodologies	Positivism	Relativism	Social constructionism
Aims	Discovery	Exposure	Invention
Starting point	Hypothesis	Proposition	Meaning
Technique	Measurement	Survey	Conversation
Analysis	Verification/ falsification	Probability	Sense-making
Outcomes	Causality	Correlation	Understanding

The key methodologies available are quantitative, qualitative and mixed methods. Creswell (2009) and Deshpande (1983) describe quantitative research as one which seeks the facts or causes of social phenomena, is verification and outcome-oriented, where data is gathered from large samples with intent to generalise the findings to the wider population. Data is analysed statistically, and is associated with a deductive approach (Creswell, 2009). Qualitative methodology, on the other hand, is concerned with understanding human behaviour and its meaning, is discovery-oriented, descriptive, seeks to explore insider perspective and is associated with an inductive approach (Creswell, 2009; Deshpande, 1983; Saunders, Lewis and Thornhill, 2012). Mix methods occur when researchers utilise both quantitative and qualitative methodologies in a single study. This methodology has been termed as 'blended research', 'multi-method', 'triangulated study' and 'mixed methods'. The latter is the most commonly used term to describe this methodology in the social sciences (Creswell, 2009; Saunders *et al*., 2012).

5.2.3 Implications and limitations of chosen research philosophy

In arriving to my philosophical position I took into consideration the dominant paradigm in my research community as well as Blaikie's (2007, p.8) guidelines that:

> "*The major task in designing a piece of social research is to work out how to answer the research question*".

Accordingly, the philosophical positioning for this thesis has been considered as the most suitable to answer the research's question. The aim of this research is to examine whether advergames, which offer various degrees of customisation options to players, have a positive impact on their affective, cognitive, and conative responses. In other words, this thesis aims to explore whether a causal relationship exists in a particular social phenomena. Therefore, positivism was chosen as the paradigm to guide this research because the philosophical assumption of positivism has the potential to explain best the existence of causality, which this research investigates (Blaikie, 2007; Easterby-Smith *et al*., 2008). Having never had the need to question or explore my philosophical stance, it has been an interesting journey, as I encountered numerous categorisations within each paradigm along with a pluralism of terminology which differed among authors with regard to the same concepts. From a personal perspective, having trained and worked at the start of my career as a lawyer, my natural inclination was to adopt the scientific realist position. The independence of the researcher from the phenomenon being investigated, the process of deduction and objectivity are the cornerstones of legal work. Indeed, legal positivism is a school of thought of analytical jurisprudence developed during the eighteenth and nineteenth centuries by Bentham, Austin and Hart who applied the philosophical positivism to law. That is, the notion that a legal system is a logical system in which decisions are deducted from predetermined rules and regulations (Rumble, 1981).

The field of consumer research is dominated by positivism and the majority of studies use quantitative methodologies (Arndt, 1985; Deshpande, 1983; Hunt, 1991). Further, in their comprehensive review about food promotions to children, Hastings *et al*. (2003) reveal that out of the reviewed studies 67% were experimental, 27% were cross-sectional, 3% were quasi-experimental and another 3% were observational. This trend of overwhelmingly quantitative methodology prevailed in subsequent reviews of the effects of food promotions on children (Cairns *et al*., 2009; Hastings *et al*. 2006). The rationale that the

positivist paradigm along with quantitative methodology dominate the field of food promotions to children is because many of those studies investigated causality. Experimental studies can provide direct measures of the outcome effects in response to a stimulus while controlling for potential confounding variables. This being also the reason why this research follows the positivist paradigm with its shallow realist ontology, empiricism epistemology, quantitative methodology and a deductive research strategy.

Limitations of chosen philosophical position

The positivist position offers a number of strengths such as, it is easier to provide justifications for policies, particularly when data is collected from large samples. In addition, data collection can potentially progress fast and relatively economically. Those methods, as argued by Easterby-Smith *et al.* (2008), can also be seen as inflexible and artificial. Further, those methods are not particularly adequate to generate meaning (i.e. to understand *why* a certain phenomenon occurs). However, the phenomenon of customisation in video games, let alone, advergames, is so new and so much is unknown that an investigation is required to understand *what* is happening in the first place. Once that is understood (i.e. whether or not customisation in advergames has effects on consumer responses), an exploration can be carried out to understand under what conditions customisation works best, what children think of such advergames, and so forth. Table 27 summarises the strengths and weaknesses of positivism compared to relativism and social constructionism.

Table 27: Strengths and weaknesses of the main social sciences traditions (Adapted from: Easterby-Smith *et al.*, 2008; Blaikie, 2007)

	Positivism	Relativism	Social constructionism
Strengths	• Provides wide coverage • Easier to provide justifications for policies • Enables generalisations beyond current sample	• Enables generalisation beyond current sample • Accepts value of multiple data sources	• Good for understanding processes, meaning and theory • Flexible, and data collection is less artificial
Weaknesses	• Not suitable for theory generation • Methods could be inflexible and artificial • Requires large samples	• Cannot accommodate organisational or cultural differences • Requires large samples	• Can be very time consuming • May not have credibility with policy makers

5.3 Research design

This thesis explores whether the degree of customisation in food advergames has any impact on children's affective, cognitive and conative responses. In addition, the influence of other variables is investigated, such as children's persuasion knowledge, their age and the role prior brand usage have on their responses. The nature of this research, therefore, requires the measurement and comparison between participants' responses. Thus, an experimental research design has been chosen to test the research's questions and hypotheses. The reasons for this choice are justified in section 5.3.1 which also provides details about the specific type of design this research follows.

5.3.1 Experimental design

An experimental design is one where a treatment manipulation is administered, which should be the only variable that systematically differs between the experimental conditions (Mitchell and Jolley, 2009). Such a design offers the ability to test and compare between different responses to different manipulations. The main advantage of such a design is that

it is the only method capable of inferring a cause and effect relationship between variables by manipulating the causal variable and measuring the effect on the outcome variables (Breakwell, Hammond and Fife-Shaw, 2000; Field, 2009; Field and Hole, 2003). This is achieved by using random assignment of participants to different experimental conditions to ensure that the only difference in responses is the treatment itself (Mitchell and Jolley, 2009).

There are two types of experiments, being field and laboratory experiments. In contrast to field experiments, which are conducted in the environment in which behaviour naturally occurs, laboratory experiments are conducted in artificial setting where the researcher has control over those variables which are manipulated. Field experiments are associated with high external validity, but low internal validity. Conversely, laboratory experiments are associated with high internal validity, and as such are best suited to separate cause and effect, as the researcher is able to exercise a high degree of control (Wells, 1993). As this thesis aims to investigate the responses associated with a certain stimulus, the need to maximise internal validity is paramount, which is why a laboratory was chosen as the setting for this research.

Experiments have been widely used to demonstrate the effectiveness of television advertising (Brucks *et al*., 1988; French *et al*., 2000; Galst and White, 1976; Gorn and Goldberg, 1980; 1982; Robertson and Rossiter, 1974; Robertson *et al*., 2007; Stoneman and Brody, 1982), and more recently, the effects of advergames on children's responses (An and Stern, 2011; Bailey *et al*., 2009; Harris *et al*., 2011; Hernandez and Chapa, 2010; Mallinckrodt and Mizerski, 2007; Van Reijmersdal *et al*., 2010; 2012; Waiguny *et al*., 2012). The majority of these studies follow a similar design, whereby children in an experimental condition are exposed to a promotional stimulus (i.e. the advergame). Afterwards, their subsequent responses are compared to those children who were in a control condition and not exposed to the stimulus.

This research method has a number of limitations. First, experiments have been criticised for their lack of external validity (Breakwell *et al*., 2000). That is, evidence that the results of a study can be applied to real-world conditions (Field, 2009). A second limitation of this method is that it lacks the depth to explain *how* individuals construct their reality. However, this research aims to investigate *what* happens rather than *how*. A third limitation is demand

characteristics, which are conscious or unconscious, verbal or non-verbal hints the researcher provides (Dyer, 1995). Orne (1969) believed that participants are eager to provide the 'right' or 'correct' answer and will follow any such hints from the researcher. This limitation was addressed by standardising all experimental procedures as well as the explanations provided for the purpose of the research as recommended by Mitchell and Jolley (2009). For the experimental protocol, please refer to appendix F. This section explains the type of experimental design adopted in this thesis and discusses the considerations for adopting a between-groups (section 5.3.1.1) post-test 2 x 3 factorial design (section 5.3.1.2).

5.3.1.1 Between-groups design

In choosing the most appropriate experimental design three options were considered, being a between-groups[21], within-groups and a counter-balanced design. In the later type of design participants are allocated to treatments in different sequences. As this thesis does not aim to investigate the *order* or *sequence* of effects, a counter-balanced design was deemed inappropriate. In within-groups (or repeated-measures) design, each participant is exposed to *all* of the experimental conditions (Field and Hole, 2003; Mitchell and Jolley, 2009). This type of design was deemed inappropriate as well because multiple exposures by participants to various measures might help them assess the research's hypotheses. Also, order effects (e.g. practice, fatigue, carryover and sensitization) could pose a serious problem in this research (Orne, 1969). For example, if children get a higher score after they participated in the second or third condition, their improvement might reflect practice effects. Thus, if they like the advergame more since they improved their score, it could be attributable to practice and not necessarily to the customisation effects. Conversely, if children's performance declines due to fatigue effects, they might dislike the advergame because they are getting lower scores as they are getting tired and not because they dislike any particular element in the advergame. This could have carryover effects in the sense that a well-practiced participant may increase their performance in the last treatment due to

[21] This type of design is also referred to as 'between-subjects' and 'independent-measures' design (Field and Hole, 2003; Mitchell and Jolley, 2009).

repeated practice or decrease their performance due to fatigue. All of the above may render the results problematic.

A between-groups design is an experimental method that uses different participants for each of the experimental conditions, whereby each participant is used only once (Dyer, 1995; Field and Hole, 2003). In such designs, participants in the experimental condition(s) are subject to a different manipulation than those in the control condition, and if participants' performance differs, it can be deducted the difference is attributable to the experimental manipulation (Field and Hole, 2003; Mitchell and Jolley, 2009). A limitation of this design is that it requires large numbers of participants, as each participant is allocated to only one condition. Another limitation is that because there are different participants in each group, those participants may have different characteristics or experiences which may influence their performance. In order to overcome this limitation, the technique of randomisation, which is discussed in section 5.8, ensures that the only systematic difference between the conditions is the treatment itself (Breakwell *et al*., 2000; Field and Hole, 2003; Mitchell and Jolley, 2009). Also, in between-group design, the chances of order effects are negligible as each participant engages in only one condition; hence, the chances of participants guessing the research's hypotheses are low. Thus, it was decided to follow the majority of studies that investigated advergames' effects via a between-groups experimental design (e.g. An and Stern, 2011; Harris *et al*., 2011; Mallinckrodt and Mizerski, 2007; Winkler and Buckner, 2006; Van Reijmersdal *et al*., 2010; 2012; Waiguny *et al*., 2012).

5.3.1.2 Post-test 2 x 3 factorial design

A pre-test design has been considered for this thesis as it increases the precision of the treatment effect (i.e. measuring the changes before and after exposure to a stimulus). However, according to Bryman (2004), it also carriers a risk of alerting participants to the research's question(s) and hypotheses, and thus increases biased responses. Measuring children's attitudes to the promoted brand prior to gameplay might have alerted them to the researcher's interest in the brand. For this reason, many advergame effects studies have included only post-test measures (e.g. Dias and Agante, 2011; Folkvord *et al*., 2013; Harris *et al*., 2011; Mallinckrodt and Mizerski, 2007; Pempek and Calvert, 2009; Van Reijmersdal *et al.,* 2012). The aim of this thesis was not to measure attitude change as a result of playing

a food advergame, but rather to explore the impact, if any, customisation levels have on children's responses. This negated the need for a pre-test, and thus a post-test was conducted. Figure 24 below illustrates the post-test factorial design undertaken. There are two control conditions (C and F) and four experimental conditions (A, B, D, and E). The experimental conditions are compared to the control conditions to assess whether they differ on the outcome of the dependent variables.

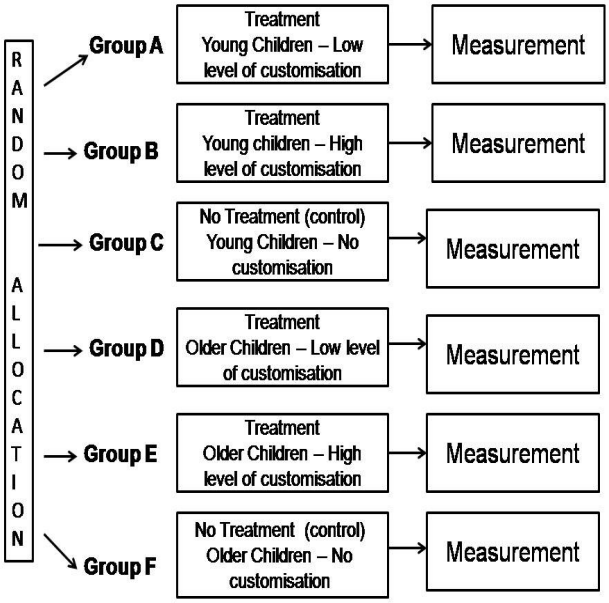


Figure 24: Post-test experimental design (Source: Author, adapted from Field and Hole, 2003)

A factorial design contains at least two factors or independent variables (figure 25). One of the strengths of such design is that it produces a few pairs of simple effects relating to each factor (Mitchell and Jolley, 2009). In this thesis, the first experimental factor (i.e. customisation) has three levels (i.e. no customisation, low and high levels of customisation), while the second factor (i.e. children's age) has two levels (i.e. younger and older children).

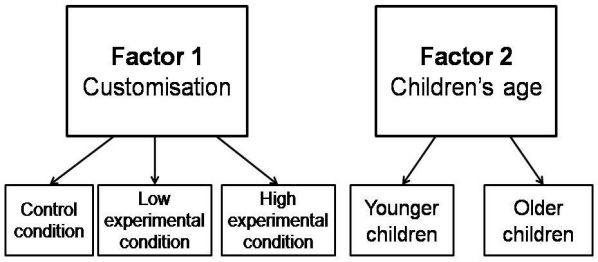


Figure 25: Factorial 2 x 3 design (Source: Author)

5.4 The brand

This section justifies the choice of brand promoted in the advergame. The literature reveals that the majority of empirical studies about food advergames effects use low-nutrient brands to reflect the reality and current practice of food companies (Harris *et al*., 2011; Hernandez and Chapa, 2010; Mallinckrodt and Mizerski, 2007; Van Reijmersdal *et al*., 2012; Waiguny *et al*., 2012). Following this practice, it was decided to use the snack food Jaffa Cake as the brand in the advergame. The reasons for the choice are explored below after introducing the brand.

Figure 26: A Jaffa Cake

United Biscuits (UB)[22] is a leading European manufacturer of branded sweet and savoury snacks and is present in the UK through its sweet biscuit brand, McVitie's. The later, under its sweet biscuit portfolio manufactures its chocolate biscuit bars Penguin, Go Ahead, and its rounded biscuit-type cake – The Jaffa Cake (Mintel, 2013). Although Jaffa Cakes appear

[22] The company United Biscuits was acquired in November 2014 by the Turkish food group, Yildiz Holding (Minotto, 2014).

in market reports in the category of biscuits, cookies and crackers, for Value Added Tax (VAT) purposes, it is categorized as a cake. This thesis does not aim to contribute to the debate whether a Jaffa Cake is a biscuit or a cake, but it should be noted though that in its size, it is more like a biscuit than a cake. Further, it is packaged and marketed as a biscuit and positioned in supermarkets in the biscuit aisles. However, in 1991 a court tribunal ruled that it had sufficient characteristics of a cake (e.g. it has the texture of a sponge cake), for the purposes of VAT zero rating (HM Revenue and Customs, 2014).

Jaffa Cake was chosen as the brand in this research for the following reasons. First, it is a well-recognised brand with which children are familiar as it is primarily consumed in the UK and Ireland with 3% of market share, as is illustrated in figure 27. Second, Jaffa cake's market share, amongst UK's top selling leading biscuit brands, is somewhere in the middle generating £58 million in sales for 2012 as is seen in table 28 For comparison, Chocolate Digestives generated £101 million and McVitie's Penguins - £32 million. By ensuring that Jaffa Cakes are positioned in the middle in terms of sales, any ceiling or flooring effects of the brand being overly familiar or not familiar enough with the sample, are aimed to be avoided.

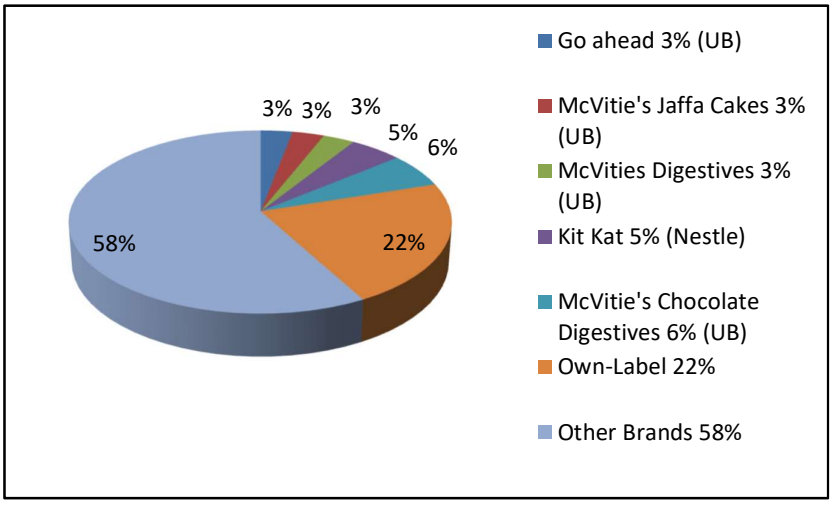


Figure 27: UK retail sales of sweet biscuit brands, 2012 (Source: Mintel, 2013)

Table 28: UK sales of sweet biscuits, by volume and market share (Source: Mintel, 2013)

	2011		2012		2011		2012	
	£m	%	£m	%	m kg	%	m kg	%
McVitie's Chocolate Digestive (UBUK)	103	6	101	6	30	7	31	7
KitKat (Nestlé)	95	6	93	5	15	3	14	3
McVitie's Digestive (UBUK)	54	3	60	3	24	5	23	5
McVitie's Jaffa Cakes (UBUK)	59	3	58	3	13	3	12	3
Go Ahead! (UBUK)	52	3	52	3	8	2	8	2
Cadbury's Fingers (BBC^)	46	3	45	3	6	1	5	1
McVitie's HobNobs (UBUK)	48	3	44	3	12	3	11	3
Maryland Cookies (BBC^)	39	2	43	2	9	2	9	2
Fox's Rocky (2 Sisters)	31	2	34	2	6	1	7	2
McVitie's Penguin (UBUK)	32	2	32	2	7	2	7	2
Other	796	46	797	46	153	35	146	34
Own label	368	21	379	22	156	36	156	
Total	**1,723**	**100**	**1,739**	**100**	**437**	**100**	**429**	

5.5 Advergame development

5.5.1 Introduction

In recent years, a growing number of researchers explored specific features of advergames. To do so, the services of professional game developers were obtained to design unique advergames in order to have control of different variables, such as game involvement (Van Reijmersdal *et al.*, 2012), brand prominence (Cauberghe and De Pelsmacker, 2010; Van Reijmersdal *et al*., 2012), brand integration (Winkler and Buckner (2006), interactivity (Lee *et al*., 2014) and healthy versus unhealthy foods (Folkvord *et al*., 2013). Following their examples, a new advergame was developed for the purpose of this thesis. In designing the advergame, the main aim was to create a high quality advergame that children will enjoy playing. In order to achieve that, the literature was consulted to find which features increase liking for the game. It was found that game involvement leads to strong affective responses (i.e. positive attitudes toward the advergame and the brand) (Van Reijmersdal *et al*., 2012); while an interactive brand placement has an impact on affective and conative responses (Van Reijmersdal *et al*., 2010). Those who were optimally challenged reported highest brand attitudes (Waiguny *et al*., 2012). Indeed, one of the most challenging tasks of this thesis was to design and develop a high quality advergame that children from two different age groups will like. Game design principles were used to develop and design an advergame with the above attributes which is *involving* and *engaging*, has an *interactive brand placement* and is *challenging* to both age groups. Customisation in the advergame was guided by the literature and followed existing methods to customise (Moore, 2006) (appendix A).

This section discusses game genres (section 5.5.2) and game design elements which were followed to develop the advergame (section 5.5.3). The manipulations for the research are presented (section 5.5.4). Then two other memory card advergames are contrasted between them and the one developed for this thesis (section 5.5.5).

5.5.2 Game genres

> "*A game is a system in which players engage in artificial conflict, defined by rules, that result in a quantifiable outcome.*"
>
> (Salen and Zimmerman, 2004, p.55).

There are many genres in video games, such as adventure, board games, card games, combat/fighting games, obstacle course games, puzzle games, racing games, shooting (including first-person shooter) games, simulation (SIM), sport and strategy games (Wolf, 2001). In deciding which game genre to adopt for the advergame, a number of factors were considered. First, previous examples of existing food advergames were researched, examples of which are in appendix B. It was found that most advergames were developed as simple 2D rather than 3D games. Second, it was not deemed appropriate or ethical to use fighting or shooter games genres. Third, the time allocated from schools for the experimental sessions largely dictated the time duration that each child could play. It was deemed necessary that children will complete at least 3-5 sessions of game play before responding to the questionnaire. Thus, simulation and strategy games were not suitable due to time constrains as those game genres require considerable amount of time to complete each session. Fourth, adventure and course obstacle genres were eliminated since they required more time and design expertise than was available for this research.

Finally, it was decided to develop an advergame from a genre which both genders play, rather than that one which appeals to a certain gender more than another (e.g. racing cars games). At the end, after a few options of game genre have been considered and eliminated, the choice was between board, card and puzzle games. A memory card game was chosen due to the short time it takes to complete each session, the relative ease of design compared to other game genres, and the fact that from discussing various options with teachers, it seems that schools already use card memory games or 'matching pairs' for educational purposes.

5.5.3 Game elements

According to Schell (2008), a game consists of four equally important elements being mechanics, story, aesthetics and technology. Figure 28 shows the visibility gradient in a game, meaning that even through all four elements are equally important, some elements tend to be less visible than others. For example, the technological elements tend to be less visible to the players, hence located in the most shaded area; aesthetics, on the other hand, are the most visible while the story and mechanics are in the middle.

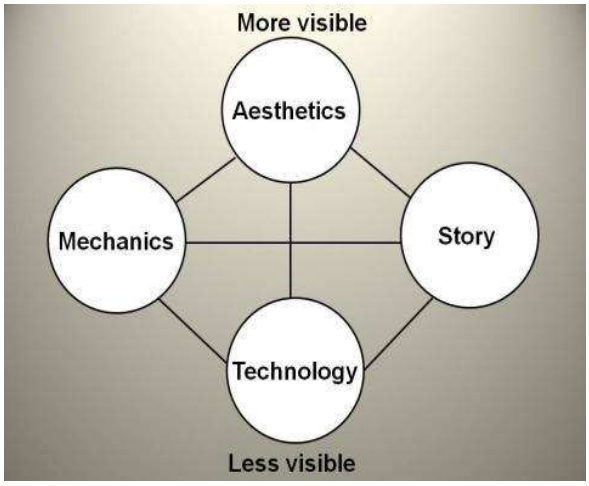


Figure 28: The elements of game design (Source: Schell, 2008, p.42)

In developing the advergame, I was responsible for the mechanics of the game (i.e. procedures and rules); story line (i.e. sequence of events in the game); and aesthetics (i.e. look and feel of the game, including branding). A professional software developer was responsible for programming and coding, covering issues such as system and software requirements. Throughout the development process, a number of consultations were conducted with professional game developers as well as pre-testing sessions with a panel of children who agreed to act as testers. Each of the game elements will now be discussed in turn as well as the reasoning behind the different decisions made. Thus, the next few sections discuss the elements of game mechanics (section 5.5.3.1), story line (section 5.5.3.2), aesthetics (section 5.5.3.3) and technology (section 5.5.3.4).

5.5.3.1 Game mechanics

A computer game contains various mechanics, and the more complex the game, the more mechanics it has (Schell, 2008). For the purpose of the card memory game, four mechanics of game space were used, being actions, skills, game space and rewards and those are explored below.

Actions

The actions in a game are both *operative* (i.e. the basic actions a player can make) and *resultant* (i.e. how a player uses operational actions to achieve a goal). In the card memory game, players can perform the following actions:

(1) Clicking on two cards to find a matching pair (resultant action)
(2) Choice of game space/ character/ back of cards/ cursor (operational action)

When children have matched correctly a pair of cards, those cards disappear from the screen and a counter at the top right of the screen lets them know how many matches they have made.

Skill

There is evidence to support the proposition that if a game challenges children at their optimal level, it impacts positively their attitudes towards the brand promoted in the game (Waiguny *et al*., 2012). Therefore, care was taken to exercise players' mental memory skills to the optimum. This had an impact on the number of cards children had to match, as too many cards (e.g. 24) may prove too challenging for the younger age group; whilst fewer cards to match (e.g. 12) may prove to be under-challenging for the older age group. Therefore, it was decided, after consultation with primary and secondary school teachers, to have the number of cards balanced in proportion to children's cognitive ability, and a number of 18 cards to match was developed.

Space

The space in a game is a mathematical construct and can be either continuous or discrete (Schell, 2008). In the card memory game the space is discrete, as there are only 18 places that have any actual meaning.

Rewards

Initially, the advergame was designed as a visual experience. However, upon consultations with game developers I have acted upon the advice provided that audio can be an incredibly powerful tool. Thus, a sound effect was implemented as a form of reward in the advergame. According to Tinson (2009), children like to get encouraged and receive rewards, and this advergame follows Nintendo games that are famous for providing players with praise via sounds and animations for every correct action they make (Schell, 2008). Thus, whenever a player matches correctly a pair of cards there is a sound effect relating to the player's chosen theme, except for the control condition which did not have any themes. This condition had a discrete sound when the cards were clicked, but not an additional sound as a reward. Thus, in the Cars theme, a correct match resulted in a revving sound of a car; in the Underwater World theme, a correct match resulted in the sound of water; while in the Winter theme, the rewarding sound was breaking icicles.

5.5.3.2 Story line

Players had to use the mouse to select (i.e. click) on two cards. If the images on those cards matched, the cards disappeared from the screen and the player was awarded with a sound. In order to win the game, the player has to correctly match all nine pairs of cards. Players were provided with clear instructions on the first screen about how to play the game, and those were repeated verbally for each group before participants started to play.

5.5.3.3 Aesthetics

Aesthetics are one of the more visible elements in game design, and according to Schell (2008), it also constitutes of what makes a game enjoyable. Hence, much consideration was given to the appearance (e.g. colours) of the background space. As advergames' purpose is to promote a brand, the background for the control condition is the same shade of blue as the Jaffa Cake packaging. For the experimental conditions, the space background was subject to participants' choice. In addition, when a theme character was chosen from the selection screen, it was highlighted in an orange square or rectangular (depending on the selection screen). The orange colour matched that of the Jaffa Cake logo.

Front of cards

The front of cards consists of Jaffa Cake images that were programmed to rotate randomly after each gaming session has been completed. Those images were obtained in a number of ways. Some were photographed at home; while others were obtained from Google Images. However, as Google is not a content depository of copyright-free images, steps were taken before those images were used. Searches were made to determine that photos used had a Creative Commons license attached to them, which permits usage of the photos, whilst other images were purchased. Appendix H contains the images which were used for the front of the cards.

Back of cards

The control and low experimental conditions had images of Jaffa Cakes as the back of the cards without the option to change it. The high experimental condition, in the pilot phase, had an option to choose between certain objects related to the game space. For example, in the Cars theme participants could choose different tyres as the back of cards. Those options, however, were revised prior to conducting the data collection for the main study. Further details regarding the revisions which were derived from the pilot's insights are discussed in section 6.3.

5.3.3.4 Technology

Two main decisions were made regarding platform and software considerations. First, it had to be decided whether the advergame should be built as a stand-alone programme or as browser-based. It was decided to develop it as a browser-based game, since it is unlikely that schools will allow software installations on their machines for research purposes. The second decision involved software considerations; that is, whether the game will be built in Flash or HTML-based programme. Indeed, the two most important platforms for advergame design are Adobe Flash and JavaScript. Flash-based advergames ran within the players' internet browser and require the presence of a Flash player plug-in. Thus, since Flash will have to be installed, as many schools do not have this application on their machines, it was decided to use the software language of HTML5, CSS and JavaScript. HTML is the scripting language for adding dynamic, interactive, and animated elements to browser-based games and web pages. JavaScript is supported by all

major browsers and as such does not require a separate plug-in. Thus, the game was designed as a Dynamic HTML game (DHTML), which combines the use of a standard mark-up language (i.e. HTML), a client side scripting language (i.e. JavaScript), and a presentation definition language (i.e. CSS).

5.5.4 Manipulations: customisation options

The levels of customisation were designed to make the experiment more sensitive to maximize tracking the effect. Mitchell and Jolley (2009, p. 297) recommend that in order to make "*the effect louder (bigger) and thus easier to hear (detect)*", the experimental and control groups should be given widely different levels of treatment. Customisation was achieved by using themes. One of the challenges in designing an advergame, was to design one that children from different genders, ages and cognitive development stages, will like. To overcome that challenge, I initialy designed an advergame that revolves around a theme that children from both age groups are familiar with and enjoy - Disney. The section below describes the three experimental conditions being the control (section 5.5.4.1), low experimental (section 5.5.4.2) and high experimental conditions (5.5.4.3) in the advergame. After the pilot was conducted, data analysed and conclusions made. After consultation with the expert advisory panel, the advergame was re-designed (see section 6.3) which discusses the revisions undertaken). The present section describes the customisation options for the first prototype which was used in the pilot. Studies on persuasion reveal that when individuals are in a situation which involves high personal relevance, they will exhibit stronger emotional reactions (Darley and Lim, 1992). Thus, part of the design considerations were to propose customisation options that might be personally relevant to the player.

5.5.4.1 Control condition

The advergame commences with brief instructions explaining how to play the game (figure 29). Once participants click on 'play now', they land on the actual game which contain 18 rounded-shaped cards (figure 30).

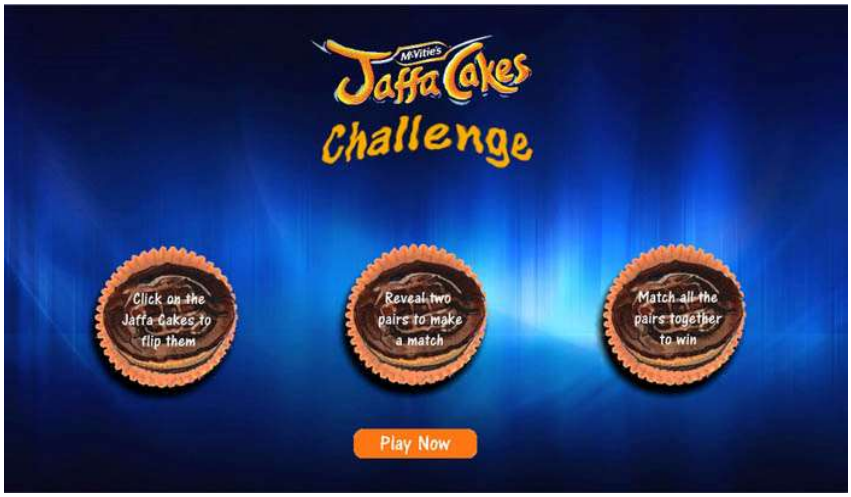


Figure 29: First landing, instruction screen

Figure 30: Advergame in progress, control condition (repeated)

5.5.4.2 Low-level experimental condition

Participants were able to make two customisation options, being a choice of a background to customise the advergame space and a character.

Background for the game space

Participants had three options to choose from, being a gaming space with the theme of 'Cars', 'Underwater world' and 'Winter wonderland', as is seen in the selection screen below (figure 31).

Figure 31: Background options selection screen

Characters

In deciding upon the choice of characters, the challenge was that they will appeal to children from both age groups, given that children from those groups belong to different cognitive and developmental stages, and play different game genres. After much consideration and consultation with game developers, it was decided to implement characters from Disney movies, as those are well known iconic characters that appeal to adults and children alike. Each character option relates to a unique game space, thus the advergame was programmed in a way that the player could only choose characters relevant to the game space theme. This was done to avoid a situation where a player could choose a Nemo character for a game space of Cars, for example.

Participants could choose a character from a pool of three, including a choice between a male, female and a third character. The aim was that the characters will appeal to both genders. For example, in the Frozen game space, the choice of characters is between Elsa, the snow queen, Kristof, the iceman; and Olaff, the snowman. In Nemo's theme the characters were Nemo, Dory and Crush; while in the 'Cars' theme those were Lighting McQueen, Chick Hicks and Sally Carnera. Figure 24 displays the character selection screens for each theme.

Figure 32: Character selection screen, pilot

5.5.4.3 High-level experimental condition

Participants could make two more choices in addition to the previous condition, thus in total they could choose:

- A background to customise the game space from a pool of three
- A character relating to the background they chose from a pool of three
- An option to customise the back of cards from a pool of three
- A choice of cursor from a pool of two

Back of cards

The options for the back of cards were also designed having thematic-relevant considerations. The Frozen theme included choices between snow balls, icicles and a Jaffa Cake. Options for Nemo were star fish, shells and a Jaffa Cake. Finally, in the 'Cars' theme participants could choose between two types of wheels and a Jaffa Cake. Figure 33 illustrates the back of cards options for Frozen (i.e. snow balls and icicles) and Nemo themes (i.e. shells and star fish).

Figure 33: High experimental condition, back of cards, pilot

Choice of cursor

Initially, it was planned to create different Jaffa Cakes as cursors, but due to design limitations, pre-existing cursors were adopted (figure 34).

Figure 34: Cursor selection screen, pilot

5.5.5 Contrasting between 'Jaffa Cake Challenge' and other memory card advergames

In this section, Jaffa Cake Challenge, the advergame developed for this thesis, is compared to other memory card advergames being Kellogg's Pop Tarts 'Sprinkle Shuffle' advergame, and the one designed by Folkvord *et al.* (2013), which explored food consumption as a result of playing an advergame promoting either healthy or nutrient-poor food.

Those advergames are contrasted in terms of mechanics and so forth. For example, in most online card memory games the cards are in a rectangular shape. Jaffa Cake Challenge differs in that the cards are in a shape of a Jaffa Cake, so when players click on the cards, they are playing with the actual brand. There are no personalisation or customisation options in either of Kellogg's or Folkvord *et al.*'s (2013) advergames. In contrast, Jaffa Cake Challenge provides different options for customisation, depending on the control or experimental conditions. With regard to awards, in Folkvord *et al.*'s (2013) advergame, an unpleasant sound was played when children made an incorrect choice. However, when children matched a correct pair, they were rewarded by a pleasant

sound. Kellogg's advergame rewards children as well via a pleasant sound when a correct match is made. In addition, the Pop Tarts packaging on the left of the screen rotates. Finally, whilst both Folkvord *et al*. (2013) and Kellogg's had 16 cards, Jaffa Cake Challenge has 18 cards. This decision was made following consultations with school teachers. The aim was to match the challenge levels of both the younger (i.e. 5-7 year olds) and older (i.e. 11-12 year old) children, as positive attitudes towards the advergame are related to being optically challenged during gameplay (Wise *et al*., 2008).

Figure 35: Contrasting Jaffa Cake Challenge with other memory cards advergames (Source: Author, Kellogg's Sprinkle Shuffle advergame and Folkvord *et al*,. 2013)

Table 29 summarises the differences between 'Jaffa Cake Challenge' and the two other advergames.

	Kellogg's advergame	Folkvord *et al.*'s (2013) advergame	Jaffa Cake Challenge
Shape of cards	Rectangular	Square	Unique shape: in the shape of the brand
Customisation options	None	None	Two or four options, depending on the condition
Rewards	Sound effects & character rotation	Sound effects (positive or negative)	Sound effects relating to specific customisation options (i.e. theme-driven)

Table 29: Contrasting Jaffa Cake Challenge to other memory card advergames (Source: Author, Kellogg's and Folkvord *et al.*, 2013)

5.6 The instrument

This section provides details about the instrument used to collect data in this thesis. It includes details about design and layout of the instrument (section 5.6.1), the order of items (section 5.6.2), followed by a discussion about measurement scales of the hypothesised relationships of the key constructs (i.e. advergame attitude, brand attitude, brand preferences, intention to request purchase and persuasion knowledge) (section 5.6.3) and an explanation of the measurements for each construct (5.6.4).

5.6.1 Design and layout

The design, layout and presentation of a questionnaire is particularly important to self-administered questionnaires (Wilson, 2003). Hence, special attention was given when designing it. The instrument comprises of three pages and is identical in all age groups. All questions were presented with instructions and those were clearly differentiated from the questions. It was decided to use smiley faces as they are engaging and regularly used in research with children (Bakir and Palan, 2010; Moore and Lutz, 2000). Following

Tinson's (2009) recommendations, the length of questions is concise due to children's short attention span. All questions were pre-tested prior to the pilot by a group of children as well as a school teacher for comprehension, and the doctoral panel. The questionnaire was printed in colour and copies for the pilot and main study are in appendix E.

5.6.2 The order of items

Special consideration was given to the *order* of items in the questionnaire, as the sequence of questions can influence the results (Schwartz and Oyserman, 2001). It was decided to position the items in the same order as was done in other similar studies (e.g. Van Reijmersdal *et al*., 2010; 2012). Accordingly, the questionnaire commences with general questions about background characteristics (i.e. age, gender, digital and card memory gaming experience). Then, there are questions about brand preferences, followed by questions about persuasion knowledge, advergame and brand attitudes. In the last section of the questionnaire, respondents were asked to indicate their prior experience with or usage of the brand, and finally - to express their intention to request their parents to purchase the brand for them.

5.7 Measurement and coding of constructs

This section discusses the measurement scales (section 5.7.1) and the items that were used to measure the different constructs in this research (section 5.7.2).

5.7.1 Measurement scales

The type of measure usually employed to measure attitudes are semantic differential scales (i.e. bipolar adjective scales) and Likert-type scales. Bornstein (1989), who conducted a meta-analysis about exposure-effect relationships (N = 208) concludes that the exposure-attitude relationship is robust and reliable, and in fact the effect is even stronger following a longer period of delay between exposure to an advertising stimulus and an attitudinal measure. He has also found that stimulus recognition is not necessarily for the exposure effect to occur. In fact, when a stimulus was presented subliminally, it resulted in "*attitudinal enhancement*" than when consumers recognised the stimulus (Bornstein, 1989, p.278).

Much consideration was given to the instrument's scales. It was decided to use Likert-type scales for several reasons. First, apart from being the most used scales in marketing research (Wilson, 2003), it is a balanced scale with an equal number of positive and negative points, and therefore avoids the "*chance of respondents simply agreeing with all statements*" (Mitchell and Jolley, 2009; Wilson, 2003, p.161). Second, Likert-type scales provide more information than nominal-dichotomous items (i.e. fixed alternative questions that allow respondents to only agree or disagree). Third, because Likert-type items yield interval data, the responses can be analysed by more powerful statistical tests than nominal-dichotomous items (Mitchell and Jolley, 2009). Finally, according to Mitchell and Jolley (2009), the more options are provided as answers, the greater ability a researcher has to detect subtle differences between participants' answers. Accordingly, in a 1-7 scale instrument, more differences could be found than in a 1-4 scale. However, the authors point that participants may be overwhelmed if presented with too many options, let alone children. Following their recommendation, the questionnaire was pre-tested before using it in the pilot, and then tested for reliability and was found to be highly reliable.

The literature revealed an inconsistency regarding the scale used by researchers measuring children's attitudes. Pecheux and Derbaix's (1999) study is a seminal and well-validated work on children's brand attitude scales. The authors devised a 7-item instrument on a 4-point Likert scales. Van Reijmersdal *et al*. (2012) have used the same 4-point scales to measure brand attitudes but adapted the items to two. Waiguny *et al.* (2012) had the same 7-items, as devised by Pecheux and Derbaix (1999), but the former authors used a 6-point scale on a non-verbal indication technique. Bakir and Palan (2010) had 4 items on a 5-point scale and Van Reijmersdal *et al*. (2010) had 13 items on a 7-point scale. Those brand measurement scales are summarised in table 30 below.

Table 30: Measurement scales in studies with children (Source: Author)

Study	Game attitude	Brand attitude
Van Reijmersdal *et al.* (2012)	5 items on a 4-point scale	2 items on a 4-point scale
Waiguny *et al.* (2012)	N/A	7 items on a 6-point scale
Bakir and Palan (2010)	N/A	4 items on a 5-point scale
Van Reijmersdal *et al.* (2010)	Grading a game on a 1-10 scale	13 items on a 7-point scale
Pecheux and Derbaix (1999)	N/A	7 items on a 4- point scale

In devising the items for advergame and brand measurement, the challenge was to capture children's attitudes precisely. Pre-testing the game found that children expressed enthusiasm and liking for all three conditions. My concern was that a scale of 4 ranging from "*No, not at all*", to "*Yes, very much*", is not sensitive enough to detect power between three groups. It was decided, therefore, to use a 7-point scale ranging from "*No, not at all*", "*No*", "*A little*", "*Not sure*", "*Maybe, yes*", "*Yes*", and "*Yes, very much*".

5.7.2 Measurement and coding of constructs

Children's age

This variable was coded initially as a continuous variable, but was re-coded to create two groups of younger and older children.

Measurement and coding of advergame attitude

The items used to measure attitude towards the advergame are all adopted from Van Reijmersdal *et al.* (2012) and are presented below in table 31.

Table 31: Items measuring attitudes towards the game (Source: Van Reijmersdal *et al.*, 2012)

No.	Items
Item 1	Do you like this memory card game?
Item 2	Do you think this game is fun?
Item 3	Do you think this game is boring?
Item 4	Do you think this game is great?
Item 5	Do you think this game is stupid?

Items 3 and 5 were reverse-coded and afterwards all five items were summed into a single item using the 'Transform-Compute Variable' in SPSS. It should be noted that before doing so, items' internal consistency was ascertained via Cronbach alpha (α) (further details are in section 7.2.4).

Measurement and coding of brand attitude

Items about brand attitudes (table 32) are based on Pecheux and Derbaix's (1999) original 7-item measurement scale (appendix C), which covers attributable and affective aspects of brand attitude. The original seven items were reduced to four and are presented in table 32. The reason for the reduction was due to the fact that in the pre-testing stage children did not understand how questions such as "*do you think that [brand name] is practical/ handy*" and "*do you think that [brand name] is useful"* (from the original authors' instrument) could be related to a food item. The third item which was omitted relates to liking [the brand] "*very much*", as a question about liking already appears (item 1).

Table 32: Items measuring attitudes towards the brand (Source: Author, adapted from Pecheux and Derbaix, 1999)

No	Items
Item 1	Do you like Jaffa Cakes?
Item 2	Do you think Jaffa Cakes are fun?
Item 3	Do you think Jaffa Cakes are great?
Item 4	Do you think Jaffa Cakes taste great?

There was no need to reverse-code any items regarding brand attitudes, thus, all four items were summed into one measure of brand attitude, and those too were found to be highly reliable.

Measurement of persuasion knowledge

Two aspects of persuasion knowledge were measured, being understanding of commercial intent and understanding of the advergame's source. Both were adapted from Van Reijmersdal *et al.* (2012) with small modifications, by adopting the answers to a British context. The items are presented in table 33. Those items were used in the pilot, but afterwards were modified for inclusion in the main study (see section 6.3.1).

Table 33: Items measuring persuasion knowledge, pilot (Source: Author, adapted from Van Reijmersdal *et al.* 2012)

Understanding of intent	
Question	**Possible answers**
Why do you think this game is online?	1. To show what you can buy in a supermarket 2. Because children like playing with it 3. To make children like Jaffa Cakes 4. Because the queen likes it

Understanding of source	
Question	**Possible answers**
Who created this game?	1. Tesco 2. Jaffa Cake company 3. Sainsbury's 4. A gaming website

Two aspects of persuasive knowledge were measured being, understanding of persuasive intent and understanding of advergame's source. The correct answer for understanding persuasive intent (no. 3) was coded as '1', while all other answers were coded as '0'. Similarly, the correct answer for understanding the advergame's source (no. 2) was coded as '1' while all other answers were coded as '0'.

Measurement and coding of brand preferences

Brand preferences were measured by asking children to tick a box indicating their preferences between alternate images of chocolate biscuits, being Cadbury Fingers, Jaffa Cake, Penguins and Hobnobs. Those brands were selected because they are within the top selling sweet biscuit brands in the UK with which children are familiar. This method was also used in other studies with young children (e.g. Mallinckrodt and Mizerski, 2007), where children circled their preferred image. A number of issues were considered when devising a measure for brand preferences. First, care was taken that Jaffa Cakes will not appear as the first option in order to avoid a situation where respondents automatically tick the first box. Second, respondents were offered a choice of another rounded biscuit (i.e. Hobnobs) so that there was a balance between rounded-shape and rectangular shaped biscuits. There were two rounded biscuits (i.e. Jaffa Cakes and Hobnobs) and two rectangular ones (i.e. Penguins and Cadbury's Fingers). Finally, images of all the brands as well as the font in the captions were exactly the same size so that no particular brand stood out. Figure 36 shows a screen shot of brand preferences selection from the questionnaire.

Figure 36: Items about brand preferences

This variable was initially created as a nominal variable, in order to capture children's preferences between brands. It has been subsequently re-coded to capture children's preferences specifically for the promoted brand. Thus, children's preferences for the promoted brand are coded as '1', while their preferences for other brands are coded as '0'.

Measurement of intention to request purchase

The measurement of intention to request purchase of the brand was adopted from Mallinckrodt and Mizerski (2007) and is measured with the question "*do you intend to ask your parents to buy Jaffa Cakes?*" on a 7-point scale as for the attitude items offering the same responses, options ranging from '*no, not at all*' to '*yes, absolutely*',

Measurement and coding of children's prior usage of the brand

The measurement of prior brand usage was with the question 'how often do you eat Jaffa Cakes'? with the response options of "*never*"; "*once a week*", "*2-3 times per week*", and "*nearly every day*". With regard to coding, two variables were created. The first measured children's brand usage while the second captured those who used the brand prior to the experiment and those who have never consumed the brand before. Thus, answers in response to the frequency of brand usage ranging from 'once a week' to '2-3 times a week' were coded as '1' while answers of 'never' were coded as '0'.

5.8 Validity considerations

This thesis investigates the causal relationship between different levels of customisation in an advergame and children's responses. In causality studies, validity is a key concept of major importance as it provides assurances that the findings will provide meaningful answers to the research's question (Clark-Carter, 2004). Validity refers to the degree to which what is being measured is what the researcher(s) intended (Clark-Carter, 2004), and whether it will provide adequate answers to the research's questions (Breakwell *et al*., 2000; Field, 2009). There are two main types of validity, being internal and external validity (Mitchell and Jolley, 2009), and those are addressed below.

Internal validity

This type of validity refers to the ability to successfully demonstrate a cause-effect relationship between the independent and dependent variables. That is, that changes in the dependent or outcome variable are caused by changes in the independent variable (Clark-Carter, 2004). Mitchell and Jolley (2009) caution that some factors, apart from the manipulation itself, can cause variation in the dependent variable. Thus, the outcome could be confounded by other variables that affect performance on the dependent variable. For example, if participants in the experimental and control conditions differed in terms of socio-demographic attributes or possess particular experience relevant to the research's measures, it cannot be inferred conclusively that the treatment itself caused the change between the conditions. Those issues were addressed by implementing standardisation and randomisation procedures.

The notion of standardisation means that variables are the same in each and every condition, and preferably across all conditions (Dyer, 1995). Standardisation was achieved in this research by ensuring that the environmental conditions under which the experimental sessions were carried out were the same in each and across conditions. In this research, all experimental sessions were conducted during the mornings, so that children were not too tired as they might have been by the end of the day. In addition, all experimental procedures were identical. For example, the instructions about game play and explanation about the purpose of the research were identical across all conditions as well as the time children were given to play.

Dyer (1995) defines randomisation as the process of distributing the probable effects at random. Breakwell *et al.* (2000) adds that it is a technique which aims to ensure that as few differences as possible exist between participants by providing them with an equal chance to be allocated either to the control or experimental conditions. Allocating participants at random order to experimental conditions improves internal validity, and since internal validity was deemed paramount to this research, much care was taken to effectively randomise participants. It was ensured that each participant, within each age group, was given an equal chance to be in any of the three game conditions. Random assignment to the research's six conditions was achieved by following the process as recommended by Mitchell and Jolley (2009, p.367), and using random numbers tables.

External validity

Ecological or external validity answers the question whether results can be generalisable to other participants and other contexts. If an experiment has been conducted in a lab, generalisability to other settings may be in question (Mitchell and Jolley, 2009), as it does not reflect the reality of when participants engage in the phenomenon in their daily lives. As all experimental sessions in this research were conducted in ICT classrooms, results may potentially differ had children played the advergame in their free time in their homes. The controlled environment in which the research was conducted decreases the research's external validity.

It was aimed to increase the external validity by studying a wide group of participants from a range of socio-economic backgrounds. Although those were not measured, participants were recruited from both public and state schools from villages, town and suburban areas. By doing so, it was hoped to have participants who are raised by parents from a variety of socio-economic backgrounds, so that this research will have a representative sample from a diverse population.

5.9 Sampling considerations

The population of interest for this thesis was defined as younger children. The purpose of investigating two different age groups is to address a gap in the literature, as noted by Livingstone and Helsper (2006). There were no particular characteristics required from the sample in order to participate in the experiment, apart from belonging to a certain age group. Participants were not required to have any gaming habits, level of skills or belong to a particular gender. Those characteristics were tested to assess whether they influence on children's responses. It was aimed that each group will be as diverse as possible, and as such the technique of randomisation was used to ensure that as few differences as possible existed between the groups (Breakwell *et al*., 2000; Dyer, 1995). Sampling considerations in this research include the usage of a non-probability sample (section 5.9.1) and sample size (section 5.9.2).

5.9.1 Non-probability sampling

According to Saunders *et al.* (2012), the main sampling techniques are probability, which is also referred to as representative sampling, and non-probability sampling. Probability sampling utilises an objective sampling procedure which provides every participant with an equal chance to be selected. This technique is beneficial to use as the results are generalisable and representative of the population of interest. Non-probability sampling, on the other hand, deploys a subjective procedure for participants' selection. It is less generalisable as it involves subjective judgement when selecting participants (Saunders *et al.,* 2012). Due to time and resources constraints as well as challenges involving the recruitment of young participants to this research, a non-probability sampling procedure was followed, which includes convenience and quota sampling.

Access to participants was made via their schools. The process was challenging and time-consuming and therefore a convenience sampling was used. Schools were approached following recommendations and introductions by existing and past parents in Northamptonshire, Buckinghamshire and Bedfordshire areas. The quota technique has been used as well. The recruitment of participants to the older age group (i.e. 11-12 year olds) has been smooth and rendered a satisfactory response rate. In contrast, the response rate from the younger age group (i.e. 5-7 year olds) has been considerably lower and thus,

this group took a longer time to recruit. In order to adhere to the thesis' timelines, more efforts were focused to recruit participants to the younger age group with the aim to comply with a certain quota for each cell.

5.9.2 Sample size

According to Sekaran (2003) and Hair *et al.* (2006), the sample size should be ten times larger than the number of variables when a multivariate analysis is deployed. This research has eight variables (i.e. two independent variables, four dependent variables and two covariates). Bryman (2004) notes that resource constrains are also a consideration in determining a sample size. This research had eight participants for pre-testing sessions, and 38 participants who took part in the pilot study. It should be noted that the data obtained in the pilot was not used in the main study. 144 children participated in the full study (i.e. control condition, N = 48; low experimental condition, N = 50; and high experimental condition, N = 46). However, as it is a factorial 2 x 3 experiment, there were six cells and table 34 presents the number of participants in each cell.

Table 34: Sample size, full study

Type of condition	Young children	Older children	Total
Control condition	N = 19	N = 29	N = 48
Low experimental condition	N = 19	N = 31	N = 50
High experimental condition	N = 18	N = 28	N = 46
Total	**N = 56**	**N = 88**	**N = 144**

Considering the limited resources and challenges faced in recruiting children for this research as well as the guidelines offered by Sekaran (2003) and Hair *et al.* (2006), the sample size per cell was deemed appropriate for this research.

5.10 Ethical considerations

Prior to conducting the study ethical approval was obtained from Cranfield's School of Management (SoM) Ethics Committee, as well as institutional approval, parental informed consent, and children's assent (appendix D). Prior to conducting the pilot, a certificate was obtained from the Disclosure and Barring Service (DBS). A copy of the certificate is in appendix D. It was explained to all stakeholders that children will be playing an online game, that their participation is entirely voluntary and that they can stop their participation at any time they wish. Ethical issues are relevant to this study, and the main issues considered below are informed consent and assent, confidentiality, anonymity, deception and de-briefing.

Informed consent and assent

One of the cornerstones of ethical research is informed consent and assent. Morrow and Richards (1996) note that there is a strong distinction between consent and assent. 'Consent' means that a competent participant "*voluntarily agrees to participate in a research project based on a full disclosure of pertinent information*" (Tymchuk, 1992, p.128); while 'assent' is where a parent or a guardian agrees for their child to participate in a research project, and the child affirmatively agrees as well (Tymchuk, 1992). In this research, following good practice as advocated by many social (McGrath, 2007) and medical researchers (BMA, 2001; Nicholson, 1986), both informed consent of relevant adults and the assent of children were obtained. For that purpose, in addition to consent forms prepared for and signed by adults, information sheets and consent forms, geared to children's reading ability, were signed by them as well (appendix D).

Confidentiality and anonymity

The confidentiality and anonymity of participating schools and all children was preserved. As the method for this research is an experiment, there was no need to use participants' names. The data was coded as 'Group 1, Participant no. 26, Female, Age7'.

Deception

In order to avoid demand artefacts parents and children were informed that it is a research about online games to conceal the research's hypotheses, as recommended by Orne

(1969). Hence, deception occurred not by intentionally providing false information, but by withholding partial information. Many psychological studies exist where informing participants about the hypotheses of the research is likely to provide a reaction that would interfere with the study's measurements. The Social Research Association (SRA) states that "*it would be unrealistic to outlaw deception in social enquiry as it would be to outlaw social interaction*" (2002, p.18). The school's stakeholders, such as headmasters and teachers, were informed about the research's true hypotheses.

De-briefing

Children were thanked at the end of each session and de-briefed. All stakeholders were provided with contact details for both the researcher and supervisor, in case they were interested to obtain further details.

5.11 Summary and conclusions

This chapter identifies the philosophical positioning for this research. It follows a positivist research paradigm as it best explains causality which this thesis investigates in a novel context. Accordingly, and following Blaikie's (2007) terminology, shallow realism was adopted as an ontology, empiricism as an epistemology, a deductive research strategy and a quantitative methodology. An experimental research design was chosen as it was considered best suited to answer the research's questions. More specifically, it is a post-test 2 x 3 factorial design with two independent variables (i.e. level of customisation and children's age), four dependent variables (i.e. attitude towards the advergame, and the promoted brand, brand preferences and intention to request purchase of the brand), and two covariates (i.e. brand usage and persuasion knowledge). In addition, justification was provided for the choice of brand in the advergame, Jaffa Cakes, as well as for the brands among which children were asked about their preferences. Finally, this chapter also explores the process involved in developing the data collection tools, being the stimulus for this thesis (i.e. the advergame) and the instrument.

With regard to the advergame development, a number of issues were considered and those are justified in the chapter. First, it was decided to adopt a puzzle game genre (i.e. memory card game); second, much consideration was given to accurately leverage the level of the game to match participants' skill so that all participants are optimally challenged. Third, different types of rewards to reinforce positive actions in the game were considered, and it was decided to reward participants with a sound related to their game's background theme each time they made a correct match. Fourth, it was decided to use a web-based platform rather than Flash in order to allow easy access to the advergame, as many schools do not have Flash installed on their computers. Finally, the images for front and back of the cards are justified and explained. This chapter further provides details about designing a child-appropriate instrument, including layout, order of items, measurement scales and constructs, validity criteria and sampling considerations.

6. DATA COLLECTION

6.1 Introduction

This chapter presents the data collection element of this thesis. Given the complexity of the experimental design, and particularly the fact that a novel advergame was developed, a number of pre-tests and a pilot were undertaken with both adults and children. Figure 37 presents the process regarding data collection for the pilot and main study. This chapter commences with a discussion about the pre-testing, the pilot and its initial findings (section 6.2), followed by the modifications the advergame and instrument underwent subsequently (section 6.3). Summary and conclusions are presented in section 6.4

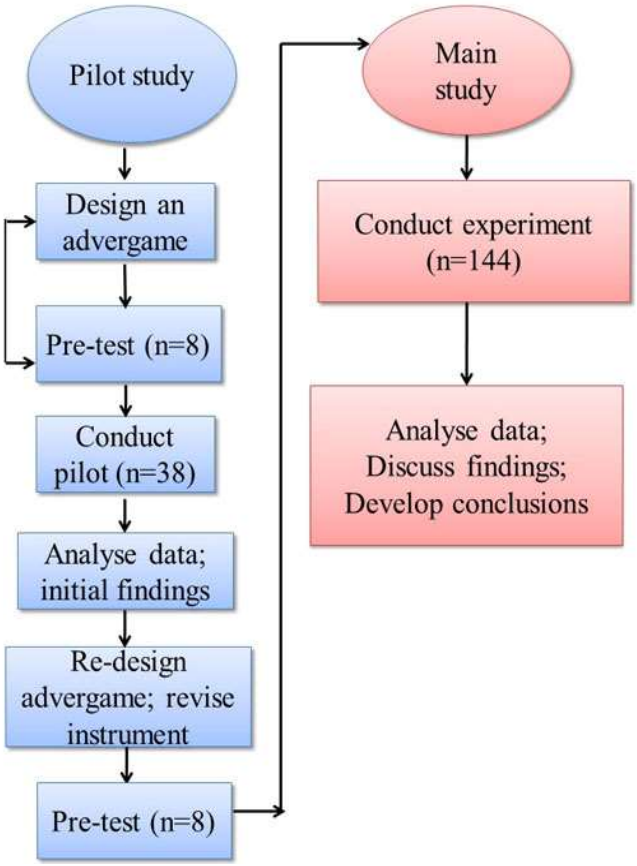


Figure 37: Data collection process

6.2 Technical pre-testing and operational pilot

One of the biggest challenges of this thesis relates to the design and development of a professional, engaging advergame. Another challenge was gaining access to a vulnerable population. It was deemed critically important that once access has been obtained, the advergame should be optimally fit for its purpose. Therefore, a series of pre-testing and a pilot were conducted. Those included testing the advergame throughout its development (section 6.2.1), followed by a small-scale operational pilot (section 6.2.2), and a third round of pre-testing sessions during the modification stage. Those sessions are discussed below.

6.2.1 Prototype I: pre-testing

Throughout the development process of the first prototype, there was a loop in terms of design-testing, which is the practice in video and online game design (Salen and Zimmerman, 2004; Schell, 2008). Code was written, graphics developed, and once each manipulation or experimental condition was finalised, it was tested by a group of eight children who agreed to act as testers for the advergame. Consent was provided by their parents as well as informed assent by the children themselves. In total, three sessions were conducted throughout the development of the first prototype (i.e. one testing session per each experimental condition). Prior to the pilot, the advergame was also tested by a member of the doctoral panel as well as other doctoral students. In addition, the advergame was presented in a doctoral colloquium in March 2014 and feedback was received from both doctoral students and senior faculty members of Cranfield School of Management. The group of eight young testers did not know the true hypotheses of this thesis. The attendees of the colloquium, other doctoral students, and naturally the panel member, were aware of the thesis' hypotheses. Screen shots from the first prototype are in appendix H, and its design is explained in further detail in section 5.5.

6.2.2 Operational pilot

The aim of the pilot was to test the robustness of the method, stimulus and measurement which will be used in the full-scale experiment. The pilot was conducted during June 2014 with younger (i.e. 7-8 year old) and older (i.e. 11-12 year old) children. The pilot was conducted after obtaining the headmaster's consent as well as of parents/guardians, and children's informed assent. Parents were given two weeks to respond to the consent forms. This section describes the procedure followed for the pilot (section 6.2.2.1) and the insights gained (section 6.2.2.2).

6.2.2.1 Procedure

The pilot took place in the school's ICT lab in Northamptonshire in the presence of the school's IT Director, who is also a qualified teacher. Before commencing the experiment, the purpose of the research was explained once more to the children and instructions were provided for game play. Children were reminded that they could stop the session at any time. Appendix F contains the experiment protocol to ensure standardisation across all conditions. Afterwards, children were randomised and divided into three groups. Two thirds of the children left with another teacher to a nearby classroom, while the other third stayed at the ICT lab and started playing the advergame. After five minutes of game play, children were asked to stop and fill the questionnaire (appendix E). Children were tested independently, each child sitting in front of his/hers monitor, so that they did not influence each other's responses. In the event that they did not understand something, either myself or a teacher provided explanations. After each group completed their task, children were thanked for their participation and were given a small gift as a token to reward them. The gifts were yellow rounded smiley faces erasers similar to the smiley faces they had in the questionnaire.

Playtime

Children were given five minutes to play the advergame across all conditions. The decision to allow them to play for such length of time was driven from the literature, following the practice of previous studies. As table 35 shows below, there is a disparity as to the playtime participants are allowed to play in advergame research.

Table 35: Playtime in advergame research

Study	Participants age	Playtime (minutes)
Folkvord *et al.* (2013)[23]	8-10	5
Van Reijmersdal *et al.* (2012)	7 - 12	3
An and Stern (2011)	8 - 11	10
Harris *et al.* (2011)	7 - 12	12
Bailey *et al*. (2008)	10 - 12	5
Mallinckrodt and Mizerski (2007)	5 - 8	5

Participants in the low and high level experimental conditions had slightly less time to play the actual advergame than those in the control condition, as the former participants spent more time customising their background space. However, even in the high level condition, customisation took approximately 8-12 seconds to accomplish. Therefore, it was considered that this minimal difference in playing-time between the different conditions should not pose any bias.

[23] The authors' stimulus was also a memory card advergame.

6.2.2.2 Insights from the pilot

This section presents the main findings from the pilot and is followed by the revisions undertaken to both the stimulus and instrument section (6.3).

Sample characteristics

There was 100% response rate and children were eager to participate in the experiment. 38 children participated, 18 males (47.4%) and 20 females (52.6%) with an equal number of children in both age groups ($N = 19$) ($M = 9.68$; $SD = 2.08$). A more detailed breakdown of participants' characteristics is displayed in table 35.

Table 36: Sample characteristics, pilot

	Characteristic	N	Percentage (%)
Age	7	6	15.8
	8	13	34.2
	11	6	15.8
	12	13	34.2
	Total	38	100.0
Gender	Males	18	47.4
	Females	20	52.6
	Total	38	100.0

Gaming experience

Children were not required to indicate what type of games they play, however, whilst explaining about the experiment and briefing them, some children volunteered the information. From their responses, it became apparent that older children play far more sophisticated games than younger children. It appears that the majority of children play computer games on a regular basis (89.5%; N = 34) (i.e. either 2-3 times per week or nearly every day). Only three children from the younger age group have never played computer games before.

Attitudes towards the advergame and the brand

An initial MANCOVA[24] (multivariate analysis of covariance) with age and customisation as independent variables, attitudes towards the advergame and the brand as dependent variables, and memory card and gaming experience as covariates, was conducted. The results indicate that those covariates had no impact on the outcome variables, and were removed from further analysis. Thereafter, a MANOVA (multivariate analysis of variance) was conducted. Section 7.1.1 in the next chapter explains in more detail the reasons why a certain analytical technique was used. The test statistic adopted for the analysis is Pillai's Trace, as according to Bray and Maxwell (1985), when sample sizes are equal, Pillai's Trace is the most robust test statistic to have.

The results reveal that customisation does not have an overall effect on the outcome variables, V = .23, $F(4, 64) = 2.1$, $p > .05$. Age, however, had a significant impact on the outcome variables V = .21, $F(2, 31) = 4.31$, $p < 0.05$. Separate univariate analyses reveal that customisation did not have a significant effect on advergame attitude, $F(2, 32) = 2.52$, $p = 0.96$, but had a significant effect on brand attitudes, $F(2, 32) = 3.88$, $p = 0.31$. Age had a significant impact on advergame attitudes, $F(1,32) = 8.90$, $p = .005$, but not on brand attitudes, $F(1, 32) = 1.51$, $p = .22$. Those initial results are presented in table 37. A separate ANOVA (analysis of variance) revealed that attitudes towards the advergame have an impact on attitudes towards the promoted brand, $F(1, 32) = 12.96$, $p = .001$

Table 37: Effects of customisation on advergame and brand attitudes

	Levels of customisation			
	Control condition	Low exp. condition	High exp. condition	F (2,32)
Advergame attitude	5.75 (1.54)	4.57 (1.84)	4.64 (1.55)	2.52
Brand attitude	6.40 (.84)	5.03 (1.88)	4.75 (1.60)	3.88*

* $p < .05$

[24] An explanation regarding the analysis technique is in section 7.2.1.

Brand preferences

Jaffa cakes were very popular compared to other brand choices with 63.2% of participants preferring it to other brands (N = 24), followed by Cadbury's Fingers (18.4%; N = 7), Penguins (10.5%; N = 4) and Hobnobs (7.9%; N = 3).

Persuasion knowledge

The majority of children (63.2%) perceived correctly that the source of the advergame was Jaffa Cakes Company. However, only 44.7% responded correctly to the question about the intent of the advergame. The remaining 52.6% believed that the advergame is online because children like playing with it.

6.3 Modifications to stimulus and instrument

Once the pilot was conducted, the research operalisation tested, data collected and analysed (section 6.3.1), it was decided following consultation with the expert advisory panel, to re-design certain elements in the advergame section and revise the instrument (6.3.2). It was also decided to review the play time (section 6.3.3). Once those were completed, both the advergame and the instrument were pre-tested once more prior to conducting the main study's experimental sessions. It was also decided to increase the age-gap between the two age groups in order to demonstrate better the differences (or lack of) between them. The older age group who participated in the full study contained children from the same age group as those who participated in the pilot. Children in the younger age group, who participated in the full study, were 5-7 years, rather than the 7-8 year olds who participated in the pilot.

6.3.1 Modifications to instrument

A number of items in the questionnaire were revised (appendix E contains the questionnaire used for the pilot and main study). The modifications included adding items about the type of digital games children play, their brand prior usage and intention to request purchase of the promoted brand. Items which were revised include those which asses children's persuasion knowledge.

Adding new items

Three additional items were added to the questionnaire and those are discussed below. It became clear during the briefing and de-briefing that children from different age groups play different genres of digital games. Therefore, the question "*which digital games do you play at home?*" was added.

The results of the pilot indicated that there might be some additional variables that could explain the results obtained. In addition, it was deemed interesting to explore whether Ehrenberg's (1997) and Barnard and Ehrenberg's (1997) thesis regarding the brand's role as a reinforcer holds true in the context of food advergames. Thus, it was decided to add a measure of children's prior usage of the promoted brand with the item "*how often do you eat Jaffa Cakes?*" with possible answers of (1) *Never*, (2) *Once a week*, (3) *2-3 times a week*; and (4) *Nearly every day*.

The third item which was added is children's intention to request purchase of the promoted brand. That construct is part of the DMH model, and it will help to gain a better understanding of the impact customisation may have on children's responses. Thus, the question '*do you intend to ask your parents to buy Jaffa Cakes?'* was asked with the response options of (1) *No, not at all*; (2) *No*; (3) *A little*; (4) *Not sure*; (5) *Maybe*; (6) *Yes*; and (7) *Yes, absolutely*.

Modifying existing items

Only one item has been modified, which is children's possession of persuasion knowledge and includes both items which measure it (i.e. understanding of persuasive intent and understanding of the advergame's source). Originally, one of the four responses to the question *'why the game is online'* included the answer *'because the queen likes it'*. All four answers to that question were adopted from Van Reijmersdal *et al.* (2012), however, none of the children in either the younger or older age groups ticked that option. Indeed, at the end of one of the sessions, a participant drew my attention to that answer, expressing his opinion that it was 'silly'. This response was replaced with *'to help improve children's memory'*.

A second iteration was made with regard to the item assessing children's knowledge about the advergame's source. The responses in the pilot's questionnaire contained the options

of (1) *Tesco*; (2) *Jaffa Cake company*; (3) *Sainsbury's*; and (4) *A gaming website*. Analysis of the results revealed that the first option was never ticked, while the third option was ticked just once. It seemed that participants had 50% probability of getting the question about the advergame's source correct due to chance alone. Thus, the response options were revised to (1) *The school*; (2) *A gaming website*; (3) *A supermarket*; and (4) *Jaffa Cake company*.

6.3.2 Modifications to stimulus: prototype II

After the pilot, a number of issues were identified. Those issues included removing Disney's theme, and hence replacing the characters, back of cards, cursor options and sound effects. In addition, aesthetics and coding were enhanced as well. Those modifications are discussed below.

Characters

Following the modification, instead of the movie themes of 'Cars', 'Frozen' and 'Nemo', the themes were revised to the generic theme of Cars, Winter Wonderland and Underwater World. It should be noted that the background screens were not adopted from the movies themselves, and were generic images, thus those remained the same. The control condition remained the same, but the other two experimental conditions were revised. In the first prototype, all characters related to Disney movies. Characters from the Cars theme included three sport cars (figure 38).

Figure 38: Cars selection screen, full study

Characters from the Underwater World theme included a sea turtle, a mermaid, and a diver (figure 39).

Figure 39: Underwater World selection screen, full study

Finally, a penguin, reindeer and snowman were the characters from the Winter Wonderland theme (figure 40).

Figure 40: Winter Wonderland selection screen, full study

Back of cards options

The options for the back of cards in the first prototype were directly related to the characters and background space (see full discussion in section 5.5.4.3). Those were revised, as in hindsight having snowflakes and shell fish had little to do with the promoted brand. Thus, the back of cards were re-designed to have a stronger brand presence and keep in line with Dahl *et al*.'s (2009, p.47) definition that an advergame contains "*branded products [that] are frequently an integral component of the game itself*". Thus, the option to customise the back of cards was offered by choosing brand related images (figure 41).

Figure 41: Back of card selection screen, full study

Choice of cursor

Finally, the choice of cursor in the first prototype included a choice between two biscuits and an ice cream lolly (figure 34). Those, however, were not related to the promoted brand. Prototype II provided a choice of cursor between a chunky mouse, a hand and a pointed finger (figure 42). It was attempted to create a cursor from an image of a Jaffa Cake, so that children could directly play with the brand, but it proved challenging regarding design aspects and therefore other options were provided. Although those options are not related to the brand, they are still fun and enjoyable as was evident from children's responses while playing the advergame.

Figure 42: Cursor selection screen, full study

Sound effects

Sound effects were included to reward players for correct card matches. For example, whenever players made a correct match in the Cars theme, there was a revving sound of a sports car. Those sounds remained. However, at the end of each completed session, there was a catch phrase from the movies related to each theme. Those catch phrases were removed.

Enhanced aesthetics

A number of iterations were conducted. First, images better in the centre of the screen and enlarged for greater visual impact. Second, the image on which the player's cursor was hovering at the time was highlighted. For example, in figures 39-40 the image on which the cursor was hovering is highlighted with an orange square. The colour of those squares matched the orange colour of the Jaffa Cake logo. Examples of screen shots from the first prototype, which was used in the pilot, and second prototype, which was used in the full study, are available for comparison in appendix H. Third, the code was also edited. It was noted during the pilot's experimental sessions that when 8-9 children accessed the advergame simultaneously, some of the screens uploaded slower than others. The issue has been addressed, so in the full study all screens uploaded smoothly and speedily.

6.3.3 Play time

The results of the pilot indicated that the advergame had considerably more positive reactions from younger (M = 5.66; SD = 1.12) rather than from older children (M = 4.21; SD = 1.89). Perhaps more interestingly, it seems that children from the control condition had more positive attitudes towards the advergame (M = 5.75, SD = 1.54) than those who played in the low experimental (M = 4.57; SD = 1.84) and high experimental conditions (M = 4.64; SD = 1.55). Similarly, brand attitudes were the highest in the control (M = 6.40; SD = .84) than in the low experimental (M = 5.03; SD = 1.88) and high experimental (M = 4.75; SD = 1.60) conditions.

Even though the sample of the pilot was small, this was a concern which was discussed with a couple of game developers. It was suggested that all three versions were novel to the children. During five minutes of play, the advergame being immersive and interactive, held children's attention without the chance for the novelty to wear off. However, had the time allocated playing the advergame was increased, this is where customisation might have had more of an impact, as participants could utilise different options once they had enough of the game itself. In other words, the short play time did not allow children to fully explore the customisation options. As one game developer commented:

> "*The initial game environment is fresh and simulating ... certainly for the first five minutes. During that time customisation normally does not have much of an impact. You see, we use customisation in a game to make people play longer*."

It follows that game developers use customisation as a motivation for players to spend more time playing games, which is consistent with Yee's (2006) study in the context of video games. Accordingly, it was decided to increase playtime.

6.4 Summary and conclusions

The current prototype has improved through numerous iterations and play-testing by both children and adults. This chapter provides details about the process in revising the data collection tools (i.e. the stimulus and instrument) for the main study. The first prototype was pretested by different audiences, such as children, doctoral students and faculty members. Nevertheless, following the pilot, additional modifications were identified and carried out from altering themes to enhancing the advergame visually. Once the work was completed and before the full data collection, the advergame was tested once more by eight children as well as by members of the expert advisory panel.

Advergame design is sophisticated and extremely challenging. Much thought was devoted into merging design principles with psychology, branding, marketing and technology. Figure 43 below illustrates the process that involves advergame design. The journey started when, following the first doctoral review, I have found it interesting to investigate the effectiveness of a unique feature of an advergame, being customisation. This led to the development of my own advergame, and provided me with the motivation to persevere in the face of many challenges, not least creating an immersive advergame with many innovative features. What followed was a sequence of ideas, play-testing and iterations until a second prototype has evolved with unique design elements. During the design process many skills had to be accomplished in a short space of time. Although I was already familiar with graphic design packages, such as Adobe Elements 11 and Photoshop CS6[25], I still had to learn many features in those software packages that I was not familiar with. In addition, when I started the design process I had only a very basic operational knowledge of HTML3, let alone the more recent version of this software, and had to learn how to programme in that language (i.e. HTML5). Thus, the learning curve gained through the design process was very steep. This has caused to extend the time originally allocated for the completion of the stimulus. Nevertheless, having done so has allowed me access to the source code of the advergame, which in turn provided me with much needed flexibility regarding the design of the manipulations.

[25] Photoshop Creative Suite (CS) 6 is one of the most extensive graphic design packages in the market.

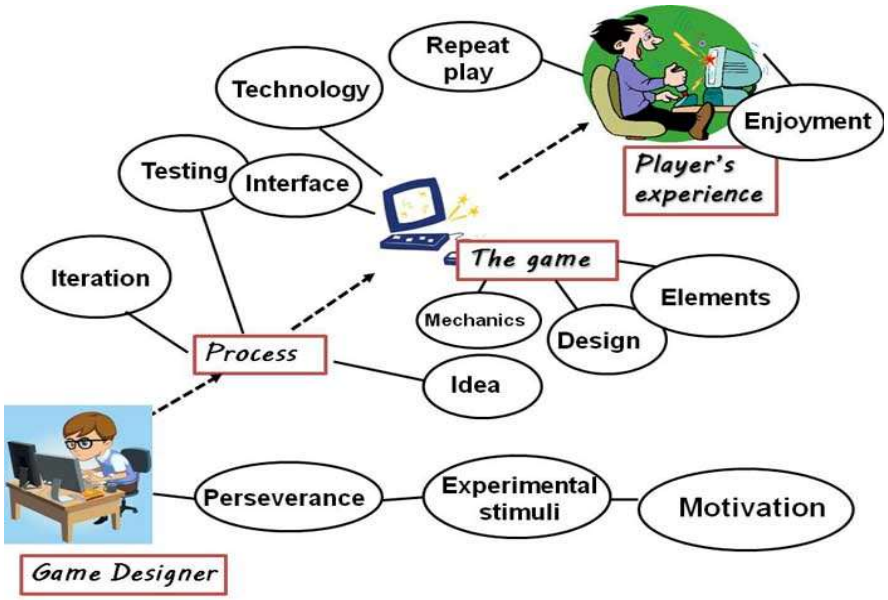


Figure 43: The journey of game design

7. RESULTS

7.1 Introduction

The primary objective of this thesis is to explore whether customised advergames have any impact on children's affective, cognitive and conative responses. The secondary objective is to understand whether children's age and possession of persuasion knowledge act as a barrier on their responses. This chapter presents the results of this research and is structured as follows. First, general results are presented (section 7.2), followed by the results relating to the research's main question and direct effects of customisation (section 7.3). The results relating to the rest of the hypotheses are presented in section 7.4. The chapter ends with a summary and conclusions (section 7.5).

7.2 Background characteristics

Justification for the data analysis techniques is discussed (section 7.2.1) as well as more general findings, such as sample characteristics (section 7.2.2), the genre of digital games children play and their gaming habits (section 7.2.3). It then presents the outcome of the randomisation and reliability scale measurement carried out for this research (section 7.2.4).

7.2.1 Analysis technique

The data for this thesis was analysed through IBM's Statistical Package for Social Sciences (SPSS) V22 software. In deciding upon the most appropriate method to analyse the data, a number of considerations were taken into account. Those include the research question, the number and type of dependent and independent variables as well as the existence of covariates. The research's main question was analysed through a MANCOVA and linear regression. The former technique is an extension of an ANCOVA, where control is added to one or more covariates that might influence one or more of the dependent variables. Field (2009) and Mayers (2013) recommend using this analysis when there are several dependent and/or independent variables as well as covariates, as it is an extremely robust test. Unlike t-tests which compare only between *two* groups, or an ANOVA which determines whether there is a difference between conditions but examines one dependent variable at a time, a MANCOVA can examine the *interaction*

between several dependent variables as well as test constructs to clarify which groups differ from each other. It does so by examining both the *multivariate* (i.e. the impact of the independent variables on the dependent variables) and *univariate* effects (i.e. how the dependent variables differ among them) at the same time (Mayers, 2013). If, on the other hand, separate ANCOVAs were conducted for each dependent variable, then any relationship or correlation between those variables may be omitted.

A MANCOVA has four test statistics, which are Pillai's Trace (i.e. the sum of the proportion of explained variance on the discriminate functions), Wilk's Lambda (i.e. the product of the unexplained variates), Hotelling's Trace (i.e. the sum of the eigenvalues for each variate), and Ray's Largest Root (i.e. the eigenvalues for the first variate) (Field, 2009). It is very important which test statistic is chosen as it will determine whether the hypotheses can be upheld or rejected. According to Field (2009) and Mayers (2013), Pillai's Trace is the most robust test when sample sizes are equal. However, when sample sizes are not equal, as in this study, Field (2009) states that Pillai's Trace test can still be used, but the assumption of homogeneity of covariance of matrices needs to be confirmed by using Box's test. The results of that test should be "*non-significant if the matrices are the same*" (Field, 2009, p.604). A MANCOVA was conducted with age and customisation as independent variables, gender, prior brand usage, card memory and gaming experience were covariates. Attitude toward the advergame, brand and intention to request purchase were dependent variables. Box's test rendered non-significant results (p = .31), which means that the covariance of matrices are roughly equal. Thus, as the assumption of homogeneity of variance has been confirmed, Pillai's Trace test was used.

The main research question asks about the *degree* to which customisation has a positive impact on children's responses. This required to examine and contrast between each condition with their respective degree of customisation separately. Linear Discriminant Analysis (LDA) and Logistic Regression (LR) were considered, as both are widely used analytical techniques when one or more of the dependent variables are categorical or dichotomous (Darlington, 1990). It was decided to use logistic regression as it is more statistically robust (Press and Wilson, 1978) and has stronger predictive power compared to LDA (Liong and Foo, 2013). Therefore, logistic regression was used to analyse part of

the main research question as well as the dependent variable which is dichotomous (i.e. brand preferences).

A mediation analysis was conducted as part of this research, and there are a few techniques to do so. The first is the traditional, well established four-step method by Baron and Kenny (1986). Another technique is a third party plug-in for SPSS developed by Hays (2013) (i.e. PROCESS). It was decided to conduct the analysis following the well-validated regression method by Baron and Kenny (1986) and confirm the findings with the PROCESS plug-in (Hayes, 2013), as recent research has been relying on this method (e.g. Hayes, Preacher and Myers, 2011). Finally, an independent t-test was used to analyse whether differences exist between younger and older children with regard to their persuasion knowledge. This test was chosen because according to Field (2009), it is used to examine the differences between two conditions where each participant is used once in only one condition.

7.2.2 Sample characteristics

144 children participated in this research, 60 were females (42%) and 84 were males (58%). The mean age was 9.73 years and the standard deviation (SD) was 2.5. Children were keen to participate in the research and filled 100% of the questionnaires, so that there were no missing values. Participants' characteristics in terms of age and gender are presented in table 38.

Table 38: Sample characteristics, full study

Characteristic	N	Percentage (%)
Age		
5	1	.7
6	18	12.5
7	37	25.7
Total	**56**	**38.9**
11	29	20.1
12	59	41.0
Total	**88**	**61.1**
Gender		
Males	84	58.3
Females	60	41.7
Total	144	100

7.2.3 Digital gaming genre and gaming habits

Results reveal that children from different age groups play on different digital platforms, such as PCs, mobile phones, tablets as well as on consoles (e.g. Wii, XBOX and PS4)[26]. There are also distinct differences pertaining to the game genres children play as well as their gaming habits, and those are discussed below.

Gaming habits

The majority of older children play digital games on a regular basis (i.e. either 2-3 times per week or nearly every day). Males in both age groups play much more frequently than females (47.9% vs. 11.1% respectively). Since the majority of both age groups play memory card games very rarely (i.e. either never or once a week) (88.9%), only the results for digital game playing habits are presented in table 39.

Table 39: Children's digital gaming habits, by gender and age

Digital gaming habits		Females	Males	Total
Never or once a week				
	Young children	17 (11.8%)	12 (8.3%)	29 (20.1%)
	Older children	27 (18.7%)	3 (2.0%)	30 (20.8%)
	Total	44 (30.5%)	15 (10.3%)	59 (40.9%)
2-3 times per week or nearly every day				
	Young children	2 (1.3%)	25 (17.36%)	27 (18.7%)
	Older children	14 (9.7%)	44 (30.5%)	58 (40.2%)
	Total	16 (11.1%)	69 (47.9%)	85 (59.0%)
	Total	60 (41.7%)	84 (58.3%)	144 (100%)

[26] Children were not asked whether they play on different gaming platforms, however, the analysis of their gaming genres reveals that some games are compatible only on certain platforms.

Game genres children play

11-12 year olds play highly sophisticated games. The most popular genre for older males is shooter games with many of those games ranked as 18+ (e.g. Call of Duty, Battlefield, Titan Fall, and Assassin's Creed). Gaming review sites explicitly warn parents with regard to the violent nature of those games. For example, Common Sense Media (2015) reviews Assassin's Creed as a "*very violent game and definitely not for children*". It should be noted that only the older males play violent games inappropriate for their age. Younger children largely play two-dimensional games. Older children from both genders play a wider range of game genres than younger children. Strategy games (e.g. Clash of Clans, Moshi Village) were most popular amongst females from both age groups; while sport games (e.g. FIFA) were popular amongst males.

During the experimental sessions a few of the older males expressed disappointment that the game they were about to play was 'only' a pair-matching game. Some expected a shooter-type game or "*at least a SIMs game*". Table 40 displays the five most popular game genres children play, and among them are strategy, action-adventure, Minecraft and puzzle games. Those genres are ranked in different order, depending on children's age and gender. Appendix G presents more detailed findings about the variety of game genres that children play.

Table 40: Five most popular game genres, by gender and age

	Females		Males	
5-7 year olds	Girl games	21%	Action-adventure games	34%
	Strategy games	21%	Sport games	20%
	Action-adventure games	16%	Minecraft	15%
	Minecraft	16%	Puzzle games	10%
	Puzzle games	10%	Racing games	10%
11-12 year olds	Strategy games	26%	Shooter games	24%
	Minecraft	24%	Sport games	23%
	Racing games	18%	Action-adventure games	12%
	Arcade games	11%	Strategy games	9%
	Puzzle games	7%	Arcade games	8%

7.2.4 Randomisation and reliability checks

Randomisation checks

A test was conducted to assess whether randomisation was successful. In order for it to be so, there should not be any significant differences between the three conditions. In other words, homogeneity of variance was expected. As described in section 7.2.1, Box's test revealed non-significant results ($p = .31$) and thus homogeneity of variance between the control and experimental conditions is assumed. As such, there were no significant differences between the six conditions, as children in the experimental conditions did not differ from those in the control condition regarding age, gender, prior brand usage, card or digital game playing experience.

Reliability checks

According to Field (2009, p.673), "*reliability means that a measure … should consistently reflect the construct that it is measuring*". Cronbach's alpha (α) is the most common measure of reliability, and a value of $> .7$ is seen as acceptable (Field and Hole, 2003; Field, 2009). Nunnally (1978), however, contends that a reliability level around .9 is ideal in the event that the research is based upon to make policy decisions. Tests for internal consistency revealed highly reliable results for both advergame ($\alpha = .89$) and brand attitudes ($\alpha = .91$).

7.3 Main effects of customisation

The main research question aims to examine the effects, if any, customisation has on children's affective, cognitive and conative responses (figure 44). This section presents the results for the main research question. The effects of the three conditions are contrasted (section 7.3.1), followed by the results relating to children's affective (H1a-b) (section 7.3.2), cognitive (H1c) and conative responses (H1d) (section 3.3.3). Finally, results regarding the role of prior brand usage are presented (section 7.3.4).

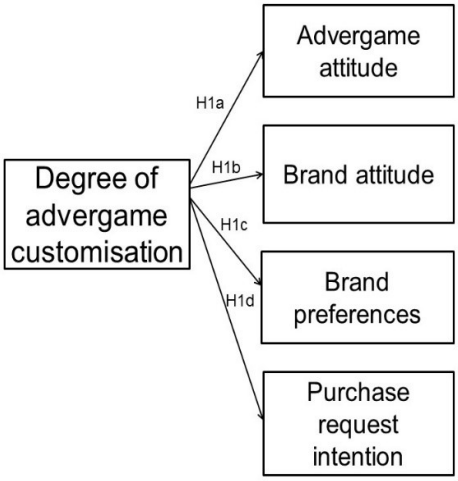


Figure 44: Main effects of customisation

7.3.1 Effects of the three experimental conditions

A MANCOVA was conducted with two independent variables (i.e. customisation and children's age), three dependent variables (i.e. attitudes towards the advergame, the brand and intention to request its purchase) and four covariates (i.e. gender, prior brand usage, card memory and digital gaming experience). The results indicate that digital gaming, V = .02, $F(3, 132) = .88$, $p = .45$, card memory gaming experience, V = .04, $F(3, 132) = 1.77$, $p = .10$, and gender, V = .05, $F(3, 132) = 2.36$, $p = .07$, had no significant impact on the outcome variables, and therefore, were removed from further analysis. Prior brand usage rendered highly significant results in the multivariate analyses, V = .45, $F(3, 132) = 35.67$, $p = .001$. Univariate tests, confirmed those results and revealed an impact of prior brand usage on advergame attitudes, $F(1, 134) = 3.77$, $p = .05$, brand attitudes $F(1,$

134) = 65.95, p = .001, and intention to request its purchase, F(1, 134) = 96.86, p = .001. Thus, this variable was used in further analyses.

After the covariates that rendered non-significant results were removed (i.e. card memory/digital gaming experience and gender), a MANCOVA was conducted. It contained the same dependent and independent variables as the previous one, with the difference that the only covariate included was prior brand usage. As brand preference is a dichotomous variable, it was analysed via logistic regression.

The results reveal that customisation does not have an overall effect on the outcome variables, V = .07, F(6, 272) = 1.69, p = .12. Separate univariate analyses reveal non-significant effects of customisation levels on advergame attitudes, F(2, 137) = .72, p = .48, and purchase request intentions F(2, 137) = 2.36, p = .09. Customisation, however, rendered significant results on brand attitudes F(2, 137) = 4.97, p = .008. Table 41 displays descriptive and inferential statistics in terms of the effects the degree of customisation has on affective, cognitive and conative responses.

Table 41: Effects of customisation on children's responses

	Levels of customisation				
	Control condition (n=48)	Low experimental condition (n=50)	High experimental condition (n=46)	F(2, 137)	P
Game attitude	5.31 (1.51)	4.88 (1.62)	5.19 (1.48)	.72	.48
Brand attitude	5.78 (1.41)*	4.76 (2.19)	5.28 (1.93)	4.97	.008
Intention to purchase	4.60 (1.88)	3.88 (2.22)	4.54 (2.36)	2.36	.09

* $p < .01$

The MANCOVA was followed up with post-hoc tests to determine whether the three conditions significantly differ between them. Thus, those conditions were contrasted between them in a K-Matrix. There were no significant differences in attitudes towards the advergame, the brand or intention to request its purchase between the low and high experimental conditions. There was, however, a significant difference regarding brand attitude (p = .02) between the control and high experimental condition with positive lower and upper confidence intervals (.07, 1.38). Another significant difference was found regarding advergame attitude (p = .001) between the control and low experimental conditions, with both lower and upper positive confidence intervals (.98, 1,91), which

adds additional reassurance that a genuine difference exists between those conditions (table 42).

Table 42: Contrast results (K Matrix) between conditions

Type of condition	Simple contrast	Advergame attitude	Brand attitude	Intention to request purchase
Control vs. high exp. condition	SE	.29	.32	.34
	Sig.	.53	.02	.26
Low vs. high exp. condition	SE	.29	.32	.34
	Sig.	.58	.46	.31
Control vs. low exp. condition	SE	.236	.268	.282
	Sig.	.001	.965	.473

Finally, the impact of customisation was analysed on brand preferences through logistic regression with prior brand usage, children's age and customisation as independent variables. The results reveal significant negative influence of customisation on brand preferences (B = -.67; SE = .24; Wald = .54; p = .006). Prior brand usage rendered a significant positive impact (B = 1.07; SE = .23; Wald = 21.33; p = .001), while children's age had no role to play (B = -.49; SE = .38; Wald = 1.64; p = .19).

In order to determine which of the three conditions has the most impact on children's responses, a series of regression analyses were conducted with attitudes towards the advergame and the brand, brand preferences and purchase request intention as dependent variables. Children's age, prior brand usage and each condition were independent variables. Results reveal no significant impact from the high experimental condition. The low experimental condition rendered significant negative outcomes regarding brand attitudes and preferences while the control condition rendered significant positive outcomes for brand attitudes and brand preferences, but not for advergame attitudes or purchase request intention. Those results are summarised in table 43. Children's age had no significant impact, apart from on game attitudes ($p < .05$). Prior brand usage had no significant impact on advergame attitudes, but had a highly significant positive impact on purchase request intention, brand attitudes and preferences (p = .001).

Table 43: Children responses from the control and the low experimental conditions

	Control condition		Low exp. condition		High exp. condition	
	B (SE)	*P*	B (SE)	*P*	B (SE)	*P*
Advergame attitudes	.27 (.24)	.25	-.32 (.24)	.18	.04 (.25)	.84
Brand attitudes	.83 (.27)	.003	-.59 (.27)	.03	-.24 (.28)	.40
Brand preferences	1.49 (.42)	.001	-.99 (.39)	.01	-.45 (.40)	.26
Purchase request intention	.48 (.28)	.09	-.44 (.28)	.12	-.02 (.29)	.92

7.3.2 Affective responses

Hypotheses 1a-b posit that children in the control condition are more likely to have positive attitudes towards the advergame (H1a) and the promoted brand (H1b) than children in the experimental conditions. This section presents children's responses towards the advergame and the promoted brand.

Attitudes towards the advergame

Results from the MANCOVA indicate that customisation had no impact on advergame attitudes. K-Matrix analysis reveals that the control and low experimental conditions significantly differed between them regarding attitudes towards the advergame (table 42). Results from regression analysis confirm the above and add that neither condition (i.e. control or experimental) had a positive impact on children's attitudes towards the advergame. Thus, hypothesis 1a is not supported.

Children from different age groups differed in their attitudes towards the advergame. There was a noticeable difference in the mean scores between children's ages. Younger children from all experimental conditions liked the advergame considerably more (M = 5.96; SD = 1.20) than older children (M = 4.60; SD = 1.50). Results from regression analysis reveal no significant effect on advergame attitudes from the high experimental (B = -.04, SE = .25, p = .84), control (B = .27, SE = .24, p = .25), or low experimental conditions (B = -.32, SE = .24. p = .18).

Attitudes towards the brand

Results from the MANCOVA indicate that customisation had a direct impact on brand attitudes $F(2, 137) = 4.97$, $p = .008$. K-Matrix analysis reveals that there was a significant difference between the control and high experimental condition relating to brand attitudes

(p = .02) (table 42). Further regression analysis reveals that out of all the three conditions, it was only the control condition that rendered significant positive outcomes on children's brand attitudes (B = .83; SE = .27; p = .003). The high experimental condition rendered non-significant results (B = -.24, SE = .28, p = .41), while the low experimental condition rendered significantly negative results (B = -.59, SE = .27, p = .03) (table 43). Thus, hypothesis 1b is supported. It appears that the mean scores is slightly higher for older (M = 5.32; SD = 1.91) than younger (M = 5.24; SD = 1.89) children.

7.3.3 Cognitive and conative responses

It is posited that children from the control condition are more likely to prefer the promoted brand (H1c) and intend to request its purchase (H1d) than children in the experimental conditions. This section presents children's cognitive and conative responses.

Brand preferences

Customisation had an overall significant negative impact on brand preferences (B = -.67; SE = .24; Wald = 7.54; p = .006; Exp(B) = .62). The control condition was the only one that rendered significant positive outcomes on brand preferences (B = 1.49; SE = .42; Wald = 12.50; p = .001; Exp(B) = 4.45), as the low experimental condition rendered significantly negative outcomes (B = -.99; SE = .39; Wald = 6.25; p = .01; Exp(B) = .37), and the high experimental condition rendered non-significant results (B = -.45; SE = .40; Wald = 1.49; p = .26; Exp(B) = .41). Following those results, hypothesis 1c is supported. Table 44 demonstrates that 46% of brand preferences occurred from the control condition followed by 30% from the high experimental condition and 24% from the low experimental condition.

Table 44: Brand preferences by condition, and age

	Type of group			
	Control condition	Low experimental condition	High experimental condition	**Total**
Young age group	16 (21.5%)	7 (9.5%)	9 (12.1%)	32 (43.1%)
Older age group	18 (24.4%)	11 (14.9%)	13 (17.6%)	42 (56.9%)
Total	**34** (45.9%)	**18** (24.3%)	**22** (29.7%)	**74** (100%)

It is also investigated whether brand preferences are positively related to the brand's exposure in an advergame and whether children from all conditions will prefer the promoted brand over the other three brands. Indeed, Jaffa Cake was the preferred brand with 74 (51.4%) children, mostly from the control condition, preferring it over other brands. This is followed by 25 children (17.4%) preferring Cadbury's Fingers, 23 children (16.0%) preferring Hobnobs, and 22 children (15.3%) preferring Penguins, as is seen in figure 47 below.

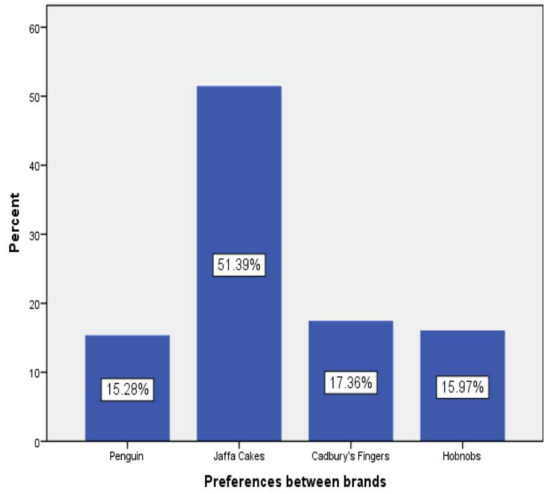


Figure 45: Brand preferences

Conative responses

Results from the MANCOVA indicate that customisation has no significant impact on intentions to request purchase of the brand, $F(2, 137) = 2.36$; $p > .05$. Post hoc analysis in K-Matrix also did not find any significant differences between the three conditions with regard to purchase request intention. Results from regression analysis confirmed the above results ($p > .05$). Thus, hypothesis 1d is not supported.

Young children had only slightly higher mean scores ($M = 4.41$; $SD = 2.14$) than older children ($M = 4.28$; $SD = 2.18$). In contrast from children's brand preferences, there was hardly any difference in their intention to request purchase of the brand. 38% indicated intent to do so from the control condition, followed by 33% from the high experimental condition and 28% from the low experimental condition.

7.3.4 The role of prior brand usage

The construct of prior brand usage was used as a covariate in the main analysis regarding the direct effects of customisation. It was omitted from the conceptual model in order to uphold a degree of clarity within the model and hypotheses. However, due to its significant impact, further tests were conducted to understand better its role as a control variable on children's responses. It appears that customisation had a significant impact on advergame attitudes only when an interaction effect was found between prior brand usage and customisation. Results show a significant interaction between group * prior brand usage on advergame attitudes, $F(6, 118) = 2.43$, $p = .03$, and on brand attitudes, $F(6, 118) = 4.75$, $p = .02$. The interaction between the two did not render any significant impact on either purchase request intentions or brand preferences ($p > .05$.)

It was also deemed important to investigate whether children with no prior usage will have negative responses, as the literature is conflicted on this topic. A regression analysis with children with no prior usage and children's age were the independent variables while, their affective, cognitive and conative responses were the outcomes variables. Results indicate that having no prior usage of the brand had negative impact on advergame attitudes (B = -.66; SE = .22; $p = .004$), brand attitudes (B = -2.58; SE = .24; $p = .001$), purchase request intentions (B = -2.82; SE = .27; $p = .001$) and brand preferences (B = -1.93; SE = .37; Wald = 26.25; $p = .001$). However, when children had used the brand previously, their responses were significantly positive on advergame attitudes (B = .67; SE = .25; $p = .009$), brand attitudes (B = 1.14, SE = .13, $p = .001$), brand preferences (B = 1.00, SE = .22, Wald = 19.5, $p = .001$) and purchase request intentions (B = 1.48, SE = .14, $p = .001$) as can be seen in table 45. Children's age had no significant impact on any of the outcome variables ($p > .05$).

Table 45: Effects of prior brand usage on children's responses

	Brand attitudes			**Brand preferences**			**Intention to purchase**		
	B	SE	*P*	B	SE	*P*	B	SE	*P*
Prior brand usage	1.14	.13	.001	1.00	.22	.001	1.48	.14	.001
Children's age	- .01	.27	.95	- .97	.71	.17	- .20	.28	.47

7.4 Indirect effects of customisation

This section commences with the results about the impact of advergames and brand attitudes on children's responses (section 7.4.1), followed by the mediating role of brand attitudes on the relationship between advergame attitudes, purchase request intention and brand preferences (section 7.4.2) This section also presents the influence of persuasion knowledge on children's responses (section 7.4.3).

7.4.1 Effects of advergame and brand attitudes on children's responses

As has been discussed in chapter 4, advergame attitude is proposed to channel all other responses, namely brand attitudes, intention to request purchase and brand preferences. It is posited that advergame attitude has a positive effect on brand attitude (H2) and purchase request intentions (H3). Advergame attitude is a continuous variable and therefore regression analysis was chosen to analyse H2-5 rather than a multivariate or univariate model. In addition, this analysis was the basis of the mediation analysis discussed in the following section. Children's age was included as an independent variable to find whether it has any role in this affect transfer. The results indicate that advergame attitudes have a positive direct effect on brand attitudes (B = .49, SE = .10; p = .001) and purchase request intentions (B = .48; SE = .12; p = .001). Children's age had no impact on those responses (p > .05). Therefore, Hypothesis 1-2 are supported.

Hypothesis H4-5 posit that brand attitude has a positive effect on purchase request intentions (H4) and brand preferences (H5). A positive effect of brand attitudes was indeed transferred to purchase request intention (B = .83; SE = .06; p = .001) and brand preferences (B = .14; SE = .01; p = .001). Once more, children's age had no role in this affect transfer (p > .05). Therefore, the above hypotheses are supported.

7.4.2 The mediating role of brand attitudes

Hypotheses 6 posit that brand attitudes mediate the relationship between advergame attitude and purchase request intention. Baron and Kenny's (1986) four-step traditional method was followed, and was confirmed by Hayes' (2013) PROCESS plug-in. As a first step, it had to be shown that advergame attitudes have a significant effect on purchase request intention (Aad → Ip) and brand attitudes (Aad → Ab). A further condition to be met is that brand attitudes influence positively purchase request intention (Ab → Ip). Regression analysis, as seen in the previous section (7.4.1), shows the existence of a positive causal relationship between Aad → Ab, Aad → Ip and Ab → Ip. Finally, a requisite for a full mediation is that when the mediating variable is present (i.e. brand attitudes), the direct effect (i.e. Aad → Ip) becomes insignificant.

In other words, the direct effect of Aad → Ip is significant only when Ab is absent. When Ab is present (i.e. added as a mediator to advergame attitude), the direct effect of the latter became insignificant (B = .08, SE = .09, p = .38). Further analysis was conducted in PROCESS with bootstrapping using 1,000 samples[27] confirmed the results of the previous four-step analysis. The path model in figure 46 shows coefficients for the mediation of brand attitude on advergame attitude and intention to request purchase. The confidence intervals (CI) were set for 95% and were .23 - .56. Both results show significant full mediation effect, and as such, hypothesis 6 is supported.

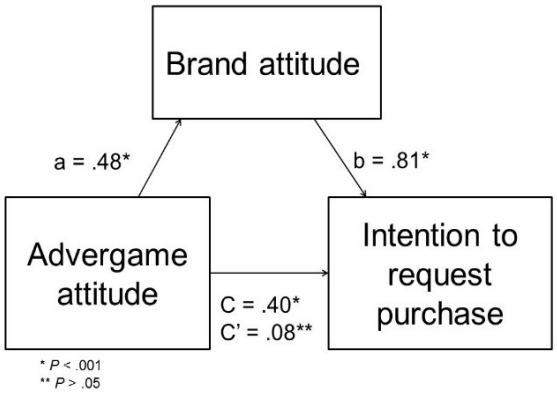


Figure 46: Brand attitude as a mediator

[27] Bootstrapping using 1,000 samples is the default option in PROCESS.

7.4.3 Effects of persuasion knowledge on children's responses

Hypothesis 7a posits that older children are likely to have greater persuasion knowledge than younger children. Results from descriptive statistics reveal that overall, only 27 children (18.7%) understood correctly the persuasive intent (PI) of the advergame. Amongst them, 20 (23%) were from the older age group and only seven (13%) were from the younger age group. Children had greater knowledge regarding the source of the game, as 63 (44%) identified it correctly with 40 (45%) children from the older age group and 23 (41%) from the younger age group, as is seen in table 46.

Table 46: Children's persuasion knowledge, by condition and age

	Young children		**Older children**	
	PI	Source	PI	Source
Control condition	1 (2.1%)	10 (20.8%)	4 (8.3%)	9 (18.8%)
Low experimental condition	2 (4.0%)	8 (16.0%)	11 (22.0%)	21 (42.0%)
High experimental condition	4 (8.7%)	5 (10.9%)	5 (10.9%)	10 (21.7%)
Total	7 (14.8%)	23 (47.7%)	20 (41.2%)	40 (82.5%)

A t-test reveals that older children had greater understanding of persuasive intent (M = .22; SD = .42) than younger children (M = .12; SD = .33), but the difference was not significant $t(144) = 1.61$, $p = .10$. Interestingly, there was not much difference regarding older children's understanding of the advergame's source (M = .45; SD = .50) from younger children (M = .41; SD = .49), $t(142) = .51$, $p = .6$, and it rendered non-significant results as well. Therefore, hypothesis 7a is not supported.

Hypotheses 7b-e posit that regardless of their age, children's persuasion knowledge will influence their attitudes towards the advergame (H7b), the brand (H7c), purchase request intention (H7d) and brand preferences (H7e) negatively. A regression analysis was conducted with children's age, persuasion knowledge, including its two components of understanding of persuasive intent and advergames' source, as independent variables. Advergame, brand attitudes, brand preferences and purchase request intentions were dependent variables. Results reveal that identification of source had no influence on children's advergame attitudes (B = .17; SE = .26; $p = .49$) brand attitudes (B = -.33; SE

= .32; p = .29), brand preferences[28] (B = .20, SE = .34, p = .53) or purchase request intentions (B = - .19, SE = .36, p = .58). Correct identification of persuasive intent also did not influence children's advergame attitudes (B = -.53; SE = .33; p = .10) brand attitudes (B = .29, SE = .41, p = .48), brand preferences (B = - .12, SE = .43, p = .77) or purchase request intentions (B = .59, SE = .46, p = .20). Children's age did not have any role to play, as can be seen in table 47.

Table 47: Effects of persuasion knowledge on children's responses

	Brand attitudes			**Brand preferences**			**Intention to request purchase**		
	B	SE	*P*	B	SE	*P*	B	SE	*P*
Identification of source	- .33	.32	.29	.20	.34	.53	.19	.36	.58
Identification of intent	.29	.41	.48	- .12	.43	.77	.59	.46	.20
Children's age	.02	.33	.93	- .37	.34	.28	- .18	.37	.63

Therefore, hypotheses H7b-e were not supported.

[28] This analysis was conducted via logistic regression.

7.5 Summary and conclusions

This chapter commenced with a presentation of general findings regarding sample characteristics, the digital gaming genre children from different age groups and gender play as well as their gaming habits. Results for randomisation and internal reliability checks were also presented. This chapter reviewed a few sets of results. First, the results relating to the main RQ and H1a-d were recorded. Those relate to the direct effects of customisation on consumer responses, as depicted in figures 2 and 44, and involves analyses in a MANCOVA and regression. Interestingly, positive significant outcomes were revealed from the control condition with regard to brand attitudes and preferences. The low-level experimental condition rendered significantly negative responses with regard to brand attitudes and preferences and no significant results to advergame attitudes and purchase request intention. The high-level experimental condition rendered non-significant results with regard to all responses. Thus, it became evident that customisation in advergames has a detrimental effects on children's attitudes towards the advergame, the promoted brand, purchase request intentions and preferences between brands. The role of prior brand usage is explored as well to contribute to the debate whether prior experience with the brand is required to enhance consumer responses. Prior brand usage was found to be paramount to children's responses, and is evident from the interaction between prior brand usage and customisation. The latter had no impact on advergame attitudes on its own, but an interaction with prior brand usage revealed a significant impact on advergame and brand attitudes. The results reveal that children who have never consumed the brand had a negative impact on their responses.

The second set of effects relate to the impact advergame attitudes have on children's responses. The results clearly support H2 and H3. Results also show affect transfer from brand attitude to purchase request intention and brand preferences. Thus, H4 and H5 are supported. Results also provide support to the existence of the Aad → Ab → Ip relationship in the context of advergames. H6 provide insights about the mediating role of brand attitudes on the relationship between advergames attitudes and purchase request intentions. Both advergame and brand attitudes have a significant positive effect on purchase request intentions, while brand attitudes have also an impact on brand preferences.

Children's age had a significant impact only in relation to attitudes towards the advergame. Otherwise, children's age played no role on their attitudes towards the brand, cognitive or conative responses. Another set of effects relate to the role children's persuasion knowledge has on their responses. Hypotheses 7a-e were raised in order to contribute to a debate among scholars relating to whether persuasion knowledge acts as a barrier and protects children from the persuasive impact of advertising. Children had different levels of persuasion knowledge. Older children had greater levels of understanding persuasive intent and a marginally greater understanding of the source of the advergame than younger children. This difference, however, is not significant. Even amongst the children who possessed persuasion knowledge, this factor did not hinder them from having positive affective, cognitive and conative responses to the stimulus. The implications of all these results are discussed in the following chapter, while table 48 provides a summary of all results in this thesis.

Table 48: Summary of all results

Hypothesis	Outcomes
H1a: Children in the control condition are more likely to have positive attitudes towards the advergame than children in the experimental	Not supported; $p >$ .05
H1b: Children in the control condition are more likely to have positive attitudes towards the brand than children in the experimental conditions	Supported; $p < .05$
H1c: Children in the control condition are more likely to prefer the brand than children in the experimental conditions	Supported; $p < .05$
H1d: Children in the control condition are more likely to intend to request purchase of the promoted brand than children in the experimental condition	Not supported; $p >$ .05
H2: Advergame attitude has a positive effect on brand attitude	Supported; $p = .001$
H3: Advergame attitude has a positive effect on purchase request intention	Supported; $p = .001$
H4: Brand attitude has a positive effect on purchase request intentions	Supported; $p = .001$
H5: Brand attitude has a positive effect on brand preferences	Supported; $p = .001$
H6: Brand attitude mediates the relationship between advergame attitude and purchase request intention	Supported; CI [.23 - .56]
H7a: Older children are likely to have a greater understanding of persuasive knowledge than younger children	Not supported; $p >$ 05
H7b: Regardless of age, possession of persuasion knowledge will influence attitudes towards the advergame negatively	Not supported; $p >$ .05
H7c: Regardless of age, possession of persuasion knowledge will influence attitudes towards the brand negatively	Not supported; $p >$ .05
H7d: Regardless of age, possession of persuasion knowledge will influence purchase request intentions negatively	Not supported; $p >$ .05
H7e: Regardless of age, possession of persuasion knowledge will influence brand preferences negatively	Not supported; $p >$ .05

8. DISCUSSION AND CONCLUSIONS

8.1 Introduction

Promoting food to children via advergames dominates the public agenda, as this topic has generated much concern due to the increasing evidence about the effects advergames have on children's responses. The effects of customisation in advergames have been scantly investigated, and this thesis explores the effects of this feature on children's responses. In addition, the role persuasion knowledge, prior brand usage and children's age have on their responses is also investigated. Having presented the results for the main research question and the hypotheses in the previous chapter, this chapter discusses and explains those results. The background findings reveal that younger and older children play entirely different game genres. This practice is concerning, since males from the older age group play games of extremely violent nature that are labelled six years beyond their age group. In addition to specific labelling on the game cover, gaming websites provide explicit guidance for parents regarding the violent nature of those games. The fact that 24% of 11-12 year old males play shooter games and another 5% play fighting games beyond their years, indicates that those guidelines and recommendations are not being followed.

This chapter is structured as follows. Section 8.2 discusses the direct effects of customisation. This is followed by a discussion about the indirect effects of customisation, including the mediating role of brand attitudes on the relationship between advergame attitudes and intention to request purchase (section 8.3). Next, the role of persuasion knowledge (section 8.4) and prior brand usage (section 8.5) on children's responses is discussed. The chapter ends with a summary and conclusions (section 8.6).

8.2 Direct effects of customisation on children's responses

This section discusses the results relating to the research's main question, which is whether the degree of advergame customisation has a positive impact on children's affective (section 8.2.1), cognitive and conative responses (section 8.2.2) from different age groups.

8.2.1 Effects of customisation on affective responses

Results relating to affective responses, in terms of attitudes towards the advergame and the brand, are discussed.

Attitudes towards the advergame

Initial studies about advergames investigated their overall effects on players' responses (Mallinckrodt and Mizerski, 2007; Winkler and Buckner, 2006). Later studies begun to focus on investigating advergames' specific features, such as brand interactivity (Goh and Ping, 2014; Lee *et al*., 2014; Sukoco and Wu, 2011; Van Reijmersdal *et al*., 2010), brand integration (Van Reijmersdal *et al*., 2010), brand prominence (Cauberghe and De Pelsmacker, 2010; Van Reijmersdal *et al*., 2012), thematic relevance (Wise *et al*., 2008) as well as the actual mechanics of the game (Kuo and Hamilton, 2014). Customisation in advergames already exists (Moore, 2006) and is used by leading brands (examples are in appendix B), but this feature has not been investigated adequately apart from a study by Bailey *et al.* (2009) about avatar customisability.

This research finds that, interestingly, the customised versions of the advergame did not have a significant positive impact on children's responses. On the contrary, it seems that customisation is detrimental to children's affective, cognitive and conative responses. Children from the control condition, with no customisation options, displayed consistently strong positive responses after playing the game. The high experimental condition rendered non-significant results. The low customisation condition rendered significant negative effects on brand attitudes and preferences, while responses to advergame's attitudes and intention to request purchase were not significant. The results from the control condition, on the other hand, rendered positive significant results on children's brand attitudes and preferences. This finding was surprising as studies, in the

context of video games render promising results regarding customisation. For example, according to Teng (2010), it raises player loyalty and enjoyment which contribute to the commercial success of the game. However, its impact on consumer responses has not been investigated yet, apart from on brand recall which rendered positive results (Dardis *et al.*, 2012). Other research, in the context of advergames, suggests that customisable avatars can affect feelings of presence and arousal (Bailey *et al.*, 2009), although the authors' sample (N = 30) is too small to draw concrete conclusions.

There are a number of possible explanations for this finding. After the pilot, a number of interviews were conducted with game developers, who said that customisation is used in games as a way to extend gameplay (section 6.3.3). In the pilot, children were given five minutes to play. This was increased to six minutes during the full study. It was not practical to extend the time for any longer as the experimental sessions were conducted during school hours. One teaching block was allocated per experimental session, which means that I had only 45 minutes to run three experimental sessions, including briefing, randomisation, game play, allowing time to respond to the questionnaire and de-briefing. It is believed, though, that even if children were allowed to play longer, customisation would still not have rendered significant results, and the reasons are discussed below.

Studies that investigated the effects of advergames' unique features on consumer responses have found that not every single feature is necessarily effective. For example, Van Reijmersdal *et al*. (2012) have found that brand prominence positively affects recall and recognition of the promoted brand, but it has no impact on advergame or brand attitudes. The brand in this research was indeed prominently placed in all conditions, as the essence of the advergame was to match identical pairs of cards displaying images of the brand. Brand prominence was particularly dominant in the high experimental condition, as in addition to having the brand displayed, players in that condition also had to customise the back of cards with images related to the brand (e.g. its packaging). This condition rendered non-significant outcomes on all responses. Another explanation is driven from Lee *et al.*'s (2014) work. The authors claim that attitudes depend on the *type* of advergame participants play. Thus, playing an advergame can exert positive attitudes provided the game is perceived as easy to play. It is proposed that having had to make choices in the experimental conditions, exerted cognitive efforts on children's part, whilst

in the control condition they started to play the advergame immediately. It is assumed that the control condition might have been perceived as 'easier', and certainly demanded less cognitive effort, hence the results. Thus, this added cognitive effort required from children in the experimental conditions might have interfered or distracted children from focusing on the promoted brand.

Another explanation is that customisation may be limited to the type or genre of the game. Thus, it could work better when it is stronger related to the mechanics of the game. That is, in games where customisation is an integral part of the game play rather than enhancing the background, although it should be noted that other advergames exist in the market where customisation enhances background features. An example for such games, where customisation is more congruent to game play, is where players can choose the colour and type of car they are driving as well as the type of race course; or in games where players have the options to customise avatar's features, such as colour of eyes or hair. It could also be the case that customisation has more impact on brands with which children have higher involvement, such as a Barbie doll or a race car, however, it is a venue to be explored in future research (see section 8.6.3).

Finally, it should also be noted that children from different age groups differed in their attitudes towards the advergame. Younger children expressed more positive evaluations towards it than older children. This could be explained by the fact that younger and older children play different game genres (appendix G).

Attitudes towards the brand

Previous research has found that an interactive brand placement (Goh and Ping, 2014; Lee *et al*., 2014; Van Reijmersdal *et al*., 2010), game involvement (Van Reijmersdal *et al*., 2012) and brand integration (Kinard and Hartman, 2013; Winkler and Buckner, 2006) have a positive impact on attitudes towards the brand. This research adds to an existing body of literature about the effects of specific advergames features. When experimental conditions were examined individually, it became clear that it was only the control condition that rendered significant positive impact on brand attitudes. Participants from the low experimental condition displayed significant negative attitudes towards the brand while there was no influence from the high experimental condition.

These results are interesting as seemingly all conditions possess the features of interactivity, game involvement and brand integration as mentioned above, so one can assume that all conditions should render positive impact in various degrees. Kinard and Hartman (2013), who investigated the impact of brand integration in advergames, offer an explanation for those results. According to their study, advergames with a high degree of brand integration produce more negative brand attitudes than advergames with fewer elements of brand integration. The high customisation condition has indeed a high level of brand integration and rendered non-significant results. It seems that the level of brand integration is critically important to generate positive attitudes. Interestingly, previous studies have found that although brand interactivity has a negative effect on advergame attitudes (Lee *et al*., 2014), it renders a significant positive effect on brand attitudes (Goh and Ping, 2014; Lee *et al*., 2014). Those results are consistent with the Limited Capacity Model of Attention (Kahneman, 1973). The added cognitive resources needed to process the tasks of customisation, in addition to matching correctly pairs of cards, resulted in children from the experimental conditions lacking cognitive resources to process the actual advertising message. In addition, the incongruity between matching correctly pairs of cards and some of the customisation options drew even more cognitive resources from children in the experimental conditions.

The implications are discussed in section 8.6.1. Although the mean scores from the younger children were higher than those from older children, statistical analysis shows

no significant difference of children's age on brand attitudes, which is consistent with Van Reijmersdal *et al.*'s (2012; 2010) findings.

8.2.2 Effects of customisation on cognitive and conative responses

Results relating to cognitive and conative responses are discussed below.

Brand preferences

Overall, the promoted brand was the preferred one among other brands regardless of age. Those results support other research conducted with children from the context of both television advertising (e.g. Borzekowski and Robinson, 2001; Boyland and Halford, 2013; Gorn and Goldberg, 1980; Halford *et al*., 2008; Kaufman and Sandman, 1983; Robinson *et al*., 2007) and advergames (Dias and Agante, 2011; Mallinckrodt and Mizerski, 2007) that exposure to a promotional stimulus has an impact on brand preferences. However, most preferences were generated from the control condition, which, once again, was the only condition that rendered significant positive outcomes on brand preferences.

Intention to request purchase

The majority of children indicated that they will request purchase of the brand from their parents/guardians (N = 95). Most responses were from the control condition, but there was not much difference, as is seen in chapter 7, between the conditions. These results are in contrast with Van Reijmersdal *et al.* (2010), but are consistent with Mallinckrodt and Mizerski (2007), where 5-8 year old Australian children also displayed strong preference for the promoted brand, yet not for intention to request its purchase.

8.3 Indirect effects of customisation

This section discusses the indirect effects of customisation. First, it includes the impact of advergame attitude on brand attitude and purchase request intention. Second, the mediating role of brand attitude is explored in relation to its relationship with advergame attitude and purchase request intention (figure 48).

The results confirm significant positive Aad → Ab; Aad → Ip; Ab → Ip paths (MacKenzie *et al.,* 1986), and thus are consistent with the DMH literature (Mitchell and Olson, 1981; Moore and Hutchinson, 1985; Shimp, 1981). It is also very interesting to note that the results of this research are consistent regarding the strength of the relationship between Aad → Ip and Ab → Ip as in MacKenzie *et al.* (1986). The authors, as discussed in chapter 4, found the Ab → Ip relationship to be stronger than that between Aad → Ip. Indeed, the paths coefficients in the latter relationship is .40, while the one in relation to the Ab → Ip relationship is .81.

The causal affect transfer model from attitudes towards the advertising stimulus to the brand it promotes was withheld in line with previous studies with children in the context of television advertising (Derbaix and Bree, 1997; Pecheux and Derbaix, 1999; Moore and Lutz, 2000) and advergames (Van Reijmersdal *et al*., 2012). Phelps and Hoy (1996) are one of the few studies that investigated the Aad → Ab → Ip relationship in children, and found positive causal relationships between those constructs. This thesis extends the above authors' work by providing evidence to the existence of brand attitudes as a mediator on the relationship between Aad → Ab → Ip in children.

8.4 Effects of persuasion knowledge and age on children's responses

This section discusses the results with regard to children's understanding of persuasive intent and advergame's source (section 8.4.1). It then considers the effects of persuasion knowledge on their responses, and whether such knowledge acts as a barrier and protects children from the effects of advertising (section 8.4.2). The effects of age are considered in section 8.4.3.

8.4.1 Children's understanding of persuasive intent and advergame source

Over three-quarters of the sample (81.3%) did not realise that the purpose of the advergame is to persuade, and over half of the children (54.2%) could not identify correctly the source of the advergame as the brand's company. Martin (1997) and John (1999; 2008), posit that by 11-12 years, most children can attribute persuasive intent to advertising messages. The authors have based their conclusions as a result of meta-analyses based on studies in the context of television advertising, when the media environment was different. Results from this research show that only 23% of the older children (i.e. 11-12 year olds) are able to do so. As such, those results contradict those by Robertson and Rossiter (1974), who found that 99% of 10-11 year olds understood persuasive intent. In comparison, only 13% of children from the younger age group in this research (i.e. 5-7 years) understood persuasive intent compared to 53% of the younger age group (i.e. 6-7 year olds) from Robertson and Rossiter's (1974) study. Interestingly, there was no significant difference between younger and older children's persuasion knowledge, which is a factor policy makers should take into consideration when providing guidelines to marketers (see section 8.6.2).

The findings of this research are more consistent with research about children's low levels of persuasive knowledge in the context of advergames (Mallinckrodt and Mizerski, 2007; Van Reijmersdal *et al*., 2012; Waiguny *et al*., 2012). Thus, the results indicate on low level of children's persuasion knowledge and as such support Owen *et al.*'s (2013) study that children have a better understanding of persuasion knowledge in television advertising than non-traditional formats, such as advergames.

8.4.2 Effects of persuasion knowledge on children's responses

According to the PKM, once persuasion knowledge is formed, it is stored in consumers' memories, to be activated in response to advertising (Friestad and Wright, 1994; Friestad *et al*., 2005). This activation triggers negative attitudes towards advertising (Robertson and Rossiter, 1974; Rossiter and Robertson, 1974). This research did not find a causal link between possession of persuasion intent and recognition of advergame source to affective, cognitive or conative responses. As such, it is consistent with other studies from the context of television advertising (Fox, 1981; Valkenburg, 2000) as well as advergames. In particular, like Mallinckrodt and Mizerski (2007), this research also did not find evidence for decreased brand preferences once children possessed persuasion knowledge; or decreased attitudes towards the advergame and the brand (Van Reijmersdal *et al*., 2012). In fact, all those findings are in contrast to the theoretical underpinning of the PKM. In this research, correct understanding of advergames' persuasive commercial intent or source did not result in negative responses.

This research contributes to a growing literature that not only young children (i.e. 5-7 year old in this research or 5-8 year olds in Mallinckrodt and Mizerski's (2007) research), but also older children (i.e. 11-12 year olds in this research or 7-12 year olds in Van Reijmersdal *et al*.'s (2012) study) are unable to apply persuasion knowledge as a defence against implicit advertising. This suggests that persuasion knowledge training (also referred to as 'media literacy training'), will not necessarily result in decreased persuasion. These findings also add to both parental, public (Channel4, 2014) and academic concerns (Livingstone, 2009; Nairn and Hang, 2012; Nairn and Fine, 2008) that while advergames are largely increasing in popularity, both young and older children demonstrate difficulties in understanding their persuasive intent. Moreover, even when they do understand such intent, it does not act as a barrier to protect them from the effects of advertising.

8.4.3 Effects of age on children's responses

It should be noted that in both responses, children's age had no impact on brand preferences or on intentions to request purchase. It is particularly interesting, as according to Piaget's (1960; 1971) age-stage developmental model, children develop in stage. The pre-operations stage (2-7 years), cognition is characterised by the tendency to focus only on the immediate aspects of an object. Thus, the model posits that children focus only on a limited amount of information at one point in time. It might have been expected that children in the younger age group to have an 'information overload' when tasked to make all those customisation choice; but older children, who are assumed to be able to consider multiple aspects simultaneously[29] should have been able, perhaps, to cut through the noise of customisation and focus on the brand. The results of this research show that not to be the case. It seems that in the case of implicit persuasion there is no difference in children's age regarding their responses.

[29] This ability to consider multiple aspects simultaneously relates to 7-11 year old children from the Concrete Operations stage, let alone older children (i.e. 11-12 year olds)

8.5 Effects of prior brand usage on children's responses

Findings suggest that prior brand usage has an important influence on advergames effects. Those results are consistent with other studies that show a well-documented correlation between past brand usage and consumers responses towards it in the context of television advertising with adults (Castleberry and Ehrenberg, 1990) and children (Auty and Lewis, 2004; Moore and Lutz, 2000). These findings particularly fit with those of Waiguny *et al.* (2012) who also conducted their study with children in the context of advergames and Winkler and Buckner (2006), who had an adult sample. The latter authors claim that advergames act as a reinforcer rather than a tool to build brand awareness. Van Reijmersdal *et al.* (2012) report contradictory results where children without prior brand usage were influenced more by the advergame than children with prior brand usage. The authors explain their finding by referring to the fact that children in their study interacted with the brand in a virtual environment, and that had the same effect as in real life experience. This research supports Ehrenberg's (1974) theory that prior brand awareness is required before purchase is made, or as in this case, an indication to request purchase of the brand. In addition, it also supports Baines *et al.* (2011, p. 392) who argue that for low-involvement purchases, such as a Jaffa Cake, advertising's role is to maintain awareness and remind customers of the brand.

The fact that the interaction of prior brand usage and condition type (i.e. customisation) rendered positive advergame and brand attitudes, highlights this constructs' importance. Those results, which are consistent with Auty and Lewis (2004) research in the context of brand placement in movies, suggest that it is not the mere exposure to an advergame, but the actual experience of using the brand previously together with a reminder, in the form of a fun and engaging game that may make a difference on affective responses.

8.6 Summary and conclusions

This final section draws together and summarises the conclusions for this thesis. It commences with a summary of the discussion (section 8.6.1) followed by explaining the contributions for marketing knowledge, practice and policy (section 8.6.2), an acknowledgement of the study's limitations and identification for future research (section 8.6.3), Finally, this thesis ends with a personal note (section 8.6.4).

8.6.1 Discussion summary

Three factors were investigated that are typically associated with advergames, being the effectiveness of a unique feature, children's possession of persuasive knowledge, and whether prior brand usage controls children's responses to the stimulus. The findings suggest that although, technically, customisation is possible, marketers should use this feature with caution as it does not necessarily lead to desired consumer responses. Children's understanding of persuasion in advergames is limited and does not act as a barrier to negatively influence the effects of a stimulus. Children's prior brand usage, on the other hand, has shown to positively influence their responses.

There are a few potential explanations to the detrimental effects of customisation in advergames on consumer responses. First, brand prominence may have rendered no impact on advergame attitudes as was in Van Reijmersdal *et al.*'s (2012) study. Second, there was a significant positive impact on children's brand attitudes, but it occurred only from the control condition. Children in the experimental conditions displayed either significant negative or non-significant outcomes. Those results demonstrate that, consistent with the Limited-Capacity Model of Attention (Kahneman, 1973), the additional cognitive effort required to process customisation has made children from the experimental conditions less likely to experience ease of processing. Thus, this research confirms that much depends on the *level* of interactivity and the type of perceived game difficulty.

Third, customisation may be limited to the type or genre of the game. Thus, it could work better when it is stronger related to the mechanics of the game. Fourth, it could also be the case that customisation may have more impact on brands with which children have

higher involvement, such as a Barbie doll or a race car, however, this is a venue to be explored in future research.

Consistent with previous studies, this research also shows that the main purpose of an advergame is to build and reinforce relationships between consumers and brands (Lee *et al*., 2009; 2014; Winkler and Buckner, 2006). This research also suggests that brand interactivity combined with prior brand usage could enhance the relationship between children and brands. Finally, consistent with other recent research, the results show that both younger and older children find it challenging to detect persuasion in advergames. When they do so, this knowledge still does not protect them from the impact of implicit advertising. Regulators assume that younger children are less media literate and therefore are considered to be particularly vulnerable to advertising. This and other research shows that older children's persuasion knowledge is not much greater, and neither age group's critical evaluation of advertising acts as a barrier against its effects. This research supports Livingstone and Helsper's (2006, p.171) assertion that –

"*The recognition of persuasive intent does not appear to confer immunity from persuasive effects, irrespective of age*".

Therefore, it is believed that these days, a 'magic age' in which children can resist advertising, should not be expected. The conclusions have important implications to theory/knowledge, practice as well as societal implications and those are discussed below.

8.6.2 Contributions to knowledge

Contribution to theory

This thesis makes a number of contributions to theories from the communication (i.e. DMH, Weak Theory of Advertising, and ATR), and children consumer socialisation (i.e. PKM) domains as it explores the role of customised advergames on children's responses. First, the research lends support to the DMH in an interactive unique customised advergame. The findings of this research are consistent with an existing body of extant literature that shows support for the influence of attitudes towards the advertisement on attitudes towards the advertised brand in the context of television advertising with adults (Batra and Ray, 1986; Lutz *et al*., 1983; Mackenzie *et al*., 1986; Mitchell and Olson, 1981) and children (Derbaix and Bree, 1997; Moore and Lutz, 2000). In the context of advergames, studies with adults (Cauberghe and De Pelsmacker, 2010; Sukoco and Wu, 2011; Wise *et al*., 2008) and children (Van Reijmersdal *et al*., 2010; 2012; Waiguny *et al*., 2012) uphold the above results.

Second, this thesis contributes to the debate whether persuasion knowledge can act as a barrier to advertising in this digital communication era. Friestad and Wright (1994) developed the theory 20 years ago in the context of a television dominated environment. However, today's digital environment presents new cognitive challenges regarding children's processing of commercial messages (Moore, 2006; Moore and Rideout, 2007), as more pervasive yet subtle messages attempt to persuade implicitly rather than explicitly (Nairn and Fine, 2008; Nairn, 2009). The extent to which children can harness their persuasion knowledge to assist them as a barrier against the persuasiveness of commercial implicit messages is the centre of a heated debate (Ambler, 2008; Livingstone, 2009; Nairn and Fine, 2008). The findings of this research show that both younger and older children find it difficult to understand the persuasive intent of advergames. In addition, the possession of persuasion knowledge does not act as a barrier to defend them from the persuasive intent of advertising.

A third contribution this thesis makes is to the Weak Theory of Advertising. The results from this research indicate that advergames act as a reinforcer rather than a tool to switch brands, as children with prior brand experience were influenced more than those who

have never used the brand before. In other words, the fact that some children had used or consumed the promoted brand, made a positive significant difference on their affective, cognitive and conative responses. A fourth contribution is demonstrating advertising effects within two distinct age groups from different developmental stages. Livingstone and Helsper (2006) observe that the majority of studies on advertising effects choose their sample for convenience rather than for theoretical grounds (e.g. Mallinckrodt and Mizerski, 2007). That gap is addressed by focusing on two groups of children that belong to different developmental stages. The first group consists of 5-7 year olds and belongs to Piaget's (1960; 1971) pre-operations stage (table 16), Roedder's (1981) limited processors stage (table 17); or John's (1999) perceptual stage (table 18). The second group of older children (i.e. 11-12 year olds) belong to Piaget's (1960; 1971) formal operations stage, Roedder's (1981) strategic processors stage and John's (1999) reflective stage. Doing so has tested the theoretical underpinning of the PKM as well as that of the age-stage frameworks above.

Contribution for practice

This research contributes to the understanding of the design of effective advergames. Creating immersive and entertaining advergames is crucial to ensure that they work well to engage and influence their young audiences. Developing a customised advergame is cost and time consuming. The results indicate that customisation in advergames does not work. On the contrary, it distracts children from the promoted brand. Therefore, marketers should not spend their budget on briefing game developers to design customised advergames. In fact, results suggest that marketers should consider very carefully the precise design of those games. Following from the version children played in the control condition, and which rendered the most desirable responses, there seems to be a number of pre-requisites for successful advergame design. First, advergames should include a brand placement with which children can interact (Goh and Ping, 2014; Lee *et al*., 2014; Van Reijmersdal *et al*., 2010). However, the placement of the interactive brand has to be treated with much caution as too high levels of brand interactivity could result in negative responses on advergame attitudes (Lee *et al*., 2014) even though it renders positive impact on brand attitudes (Goh and Ping, 2014; Lee *et al*., 2014). Thus, the *balance* regarding the degree of interactivity has to be adjusted carefully. Second, the advergame should be

involving and engaging (Van Reijmersdal *et al*., 2012), and although the brand should be interactive, it should not be too prominently placed (Van Reijmersdal *et al.,* 2012). Finally, an advergame should not be challenging or frustrating (Kinard and Hartman, 2013).

Contribution to policy

This research adds to public and parental concerns about the impact of advergames, particularly those that promote food brands. Results from this research indicate that neither age nor persuasion knowledge act as barriers against advergame's effects. Studies from broadcast media as well as advergames indicate that even when children possess critical evaluation of advertising, this knowledge does not defend them against the impact of advertising. There are a number of policy implications. First, much of the concern expressed by scholars relates to young children, predominantly from John's (1999) perceptual stage (i.e. 3-7 years). However, this, as well as other growing number of studies, show that children from John's (1999) reflective stage (i.e. 11-16 year olds) were similarly influenced by advergames. There is no statistically significant difference between the two age groups with regard to their persuasion knowledge as well as whether such knowledge acts as a barrier to advertising; while according to John's (1999) model, upon which policy is based, the older age group is supposed to understand not only the persuasive intent of advertising, but also its specific tactics and appeals.

The Advertising Standards Authority Code on Advertising Practice (CAP) provisions with regard to the promotion of HSSF foods has been in place for many years. This research adds to a growing number of other findings claiming that the integrated and immersive nature of advergames makes it difficult for children of different ages to apply their critical evaluative skills to advergames. Even when those skills are applied, they do not protect children from the impact of advertising. In response to those findings, CAP (2015) will commission further research into exploring children's critical understanding of advertising in an online content (including advergames). It will also provide guidelines to marketers that "*the marketing nature of advergames should be more clear, for example, by labelling*" (CAP, 2015, p.7). Those initiatives are in line with Nairn and Hang's (2012) recommendations for a mandatory and clear labelling for children's advergames as

advertising. In addition, policy makers should consider broadening the scope of concern for older as well as younger children as both are affected by this powerful medium.

8.6.3 Potential limitations and future research

The present study is the first attempt to explore the impact of customisation in advergames on consumer responses. In the past five years more researchers started to investigate the phenomenon surrounding advergames, yet there is still largely a gap in the area in comparison to the hundreds of studies that exist about television advertising. Future research could follow this investigation and contribute to the advergame literature. Below is a number of limitations are acknowledged as well as suggestions for future research.

First, customisation was explored in a specific context of a puzzle game, where the brand was embedded as part of the game's components (i.e. illustrative integration). It remains to be seen whether these results uphold in a different game genre, such as action-adventure or a SIM advergame, or where the brand is integrated differently. For example, results may differ if the advergame had demonstrative brand integration (e.g. figure 8), where players can experience the brand in its natural environment.

Second, this research was conducted in school ICT labs, and although it was not in a research labs, it was still not in children's natural environment, where they normally play such games. Further research could be carried out in a more natural environment. Third, since children responded to the questionnaire immediately after playing the game, it could explain short-term responses, but it could not account for long-term effects. A different design could perhaps leave two-three days' gap between stimulus exposure to measuring children's responses.

Fourth, this research focused on snack food brands, but during the research many examples of inappropriate advertising to children have been observed (e.g. advergames promoting alcohol), and it would be interesting to investigate whether exposure to alcohol or tobacco has an impact on children's or underage people's consumption. Fifth, this research explored '*what*' rather than '*how*' a certain phenomenon occurs. It would be interesting to investigate via a qualitative methodology age-related differences of children's and young people's understanding of advergame's potential as a commercial communications tool. The practice of marketers to promote food via sophisticated digital

mediums (e.g. online advertising or advergames) or covert advertising techniques (e.g. product placement) makes children older than 11-12 also vulnerable due to their lack of cognitive skills to detect them. It would be interesting to research adults' understanding of subliminal messages and compare those to children's. Robertson and Rossiter (1974) investigated children's persuasion knowledge and their trust in advertisements. It would be interesting to conduct a similar study with a younger children vs. adults, to explore their understanding of advergames. As part of such as discussion, it would be interesting to explore whether, once participants have understood that an advergame is a new format of advertising, would they trust it less, and what are their thoughts about the practice. Sixth, this research used a post-test design and as such it did not measure children's existing attitudes towards the promoted brand or their preferences for it among other brands. Further research could measure children's brand attitudes and preferences a couple of days prior to the experiment in order to evaluate positive or negative changes after exposure to the stimulus.

Finally, this research could investigate the differences between personalisation vs. customisation. It would be fascinating to explore which one is more effective. This could be achieved by designing two advergames promoting the same brand; one using personalisation (e.g. providing players with choices for their preferred character) while the other uses customisation techniques (e.g. providing players with choices about hairstyle or clothing for a random character). The challenge, though, is to operationalise personalisation as participants' prior preferences need to be established in advance.

8.6.4 Personal note

I started this journey in order to learn more about the impact of a potentially highly effective digital communication medium. Along my journey many content analyses were reviewed which reveal an overwhelming evidence that the food promoted to children via those advergames is precisely the type of food that both children and adults should not consume as it is detrimental to their health. Recent research about advergames proven time and time again that this interactive form of advertising has a strong impact on players' responses.

It took me several years to complete this PhD. I started as a practitioner working for digital marketing agencies, and along the journey I have encountered a mountain of challenges. The biggest challenge was to design a unique, novel advergame. When I arrived to Cranfield during my induction week, I would have never imagined that I will design my own advergame, even less so that children will actually be enthusiastic to play with it. There were numerous moments that I wished to stop, questioning the sanity of it all. At those moments, I had to remind myself the reason I started this journey in the first place and to carry on. As a final note, I believe more than ever that advergames are a powerful tool, and those could and certainly should be used for the promotion of healthy food that is beneficial for children's health.

REFERENCES

Adis, A.A., Kim, H-J, Majid, M.R.A., Osman, Z., Roeli, I.A. and Ing, G.P. (2015) 'Purchase Behaviour in Advergames and the Effect of Brand Attitude As A Mediator', *Asian Social Science*, 11(5), pp. 249-258.

Ajzen, I. (1991) 'The Theory of Planned Behaviour', *Organizational Behaviour and Human Decision Processes*, 50, pp. 179-211.

Ajzen, I. and Fishbein, M. (1980) *Understanding Attitudes and Predicting Social Behavior*, Englewood Cliffs, NJ: Prentice-Hall.

Ajzen, I. and Madden, T.J. (1986) 'Prediction of Goal-Directed Behaviour: Attitudes, Intentions and Perceived Behaviour Control', *Journal of Experimental Social Psychology*, 22, pp. 453-474.

Albanese, J.S. (1987) 'The Nature of Preferences: An Exploration of the Relationship Between Economics and Psychology', *Journal of Economic Psychology*, 8(1), pp. 3-18.

Allen, C.T, Machleit, K.A., Kleine, S.S. and Notani, A.S. (2005) 'A Place for Emotion in Attitude Models', *Journal of Business Research*, 58(4), pp. 494-499.

Allport, G.W. (1935) 'Attitudes', In Murchinson, C. (eds.), *A Handbook of Social Psychology*, pp. 798-844, Worcester: Cork University Press.

Ambler, T. (2008) 'Who's Messing with Whose Mind? Debating the Nairn and Fine Argument', *International Journal of Advertising*, 27(5), pp. 885-895.

An, S. and Kang, H. (2013) 'Do Online Ad Breaks Clearly Tell Kids That advergames Are Advertisements That Intend To Sell Things?', *Journal of International Advertising*, 32(4), pp. 655-678.

An, S. and Stern, S. (2011) 'Mitigating the Effects of Advergames on Children: Do Advertising Breaks Work?', *Journal of Advertising*, 40(1), pp. 43-56.

An, S. Jin, H.S. and Paek, E.H. (2014) 'Children's Advertising Literacy for Advergames: Perceptions of the Game as Advertising', *Journal of Advertising*, 43(1), pp. 63-72.

Ansari, A. And Mela, C.F. (2003) 'e-Customisation', *Journal of Marketing Research*, 40, pp. 131-145.

Anselmsson, J., Johansson, U. and Persson, N. (2008) 'The Battle of Brands In The Swedish Market for Consumer Packaged Goods: A Cross-Category Examination of Brand Preference and Liking', *Journal of Brand Management*, 16(1), pp.63-79.

Armitage, C.J. and Connor M. (2001) 'Efficacy of the Theory of Planned Behaviour: A Meta-Analytic Review', *British Journal of Social Psychology*, 40, pp. 471-499.

Armitage, C.J. and Christian, J. (2003) 'From Attitudes to Behaviour: Basic and Applied Research on the Theory of Planned Behaviour', *Current Psychology: Developmental, Learning, Personality and Social*, 22(3), pp. 187-195.

Arndt, J. (1985) 'On Making Marketing Science More Scientific: Role of

Orientations, Paradigms, Metaphors, and Puzzle Solving', *Journal of Marketing*, 49, pp. 11-23.

Bagozzi, R.P. Tybout, A.M., Craig, C.S. and Sternthal, B. (1979) 'The Construct Validity of the Tripartite Classification of Attitudes', *Journal of Marketing Research*, 16, pp. 88-95.

Bagozzi, R.P. and Burnkrant, R.E. (1980) 'Single Component versus Multicomponent Models of Attitude: Some Cautions and Contingencies For Their Use', in NA: Advances in Consumer Research, 7, Olson, J.C. and Abor, A. (eds.), MI: *Association for Consumer Research*, pp. 339-344.

Bailey, R., Wise, K. and Bolls, P. (2009) 'How Avatar Customizability Affects Children's Arousal and Subjective Presence During Junk Food Sponsored Online Video Games', *Cyber Psychology and Behaviour*, 12(10), pp. 1-7.

Baines, P., Fill, C. and Page, K. (2011) *Marketing*, 2nd ed., Oxford: Oxford University Press.

Balasubramanian, S.K., Karrh, J.A. and Patwardhan, H. (2006) 'Audience Response to Product Placements', *Journal of Advertising*, 35(3), pp. 115-141.

Bandura, A. (1986) *Social Foundation of Thought and Action: A Social Cognitive Theory*, Englewood Cliffs, NJ: Prentice Hall.

Barnard, N.R. and Ehrenberg, A.S.C. (1997) 'Advertising: Strongly Persuasive or Nudging?', *Journal of Advertising Research*, 37, pp. 21-31.

Baron, R.M. and Kenny, D.A. (986) 'The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations', *Journal of Personality and Social Psychology*, 51, pp. 1173-1182.

Barwise, T.P. and Ehrenberg, A.S.C. (1985) 'Consumer Beliefs and Brand Usage', *Journal of Market Research Society*, 27, pp. 81-93.

Bass, F.M. and Talazyk, W.W. (1972) 'An Attitude Model For The Study of Brand Preference', *Journal of Marketing Research*, 9(1), pp. 93-96.

Bass, F.M. and Wilkie, W.L. (1973) 'A Comparative Analysis of Attitudinal Predictions of Brand Preference', *Journal of Marketing Research*, 10, pp. 262-269.

Batra, R. and Ray, M.L. (1986) 'Affective Responses Mediating Acceptance of Advertising', *Journal of Consumer Research*, 13, (September), pp. 234-249.

Beach, L.R. (1993) 'Broadening the Definition of Decision Making: The Role of Prochoice Screening of Options', *Psychological Science*, 4(4), pp. 215-220.

Berg, C., Jonsson, I. and Connor, M. (2000) 'Understanding Choice of Milk and Bread for Breakfast Among Swedish Children Aged 11-15 Years: An Application of the Theory of Planned Behaviour', *Appetite*, 34(1), (February), pp. 5-19.

Bettman, J.R., Luce, M.F. and Payne, J.W. (1998) 'Constructive Consumer Choice Process', *Journal of Consumer Research*, 25(3), pp. 187-217.

Bijmolt, T.H.A. Claassen, W. and Brus, B. (1998) 'Children's Understanding of TV Advertising: Effects of Age, Gender and Parental Influence', *Journal of Consumer Policy*, 21(2), pp. 171-194.

Blackwell, R.D., Engel, J. And Miniard, P.W. (2006) *Consumer Behaviour* (10th ed.), Mason, Ohio: Thomson Business and Economics.

Blaikie, N. (2007) *Approaches to Social Enquiry: Advancing Knowledge.* 2nd ed., Cambridge: Polity Press.

Blom, J. (2000) 'Personalisation - A Taxonomy', *Extended Abstracts of the CHI2000 Conference on Human Factors in Computing Systems*, New-York: ACM.

Blom, J. and Monk, A. (2003) 'Theory of Personalisation of Appearance: Why People Personalise Their Mobile Phones and PCs', *Human-Computer Interaction*, 18, pp. 193-228.

Bornstein, R.F. (1989) 'Exposure and Effect: Overview and Meta-Analysis of Research (1968-1987)', *Psychological Bulletin*, 106(2), pp. 265-289.

Borzekowski, D.L.G. and Robinson, T.N. (2001) 'The 30-Second Effect: An Experiment Revealing the Impact of Television Commercials on Food Preferences of Preschoolers', *Journal of American Dietetic Association*, 10(1), pp. 42-46.

Boyland, E.J. and Halford, J.C.G. (2013) 'Television Advertising and Branding: Effects on Eating Behaviour and Food Preferences in Children', *Appetite,* 62, pp. 236-241.

Boyland, E.J., Harrold, J.A., Kirkham, T.C., Corker, C., Cuddy, J., Evans, D., (2011) 'Food Commercials Increase Preference for Energy-Dense Foods, Particularly In Children Who Watch More Television', *Paediatrics*, 128, pp. 93-100.

Boynton-Jarrett, R., Thomas, T.N., Peterson, K.E., Wiecha, J., Sobol, A.M. and Gortmaker, S.L. (2003) 'Impact of Television Viewing Patterns on Fruit and Vegetable Consumption Amongst Adolescents', *Paediatrics*, 112, pp. 1321-1326.

Bray, J.H. and Maxwell, S.E. (1985) *Multivariate Analysis of Covariance*, 54, Newbury Park, CA: Sage Publications.

Breakwell, G.M., Hammond, S, and Fife-Schaw, C. (2000) *Research Methods in Psychology*. 2nd edn., London: SAGE Publications.

British Medical Association (2001) *Consent, Rights and Choices in Health Care for Children and Young People*, London: BMA.

British Medical Association (2005) *Preventing Childhood Obesity*, June, Board of Science. London: BMA.

British Medical Association (2015) *Food for Thought: Promoting Healthy Diets Among Children and Young People*, July, London: Board of Science.

Brown, S.P. and Stayman, D.M. (1992) 'Antecedents and Consequences of Attitude Toward the Ad: A Meta-Analysis', *Journal of Consumer Research*, 19, pp.34-51.

Brucks, M., Armstrong, G.M. and Goldberg, M.E. (1988) 'Children's use of Cognitive Defences against Advertising', *Journal of Consumers Research*, 14, pp. 471-482.

Bryman, A. (2004) *Social Research Methods*. New-York: Oxford University Press.

Buijzen, M., Van Reijmersdal, E.A. and Owen, L.H. (2010) 'Introducing the PCMC Model: An Investigative Framework for Young People's Processing of Commercialised Media Content', *Communication Theory*, 20, pp. 427-450.

Cacioppo, J.T. and Petty, R.E. (1985) 'Central and Peripheral Routes to Persuasion: The Role of Message Repetition', in Alwitt, L.F. and Mitchell, A.A. (ed.) *Psychological Processes and Advertising Effects: Theory, Research and Applications*. Hillsdale, NJ: Lawrence Erlbaum, pp. 91-112.

Cairns, G., Angus, K. and Hastings, G. (2009), *The Extent, Nature and Effects of Food Promotions to Children: A Review of the Evidence*, Geneva: World Health Organisation (WHO).

Cairns, G., Angus, K., Hastings, G. And Caraher, M. (2012) Research Review: Systematic Review of the Evidence on the Nature, Extent and Effects of Food Marketing to Children, *Appetite*, pp. 1-7.

Cairns, G., (2015) *The Impact of Food and Drink Marketing on Scotland's Children and Young People: A Report on the Results of Questions About Exposure and Purchase Responses Included in IPSOS-Mori's 2014Young People in Scotland Survey*. Stirling: ISM Institute for Social Marketing and the Open University.

CAP (2015) *Online Food and Drink Marketing to Children: CAP's Response to the 2014 Literature Review by Family, Kids & Youth*. London: Committee of Advertising Practice.

Castleberry, S.B. and Ehrenberg, A.S.C. (1990) 'Brand Usage: A Factor in Consumer Beliefs', *Marketing Research*, pp. 14-19.

Cauberghe, V. and De Pelsmacker, P. (2000) 'The Impact of Brand Prominence and Game Repetition on Brand Responses', *Journal of Advertising*, 39(1), pp.5-18.

Chang, H.H. and Liu, Y.M. (2009) 'The Impact of Brand Equity on Brand Preference and Purchase Intentions in the Service Industries', *The Service Industries Journal*, 26(12), pp.1687-1706.

Channel4 Dispatches (2014) *Tricks of the Junk Food Business* (Chanel4) (available at: http://www.channel4.com/programmes/dispatches/videos/all/dispatches-tricks-of-the-junk-food-business)

Chellapa, R.K. and Sin, R.G. (2005) 'Personalisation versus Privacy: An Empirical Examination of the Online Consumers' Dilemma', *Information Technology and Management*, 6(2), pp. 181-202.

Chernin, A. (2008) 'The Effects of Food Marketing on Children's Preferences: Testing the Moderating Roles of Age and Gender', *Annals of the American Academy of Political and Social Science*, 615, pp. 102-118.

Chester, J. and Montgomery, K. (2007) *Interactive Food and Beverage Marketing: Targeting Children and Youth*, Report to the Berkeley Media Study Group, Berkley, CA: The Public Health Institute.

Cheyne, A., Dorfman, D.L., Gonzalez, P. and Mejia, P. (2011) *Food and Beverage Marketing to Children and Adolescents: An Environment at Odds with Good Health*. Berkeley Media Studies Group, (April). Berkley, CA: Robert Wood Johnson Foundation.

Chia, R. (2002) 'The Production of Management Knowledge: Philosophical Underpinnings of Research Design', in Partington, D. (eds), *Essential Skills for Management Research*, London: SAGE Publications Ltd., pp. 1-9.

Cicchirillo, V. and Lin, J-S (2011) 'Stop Playing with your Food: A Comparison of For-Profit and Non-Profit Food Related Advergames', *Journal of Advertising Research*, 51(3), pp. 484-498.

Clarke, T.K. (1984) 'Situational Factors Affecting Preschoolers'' Responses to Advertising', *Academy of Marketing Science Journal*, 12(4), p.25.

Committee For Advertising Practice (CAP) (2010a), The BCAP Code: The UK Code For Broadcast Advertising, available at: https://www.cap.org.uk/Advertising-Codes/~/media/Files/CAP/Codes%20BCAP%20pdf/The%20BCAP%20Code.ashx, (accessed: 1 December, 2015).

Committee For Advertising Practice (2010b) *The CAP Code: The UK Code of Non-Broadcast Advertising, Sales, Promotions and Direct Marketing*, London.

Common Sense Media (2015), Accessed on 20 April, 2016 available at: https://www.commonsensemedia.org

Coner, A. (2003) 'Personalisation and Customisation in Financial Portals', *Journal of American Academy of Business*, 2, pp. 498-504.

Conde-Pumpido, T.H. (2014) *Persuasive Strategies in Advergames: Converging Advertising Messages Through Digital Game*, Unpublished Doctoral Thesis, Netherlands: Utrecht University.

Cordova, D.I. and Lepper, M.R. (1996) 'Intrinsic Motivation and the Process of Learning: Beneficial Effects of Contextualization, Personalisation, and Choice', *Journal of Educational Psychology*, 88(4), pp.715-730.

Creswell, J.W. (2009) *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*. 3rd edn. London: Sage Publications.

Culp, J., Bell, R.A., and Cassady, D. (2010) 'Characteristics of Food Industry Websites and Advergames Targeting Children', *Journal of Nutrition Education Behaviour*, 42(3), pp. 197-201.

Dahl, S., Eagle, L. and Carlos, B. (2009) 'Analyzing Advergames: Active Diversions or Actually Deceptions: An Exploratory Study of Online Advergames Content', *Young Consumers*, 10(1), pp.46-59.

Dalmeny, K., Hanna, E., and Lobstein, T. (2003) *Broadcasting Bad Health: Why Food Marketing to Children Needs to be Controlled?*, A Report by the International Association of Consumer Food Organisations (IACFO). London: World Health Organisation (WHO).

Dardis, F.E., Schmierbach, M. and Limperos, A. (2012) 'The Impact of Game Personalisation And Control Mechanisms on Recall and Peripheral Brand Placements in Video Games', *Journal of Interactive Marketing*, 12(2), pp.1-12.

Darley, W. and Lim, J. (1992) 'The Effect of Consumers' Emotional Reactions on Behavioural Intentions: The Moderating Role of Personal Relevance and Self-Monitoring', *Psychology & Marketing*, 9(4), pp. 329-346.

Darlington, R.B. (1990) *Regression and Linear Models*. New-York: McGraw-Hill.

Davis, S.M. (1987), *Future Perfect*. Reading, MA: Addison-Wesley.

Deci, E.L. and Ryan, R.M. (1985) *Intrinsic Motivation and Self Determination in Human Behaviour*. New-York: Plenum.

De Onis M., Blossner, M. and Borghi, E. (2010) 'Global Prevalence and Trends of Overweight and Obesity Among Pre-School Children', *The American Journal of Clinical Nutrition*, 92(5), pp.1257-1264.

De Chernatony, L. and McDonald, M. (2003) *Creating Powerful Brands in Consumer Service and Industrial Markets*. 3rd edn. Oxford: Elsevier Butterworth-Heinemann.

Derbaix, C. and Bree, J. (1997), 'The Impact of Children's Affective Reactions Elicited by Commercials on Attitudes toward the Advertisement and the Brand', *International Journal of Research in Marketing*, 14, pp. 207-229.

Deshpande, R. (1983), 'Paradigms Lost: On Theory and Method in Research Marketing', *Journal of Marketing*, 47, pp. 101-110.

Dias, M. and Agante, L. (2011) 'Can Advergames Boost Children's Healthier Eating Habits? A Comparison Between Healthy and Non-Healthy Food', *Journal of Consumer Behaviour*, 10(3), pp. 152-160.

Dyer, C. (1995) *Beginning Research in Psychology: A Practical Guide to Research Methods and Statistics*, Blackwell Publishers Ltd.

Easterby-Smith, M., Thorpe, R., Jackson, P. and Lowe, A. (2008) *Management Research: Theory and Practice*. 3rd edn. London: Sage.

Eagly, A.E. and Chaiken, S. (1993) *The Psychology of Attitudes*. TX: Harcourt Brace Jovanovich.

Eagly, A.E. and Chaiken, S. (1998) Attitude Structure and Function, In Gilbert, D.T., Fiske, S.T. and Lindzey, G. (Eds.), *The Handbook of Social Psychology*, 4th edn. 1, pp. 268-322, New York: McGraw-Hill.

Ehrenberg, A.S.C. (1997) 'How Do Consumers Come to Buy A New Brand?', *Admap*, pp. 20-24.

Eisenmann, J.C., Bartee, R.T., Smith, D.T., Welk, G.J. and Fu, Q. (2008) 'Combined Influence of Physical Activity and Television Advertising Viewing on the Risk of Overweight in US Youth', *International Journal of Obesity*, 32, pp. 613-618.

Epstein, L.H., Roemmich, J.N., Robinson, J.L., Paluch, R.A., Winiewicz, D.D. and Fuerch, J.H. (2008) A Randomized Trial of The Effects of Reducing Television Viewing and Computer Use on Body Mass Index In Young Children", *Archives of Pediatrics and Adolescent Medicine*, 162, p. 239-45.

Evans, N.J. and Park, D. (2015) 'Rethinking the Persuasion Knowledge Model: Schematic Antecedents and Associative Outcomes of Persuasion Knowledge Activation for Covert Advertising', *Journal of Current Issues and Research in Advertising*, 36, pp. 157-176.

Federal Trade Commission (FTC) (2008) *Marketing Food to Children and Adolescents: A Review of Industry Expenditure, Activities, and Self-Regulation*, (July 2008), Report to Congress: Washington DC, p. 1-120. Available from: http://www.ftc.gov/os/2008/07/P064504foodmktingreport.pdf (Accessed: 16 April, 2011).

Fennis, B.M. and Stroebe, W. (2010) *The Psychology of Advertising*. East Sussex: Psychology Press.

Field, A. (2009) *Discovering Statistics Using SPSS*. 3rd edn. London: SAGE Publications.

Field, A. and Hole, G.J. (2003) *How to Design and Report Experiments*. London: SAGE Publications Ltd.

Fill, C. (2013) *Marketing Communications: Brands, Experiences*, and Participation. 6th edn. Pearson Education Ltd.

Fishbein, M. (1965) A Consideration of Beliefs, Attitudes, and Their Relationships. In: Steiner, I.D. and Fishbein, M. (eds.), *Current Studies in Social Psychology*. New York: Hold, Rinehart and Wilson, pp. 107-120.

Fishbein, M.A. (1967) Attitude and the Prediction of Behaviour, In Fishbein, M. (Ed.), Readings in Attitude Theory and Measurement, New-York: Wiley, pp. 477-492.

Fishbein, M. and Ajzen, I. (1975) *Belief, Attitude, Intention and Behaviour: An Introduction to Theory and Research*, Reading, Massachusetts: Addison-Wesley.

Florack, A. and Scarabis, M. (2006) 'How Advertising Claims Effect on Brand Preference and Category: The Role of Regulatory Fit", *Psychology and Marketing*, 23, pp. 741-755.

Folkvord, F., Anschutz, D.J., Buijzen, M. and Valkenburg, P.M. (2013) 'The Effects of Playing Advergames That Promote Energy-Dense Snacks or Fruit on Actual Food Intake Among Children', *American Journal of Clinical Nutrition*, 97, pp. 239-245.

Fox, D.T. (1981) 'Children's Television Commercials and Their Nutrition Knowledge and Eating Habits', *Dissertation Abstracts International*, 42, p. 2576.

Franke, N. and Piller, F.T. (2004) 'Value Creation by Toolkits for User Innovation and Design: The Case of the Watch Market', *Journal of Product Innovation Management*, 21 (November), pp. 401-415.

Friestad, M. and Wright, P. (1994) 'The Persuasion Model: How People Cope with Persuasion Attempts', *Journal of Consumer Research*, 21, pp. 1-31.

Garretson, J.A. and Niedrich, R.W. (2004) 'Spokes-Characters: Creating Character Trust and Positive Brand Attitudes', *Journal of Advertising*, 33, p. 25-36.

Galst, J.P. and White, M.A. (1976) 'The Unhealthy Persuader: the Reinforcing Value of Television and Children's Purchase Influencing Attempts at the Supermarket', *Child Development*, 47, pp. 1086-1096.

Gee, J.P. (2005) 'Learning by Design: Good Video Games as Learning Machines', *E-Learning*, 2, pp. 5-16.

Geraci, J.C. (2004) 'What Do Youth Marketers Think About Selling to Kids?', *International Journal of Advertising and Marketing to Children*, 5(3), pp. 11-17.

Gilmore, J.H. and Pine, J. (1997), 'The Four Faces of Mass Customisation', *Harvard Business Review*, 75, pp. 91-101.

Goh, K-Y and Ping, J.W. (2014) 'Engaging Consumers with Advergames: An Experimental Evaluation of Interactivity, Fit and Expectancy', *Journal of The Association for Information Systems*, 15(7), pp. 388-421.

Goldberg, M.E., Gorn, G.J. and Gibson, W. (1978) 'TV Messages for Snacks and Breakfast Foods: Do They Influence Children's Preferences', *Journal of Consumer Research*, 5(2), pp. 73-81.

Gorn, G.J. and Goldberg, M.E. (1980) 'Children's Responses to Repetitive Television Commercials', *Journal of Consumer Research*, 6(4), pp. 421-424.

Gorn, G.J. and Goldberg, M.E. (1982) 'Behavioural Evidence of the Effects of Televised Food Messages on Children', *Journal of Consumer Research*, 9(2), pp. 200-205.

Gorn, G.J. and Florsheim, R. (1985) 'The Effects of Commercials for Adult Products on Children', *Journal of Consumer Research*, 11(4), pp. 962-967.

Goswami, V. (2008) *Byron Review on the Impact of New Technologies on Children: A Research Literature Review: Child Development*. Cambridge: University of Cambridge.

Grigorovici, D.M. and Constantin, C.D. (2004) 'Experiencing Interactive Advertising Beyond Rich Media: Impacts of Ad Type on Brand Effectiveness in 3D Gaming Immersive Virtual Environments', *Journal of Interactive Advertising*, 5, pp. 22-36.

Grunet, K. (1988) 'Research in Consumer behaviour: Beyond Attitude and Decision Making', *European Research*, 16, pp. 172-183.

Guba, E.G. and Lincoln, Y.S. (2000) (Eds.) *Paradigmatic Controversies, Contradictions and Emerging Confluences*. 2nd edn. London: Sage Publications.

Guildford, J.P. and Frunchter, B. (1978) *Fundamental Statistics for Psychology and Education*. McGraw-Hill Book Co.

Gunn, E. (2001) 'Product Placement Prize', *Advertising Age*, 72(7), pp. 10.

Gunter, B. and Furnham, A. (1998) *Children as Consumers: A Psychological Analysis of Young People's Market*, Routledge.

Hair, J.F., Black, W.C., Bobin, B.J., Anderson, R.E. and Tatham, R.L. (2006), *Multivariate Data Analysis*. 6th edn. New Jersey: Pearson.

Halford, J.C.G., Gillespie, J., Brown, V., Pontin, E.E. and Dovey, T.M. (2004) 'Effects of Television Advertisements For Foods on Food Consumption In Children', *Appetite*, 42, pp. 221-225.

Halford, G.S. and Andrews, G. 'Information Processing Models of Cognitive Development', In Goswami, V. (Eds.) (2013) The Willey-Blackwell Handbook of Childhood Cognitive Development. 2nd edn. Chichester: John Willey & Sons Ltd.

Hancox, R.J. and Poulton, R. (2006) 'Watching Television Is Associated With Childhood Obesity: But Is It Clinically Important?', *International Journal of Obesity and Related Metabolic Disorders*, 30, pp. 171-175.

Hang, H. and Auty, S. (2011) 'Children Playing Branded Video Games: The Impact of Interactivity on Product Placement Effectiveness', *Journal of Consumer Psychology*, 21(1), pp. 65-72.

Harrell, G.D. and Bennett, P.D. (1974) 'An Evaluation of the Expectancy Value Model of Attribute Measurement for Physician Prescribing Behaviour', *Journal of Marketing Research*, 11(3), pp. 269-278.

Harris, J., Schwartz, M., Brownell, K., Sarda, V., Weinberg, M., Speers, S., Thompson, J., Ustianauskas, A., Cheyne, A., Bukofzer, E., Dorfman, L., and Byrnes-Enoch, H. (2009) *Cereal F.A.C.T.S. – Evaluating the Nutrition Quality of Children's Cereals*, Report to Congress. Yale University: Rudd Centre for Food Policy and Obesity.

Harris, J.L., Brownell, K.D. and Bargh, J.A. (2009) 'The Food Marketing Defence Model: Integrating Psychological Research to Protect Youth and Inform Public Policy', *Social Issues and Policy Review*, 3, pp. 211-271.

Harrison, K. (2005) 'Is 'Fat-Free' Good for Me? A Panel Study of Television Viewing and Children's Nutritional Knowledge and Reasoning', *Health Communications*, 17(2), pp. 117-132.

Harrison, K. and Marske, A.L. (2005) 'Nutritional Content of Food Advertised During The Television Programs Children Watch Most', *American Journal of Public Health*, 95(9), pp. 1568-1574.

Hart, C.W. (1996) 'Made to Order', *Marketing Management*, 5(2), pp. 12-22.

HM Revenue & Customs (2014) www.hmrc.gov.uk/manuals/vfoodmanual/vfood6260.htm VFOOD6260 – Excepted items: Confectionary, The Bounds of Confectionary, Sweets, Chocolates, Chocolate Biscuits, Cakes and Biscuits: The Borderline Between Cakes and Biscuits (Accessed: on 27 January, 2014).

Haslop, L.A. and Ryans, A.B. (1980), 'A Second Look at Children and the Advertising of Premiums', *Journal of Consumer Research*, 6(4), pp. 414-420.

Hastings, G., McDermott, L., Angus, K., and Thomson, S. (2006) *The Extent, Nature and Effects of Food Promotions to Children: A Review of the Evidence*, Technical Paper Prepared for the World Health Organisation, Geneva: WHO.

Hastings, G., Stead, M., McDermott, L., Forsyth, A., Mackintosh, A.M., Rayner, M., Godfrey, C., Caraher, M. and Angus, K. (2003) *Reviewing of Research on the Effects of Food Promotion to Children,* Report to the Food Standards Agency (FSA), University of Strathclyde: Centre for Social Marketing (CSM).

Hawkes, C. (2004), 'Marketing Food to Children: The Global Regulatory Environment', Geneva: World Health Organisation.

Hayes, A.F., Preacher, K.J. and Mayers, T.A. (2011) Mediation and the Estimation of Indirect Effects in Political Communications Research. In Bucy, P. and Holbert, R. (Eds.), The Sourcebook for Political Communications Research: Methods, Measures and Analytical Techniques, pp. 434-465. New-York: Routledge.

Hayes, A.F. (2013) *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression Based Approach*. New York: The Guilford Press.

Heeter, C. (1989) 'Implications of New Interactive Technologies for Conceptualizing Communication Media Use', in Savaggio, J. and Bryant, J. (ed.), *The Information Age: Emerging Patterns of Adoption and Consumer Use*. Hillsdale, NJ: Lawrence Erlbaum Associates, pp. 53-75.

Hernandez, M.D. and Chapa, S. (2010), 'Adolescents, Advergames and Snack Food: Effects Of Positive Affects and Experience on Memory and Choice', *Journal of Marketing Communications*, 16(1-2), pp. 57-68.

Hernandez, M.D., Chapa, S., Minor, M.S., Maldonado, C. and Barranzuela, F. (2004) 'Hispanic Attitudes toward Advergames: A Proposed Model of their Antecedents', *Journal of Interactive Advertising*, 5, pp. 74-83.

Hewitt, A.M. and Stephens, C. (2007) 'Healthy Eating Among 10-13 Year Old New Zealand Children: Understanding Choice Using the Theory of Planned Behaviour and the Role of Parental Influence', *Psychology, Health and Medicine*, 12(5), pp. 526-535.

Hite, R.E. and Eck, R. (1987) 'Advertising to Children, Attitudes of Business vs. Consumers', *Journal of Advertising Research*, 27(5), pp. 40-53.

Ho, S.Y. (2006) 'The Attraction of Web Personalisation to Web Users', *Electronic Markets*, 16(1), pp. 41-50.

Holbrook, M.B. and Hirschman, E.C. (1982) 'The Experiential Aspects of Consumption: Consumer Fantasies, Feelings, and Fun', *Journal of Consumer Research*, 9, pp. 132-140.

Hovland, C.I., Janis, I.L. and Kelley, H.H. (1953) *Communication and Persuasion: Psychological Studies of Opinion Change*. New Haven: Yale University Press.

HSCIC (2012) *Health Survey for England: Health, Social Care and Lifestyles*, A Survey Carried Out On Behalf Of the HSCIC, London: Department of Epidemiology and Public Health, University College London.

HSCIC (2015) *Statistics on Obesity, Physical Activity, and Diet, Health and Social Care Information Centre*, London.

Hsee, C.K., Yang, Y., Gu, Y. and Chen, J. (2009) 'Specification Seeking: How Product Specifications Influence Consumer Preference', *Journal of Consumer Research*, 35, pp. 952-966.

Institute of Medicine (IoM) (2005) *Food Marketing to Children and Youth: Threat or Opportunity?*, Washington, D.C.: Institute of Medicine of the National Academics.

John, D.R. (1999) 'Consumers Socialization of Children: A Retrospective Look at Twenty-Five Years of Research', *Journal of Consumer Research*, 26, pp. 183-213.

Jones, J.P. (1990) 'Advertising: Strong Force or Weak Force? Two Views An Ocean Apart', *International Journal of Advertising*, 9(3), pp. 233-246.

Jones, J.P. (1995) *When Ads Work: New Proof that Advertising Triggers Sales.* New-York: Lexington Books.

Jones, J.P. (1997) 'Is Advertising Still Salesmanship?', Journal of Advertising Research, pp. 9-15.

Jones, S.C. and Reid, A. (2010) 'Marketing to Children and Teens on Australian Food Company Websites', *Young Consumers*, 11(1), pp. 57-66.

Jones, S.C., Wiese, E. and Fabrianesi, B. (2008), 'Following the Links: Food Advertising and Promotion on Children's Magazine Websites', *Journal of Non-Profit & Public Sector Marketing*, 20(2), pp. 166-190.

Jorczak, R.L. (2011) 'An Information Processing Perspective on Divergence and Convergence in Collaborative Learning', *International Journal of Computer-Supported Collaborative Learning*, 6(2), pp. 207-221.

Kahneman, D. (1973) *Attention and Effort*, Englewood Cliffs, NJ: Prentice Hall.

Kalyanaraman, S. and Sundar, S. (2006) 'The Psychological Appeal of Personalized Content on Web Portals: Does Customization Affect Attitudes and Behaviour?', *Journal of Communication*, 56, pp. 110-132.

Karrh, J.A. (1998) 'Brand Placements: A Review', *Journal of Current Issues and Research in Advertising*, 20(2), pp. 31-49.

Karrh, J.A., McKee, K.B., Pardun, C.J., (2003) 'Practitioners' Evolving Views on Product Placement Effectiveness', *Journal of Advertising Research,* pp. 138-149.

Karson, E.J. and Fisher, R.J. (2005) 'Re-Examining and Extending the DMH in An Online Advertising Context', *Psychology & Marketing*, 22(4), pp. 333-351.

Kaufman, L. And Sandman, P.M. (1983) Countering Children's Sugared Food Commercials: Do Rebuttals Help?, 34th Annual Meeting of the International Communication Association. San Francisco, CA, May 24-28.

Keats, J. (2001) 'Jargon Watch', *Wired*, http://www.wired.com/2001/10/jargon-watch-75/ (Accessed on: 12 June, 2016).

Kellogg's (2009) 'Apple Jacks Glider Advergame', available at: http://www.freegame3.com/apple-jacks-gliders/ (accessed: 22 April, 2012).

Kelly, B., Baur, L.A., Bauman, A.E., King, L., Chapman, K. And Smith, B.J. (2011) 'Food and Drink Sponsorship of Children's Sport in Australia: Who Pays?', *Health Promotion International*, 26, pp. 188-195.

Kennett, J. And Matthews, S. (2007) 'Marketing, Intimacy and Vulnerability', *Res Publica*, 16(1), pp. 1-6.

Kinard, B.R. and Hartman, K.B. (2013) 'Are You Entertained? The Impact of Brand Integration and Brand Experience In Television-Related Advergames', *Journal of Advertising*, 42 (2-3), pp. 196-203.

Klimmt, C. and Vorderer, P. (2007) Interactive Media, in Arnett, J.J. (Ed.), Encyclopaedia of Children, *Adolescents and the Media*, pp. 417-419, London: Sage.

Koivisto, E. (2007) *Mobile Games 2010.* Tempera: Nokia Research Centre.

Kotler, P., Armstrong, G., Harris, L.C., Piercy, N.F. and Robinshaw, M. (2013), *Principles of Marketing*. 6th edn. Harlow: Pearson Education Ltd.

Kraak, V.I. and Story, M. (2015) 'Influence of Food Companies' Brand Mascots and Entertainment Companies' Cartoon Media Characters on Children's Diet and Health: A Systematic Review and Research Needs', *Obesity Reviews*, 16(2), pp. 107-126.

Krauss, S.E. (2005) 'Research Paradigms and Meaning Making: A Primer', *The Qualitative Report*, 10(4), pp. 758-770.

Kuhn, T. (1996) *The Structure of Scientific Revolutions*. 3rd edn. Chicago: University of Chicago Press.

Kumar, A. (2007) 'From Mass Customization to Mass Personalization: A Strategic Transformation', *International Journal of Flexible Manufacturing Systems*, 19, pp. 533-547.

Kunkel, D. and Roberts, D. (1991) 'Young Minds and Marketplace Values: Issues in Children's Television Advertising', *Journal of Social Issues*, 47(1), pp. 57-72.

Kunkel, D. (2001) Children and Television Advertising, In Singer, D.G. and Singer, J.L. (ed.), Handbook of Children and the Media, Thousand Oaks, California: Sage Publications Inc., pp. 375-393.

Kunkel, D., Wilcox, B.L. Cantor J., Dowrick, P. and Palmer, E. (2004) *Report of the APA Task Force on Advertising to Children*, Washington DC: American Psychological Association.

LaPiere, R.T. (1934) 'Attitudes vs. Actions', *Social Forces*, 13, pp. 230-237.

Larson, N. and Story, M. (2008) *Food and Beverage Marketing to Children and Adolescents: What Changes are Needed to Promote Healthy Eating Habits?*, A Research Brief, (October). Princeton, NJ: Robert Wood Johnson Foundation.

Lavidge, R.J. and Steiner, G.A. (1961) 'A Model of Predictive Measurement of Advertising Effectiveness', *Journal of Marketing*, 52, pp. 59-62.

Lee, E-J and Schumann, D.W. (2004) 'Explaining the Special Case of Incongruity in Advertising: Combining Classic Theoretic Approaches', *Marketing Theory*, 4(1/2), pp. 59-90.

Lee, L., Park, H. And Wise, K. (2014) 'Brand Interactivity and Its Effects on the Outcomes of Advergame Play', *New Media & Society*, 16(8), pp. 1268-1286.

Lee, M. Choi, Y., Quilliam, E.T. and Cole, R.T. (2009) 'Playing with Food: Content Analysis of Food Advergames', *The Journal of Consumer Affairs*, 43(1), pp. 129-154.

Liong, C-Y and Foo, S-F (2013) Comparison of Linear Discriminant Analysis and Logistic Regression for Data Classification, proceedings of the 20th National Symposium on Mathematical Sciences, AIP Conference, pp. 1159-1165.

Livingstone, S. (2009) 'Debating Children's Susceptibility to Persuasion – Where Does Fairness Come In? – A Commentary on the Nairn and Fine Versus Ambler Debate', *International Journal of Advertising*, 28(1), pp. 170-174.

Lobstein, T. (2006) *Marketing to Children: Understanding the Need for International Standards*, London: International Obesity Task Force/ International Association for the Study of Obesity.

Locke, E.A. and Latham, G.P. (1990) *A Theory of Goal Setting and Task Performance*. Eaglewood Cliffs, NJ: Prentice Hall.

Lutz, R.J., Mackenzie, S.B. and Belch, G. (1983) 'Attitudes toward the Ad as a Mediator of Advertising Effectiveness: Determinants and Consequences', in Bagozzi, R. P. (ed.), *Advances in Consumer Research*, Vol. 10, Association for Consumer Research, pp. 532-539.

Mackenzie, S.B., Lutz, R.J. and Belch, G.E. (1986) 'The Role Attitude towards the Ad as a Mediator of Advertising Effectiveness: A Test of Competing Explanations', *Journal of Marketing Research*, 23, pp. 130-143.

MacKenzie, S.B. and Lutz, R.J. (1989) 'An Empirical Examination of the Structural Antecedents of Attitudes Toward the Ad in an Advertising Pretesting Context', *Journal of Marketing*, 53(2), pp. 48-65.

Mangleburg, T.F. and Bristol, T. (1998) 'Socialization and Adolescents' Skepticism Toward Advertising', *Journal of Advertising*, 17(3), pp. 11-23.

Maher, A., Wilson, N., Signal, L. And Thomson, G. (2006) 'Patterns of Sports Sponsorship by Gambling, Alcohol and Food Companies: An Internet Survey', *BMC Public Health*, 6, p.95.

Mallinckrodt, V. and Mizerski, D. (2007) 'The Effects of an Advergame on Young Children's Perceptions, Preferences and Requests', *Journal of Advertising*, 36(2), pp. 87-100.

Mandler, G. (1982) 'The Structure of Value: Accounting for Taste' in Clark, M.S. and Fiske, S.T. (ed.) *Affect and Cognition:17th Annual Carnegie Mellon Symposium on Cognition*. Hillsdale, NJ: Erlbaum, pp. 3-36.

Mano, H. and Oliver, R.L. (1993) 'Assessing the Dimensions and Structure of the Consumption Experience: Evaluation, Feeling and Satisfaction', *Journal of Consumer Research*, 20(3), pp. 451-466.

Marshall, D., O'Donohoe, S. and Kline, S. (2007), 'Families, Food and Pester Power: Beyond the Blame Game', *Journal of Consumer Behavior'*, 6(4), pp. 164-181.

Martin, M.C. (1997) 'Children's Understanding of the Intent of Advertising: A Meta-Analysis', *Journal of Public Policy and Marketing*, 16, pp. 205-216.

Mathieu, J.E. and Taylor, S.R. (2007) 'A Framework for Testing Meso-Mediational Relationships in Organisational Behavior', *Journal of Organisational Behavior*, 28, pp. 141-172.

McFadden, D. (1996) 'Rationality for Economists', *Journal of Risk and Uncertainty*, 19(1), pp. 73-105.

McNeal, J.V. (1992) *Kids As Consumers: A Handbook of Marketing to Children*. New-York: Lexington Books.

Mangleburg, T.E. and Bristol, T. (1998) 'Socialization and Adolescents' Skepticism toward Advertising', *Journal of Advertising*, 27(3), pp.11-12.

Mayers, A. (2013) *Introduction to Statistics and SPSS in Psychology*. Harlow: Pearson Education.

Minotto, J. (2014) *Taking the Biscuit: Yildiz Acquire United Biscuits*, (6 November), Mintel Group Ltd.

Mintel (2013) Biscuits, *Cookies, and Crackers*, Mintel Group Ltd.

Mitchell, A.A. and Olson, J.C. (1981) 'Are Product Attributes Beliefs the Only Mediator for Advertising Effects on Brand Attitude?', *Journal of Marketing Research*, 18, pp. 318-332.

Mitchell, M.L. and Jolley, J.M. (2013) *Research Design Explained*. 8th edn. International edition. Belmont, CA: Wadsworth Cengage Learning.

Montgomery, K.C. and Chester, M.S.W. (2009) 'Interactive Food and Beverage Marketing: Targeting Adolescents in the Digital Age', *Journal of Adolescence Health*, 45, pp. 18-29.

Moore, E.S. and Lutz, R.J. (2000) 'Children, Advertising, and Product Placement Expenditure: A Multi-Method Inquiry', *Journal of Consumer Research*, 27, pp. 31-47.

Moore, E.S. (2006) *It's Child's Play: Advergaming and the Online Marketing of Food to Children*, (July). Washington D.C.: The Henry J. Kaiser Family Foundation.

Moore, E. and Rideout, V.J. (2007) 'The Online Marketing of Food to Children: Is It Just Fun and Games?', *Journal of Public Policy and Marketing*, 26(2), pp. 202-220.

Moore, D.L. and Hutchinson, J.W. (1985) 'The Effect of Ad Affects on Advertising Effectiveness', In Bagozzi, R.P. and Tybout, A.M. (Eds.), *Advances in Consumer Research*, 10, pp. 526-531, Association for Consumer Research.

Morrow, V. and Richards, M. (1996) 'The Ethics of Social Research With Children: An Overview', *Children and Society*, 10, pp. 90-105.

Moses, L.J. and Baldwin, D.A. (2005) 'What Can The Study of Cognitive Development Reveal About Children's Ability to Appreciate and Cope With Advertising?', *Journal of Public Policy & Marketing*, 24(2), pp. 186-201.

Nairn, A. (2009) *Changing the Rules of the Game: Implicit Persuasion and Interactive Children's Marketing*, Berkeley, CA: The Robert Wood Johnson Foundation.

Nairn, A. and Fine, C. (2008) 'Who's Messing with My Mind? – The Implications of Dual Process Model for the Ethics of Advertising to Children', *International Journal of Advertising*, 27(3), pp. 447-470.

Nairn, A. and Hang, A. (2012) *Advergames: It's Not a Child's Play: A Review of Research,* (December). London: Family and Parenting Institute.

Neeley, S.M. and Schumann, D.W. (2004) 'Using Animated Spoke-Characters in Advertising to Young Children', *Journal of Advertising*, 33(3), pp. 7-23.

Nelson, M.R. (2002) Recall of Brand Placements in Computer/Video Games, *Journal of Advertising Research,* 42(2), pp. 80-92.

Nelson M.R., Woo, M.L. and Paek, H.J. (2009) 'Increased Persuasion Knowledge of Video News Releases: Audience Beliefs About News and Support for Source Disclosure', *Journal of Mass Media Ethics*, 24(4), pp.220-237.

Nicolson, R.H. (1986) *Medical Research with Children: Ethics, Law and Practice*, Oxford: Oxford University Press.

Nielsen, J. (1998) 'Personalisation Is Over-Rated' http://www.useit.com/alertbox/981004.html (accessed on 14 October 2012).

Norton, P.A., Falciglia, G.A. and Ricketts, C. (2000) 'Motivational Determinants of Food Preferences in Adolescents and Pre-Adolescents', *Ecology of Food and Nutrition*, 39(3), pp.169-182.

Nunnally, J.C. (1978) Psychometric Theory. 2nd edn. New-York: McGraw-Hill.

Oates, C., Blades, M. and Gunter, B. (2002) 'Children and Television Advertising: When do They Understand Persuasive Intent', *Journal of Consumer Behaviour*, 1(3), pp. 238-245.

OFCOM (2010) *HFSS Advertising Restrictions: Final Review*. London: Office of Communications.

Oliver, R.L. (1999) 'Whence Consumer Loyalty?', Journal of Marketing, 63(4), pp. 33-44.

Orne, M.T. (1969) 'Demand Characteristics and the Concept of Quasi-Controls', in: Rosenthal, R. and Rosnow, R. L. (eds.). Artefact in Behavioural Research, New-York: Academic Press.

Owen, L. Lewis, C., Auty, S. And Buijzen, M. (2013) 'Is Children's Understanding of Non-Traditional Advertising Comparable to their Understanding of Television Advertising', *Journal of Public Policy*, 32(2), pp. 195-206.

Paek, H-J, Quilliam, E-T, Kim, S., Weatherspoon, L.J., Nora, R. and Lee, M. (2014) 'Characteristics of Food Advergames that Reach Children and the Nutrient Quality of the Good They Advertise', *Internet Research*, 1, pp. 63-81.

Paliwoda, S. and Crawford, I. (2003), An Analysis of the Hastings Review, A Report Commissioned by the *Food Advertising Unit (FAU) of the Advertising Association*. London: FAU.

Partington, D. (2000) *Essential Skills for Management Research*, Cranfield: Sage Publications Ltd.

Peppers, D. and Rogers, M. (1998) *The One-to-One Future: Building Relationships one Customer At A Time*, New-York: Double Day Dell Publishing Group.

Pecheux, C. and Derbaix, C. (1999) 'Children and Attitude toward the Brand: A New Measurement Scale', *Journal of Advertising Research*, 39(4), pp. 19-27.

Peterson, P.E., Jeffrey, D.B., Bridgewater, C.A. and Dawson, B. (1984) 'How Pro-Nutrition Television Programming Affects Children's Dietary Habits', *Developmental Psychology*, 20(1), pp. 55-63.

Petty, R.E., Cacioppo, J.T. and Schumann, D.L. (1983) 'Central and Peripheral Routes to Advertising Effectiveness: The Moderating Role of Involvement', *Journal of Consumer Research*, 10, pp.135-146.

Petty, R.E. and Cacioppo, J.T. (1981) *Attitudes and Persuasion: Classic and Contemporary Approaches*. IA: Brown, W.C.

Petty, R.E. and Cacioppo, J.T. (1986) *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*. New-York: Springer-Verlog.

Petty, R.D. and Andrews, J.C. (2008) 'Covert Marketing Unmasked: A Legal and Regulatory Guide for Practices That Mask Marketing Messages', *Journal of Public Policy and Marketing*, 27(1), pp. 7-18.

Phelps, J.E. and Hoy, M.G. (1996) 'The Aad-Ab-PI Relationship in Children: The Impact of Brand Familiarity and Measurement Timing', *Psychology & Marketing*, 13(1), pp. 77-105.

Piaget, J. (1960) 'General Problems of the Psychological Development of the Child', in: Tanner, J.M. and Inhelder, B. (Eds.), Discussions on Child Development, Proceedings of the WHO Study Group on Psychological Development of the Child, Vol. 4. New-York: International Universities Press.

Piaget, J. (1971) 'The Theory Stages in Cognitive Development', in: Green, D.K., Ford, M.P. and Flamer, G.B. (eds.), Measurement and Piaget, pp. 1-11, New-York: McGraw-Hill.

Pinelle, D., Wong, N. And Stach, T. (2008) Heuristic Evaluation for Games: Usability Principles for Video Game Design, In Proceedings of the *ACM Conference on Human Factors In Computing Systems* (CHI 2008), pp. 1453-1462.

Quilliam, E.T., Lee, M., Cole, R.T. and Kim, M. (2011) 'The Impetus for (and Limited Power of) Business Self-Regulation: The Example of Advergames', *The Journal of Consumer Affairs*, pp. 224-249.

Redondo, I. (2012) 'The Effectiveness of Casual Advergames on Adolescents' Brand Attitudes', *European Journal of Marketing*, 46(11-12), pp. 1671-1688.

Riley, F.D., Rink, L. and Harris, P. (1999) 'Patterns of Attitude and Behaviour in Fragmented Markets', *Journal of Empirical Generalisations in Marketing Science*, 4, pp. 62-91.

Ritchey, N. And Olson, C. (1983) 'Relationship Between Family Variables and Children's Preference for Consumption of Sweet Foods', *Ecology of Food and Nutrition*, 13, pp. 257-266.

Press, S.J. and Wilson, S. (1978) 'Choosing Between Logistic Regression and Discriminant Analysis', *Journal of the American Statistical Association*, 73, pp. 699-705.

Robertson, E. (2008) *The Junk Food Trap: Marketing Unhealthy Food to Children in Asia-Pacific*, Campaign Report. London: Consumers International.

Robertson, T.S. (1979) 'Parental Mediation of Television Advertising Effects', *Journal of Communications*, 1, pp. 12-25.

Robertson, T.S. and Rossiter, J.R. (1974) 'Children and Commercial Persuasion: An Attribution Theory Analysis', *Journal of Consumer Research*, 1, pp. 13-20.

Robinson, T.N., Borzekowski, D.L.G., Matheson, D.M. and Kraemer, H.C. (2007) 'Effects of Fast Food Branding on Young Children's Taste Preferences', *Archives of Paediatric Adolescent Medicine*, 161(8), pp. 792-797.

Robinson, E., De Vera, A. and Witt, J. (2008), *The Junk Food Trap: Marketing Unhealthy Food to Children in Asia Pacific*, London: Consumers International.

Roedder, D.L. (1981) 'Age Differences in Children's Responses to Television Advertising: An Information-Processing Approach', *Journal of Consumer Research*, 8, pp. 144-153.

Roehm, H.A. and Haugtvedt, C.P. (2010) 'Understanding Interactivity of Cyberspace Advertising', in Schumann, D.W and Thorson, E. (ed.), *Advertising and the World Wide Web*. NJ: Lawrence Erlbaum, pp. 27-39.

Ross, R. P., Campbell, T. A. Huston-Stein, A. and Wright, J. C. (1981) "Nutritional Misinformation to Children: A Developmental and Experimental Analysis of the Effects of Televised Food Commercials", *Journal of Applied Psychology*, 1(4), pp. 329-347.

Rossiter, J.R. and Robertson, T.S. (1974) 'Children's TV Commercials: Testing the Defences', *Journal of Communications*, 24, pp. 137-144.

Rossiter, J.R. and Percy, L. (1997) *Advertising Communication and Promotions Management*. 2nd edn. New York: McGraw-Hill.

Roto, V. and Kaikkonen, A. (2003) *Perception of Narrow Web Pages On A Mobile Phone*, 19th International Symposium On Human Factors In Telecommunications, Berlin.

Rozendaal, E., Buijzen, M. and Valkenburg, P. (2010) 'Comparing Children's and Adults' Cognitive Advertising Competencies in the Netherlands', *Journal of Children and Media*, 4(1), pp. 77-89.

Rumble, W.E. (1981) 'Legal Positivism of John Austin and the Realist Movement in American Jurisprudence', *Cornell Law Review*, 66, pp. 986-1031.

Ryan, M.J. and Bonfield, E.H. (1975) 'The Extended Fishbein Model: Additional Insights and Problems', in Advances in Consumer Research, 2, (Eds. Schlinger, M.J. and Albor, A.), MI: Association for Consumer Research, pp.265-284.

Sagoff, M. (2003) 'On The Relation Between Preference and Choice', *Journal of Socio-Economics*, 31, pp. 587-598.

Salen, K. and Zimmerman, E. (2004) *Rules of Play: Game Design Fundamentals*. Cambridge, MA: The MIT Press.

Samuels, W.T. (1978) 'Information Systems, Preferences and the Economy in the JEI', *Journal of Economic Issues*, 12(1), pp. 23-41.

Saunders, M., Lewis, P. and Thornhill, A. (2012) *Research Methods for Business Students*. 6th ed. Essex: Pearson Education Ltd.

Schell, J. (2008) *The Art of Game Design: A Book of Lenses*, Morgan Kaufman Publications.

Schoder, D. Sick, S., Putzke, Z. and Kaplan, A.M. (2006), 'Mass Customization in the Newspaper Industry: Consumers' Attitudes Toward Individualized Media Innovations', *International Journal on Media Management*, 8(1), pp. 9-18.

Schwartz, N. and Oyserman, D. (2001) 'Asking Questions About Behaviour: Cognition, Communication, and Construction', *American Journal of Evaluation*, June, 22, pp. 127-160.

Selman, R.L. (1980) *The Growth of Interpersonal Understanding: Developmental and Clinical Analysis*. New York: Academic Press.

Sekaran, V. (2003) *Research Methods for Business: A Skill-Building Approach*. 4th edn. New-York: John Wiley and Sons.

Serino, C.M., Furner, C.P. and Smatt, C. (2005) 'Making it Personal: How Personalization Affects Trust Over Time?', *38th Hawaii International Conference on System Science*, 7, pp. 1-10.

Shepherd, R., and Stockley, L. (1985) 'Fat Consumption and Attitude toward Food With A High Fat Content', *Human Nutrition, Applied Nutrition*, 39(6), pp. 431-442.

Shelton, M. McMullen, J., Glayzer, A. and Voudouri, R. (2011) Manual for Monitoring Food Marketing to Children, London: Consumers International.

Sheth, J. And Sisodia, R.S. (1999) 'Revisiting Marketing's Lawlike Generalizations', *Journal of Academy of Marketing Science*, 27, pp. 71-87.

Skinner, B.F. (1953) *Science and Human Behaviour*. New York: Macmillan.

Snyder, M. and DeBono, K.G. (1985) 'Appeals to Image and Claims About Quality: Understanding the Psychology of Advertising', *Journal of Personality and Social Psychology*, 49, pp. 568-597.

Spears, N. and Singh, S.N. (2004) 'Measuring Attitude Toward The Brand and Purchase Intentions', *Journal of Current Issues & Research in Advertising*, 26(2), pp. 53-66.

Steuer, J.(1992) 'Defining Virtual Reality: Dimensions Determining Telepresence', *Journal of Communication*, 42(4), pp. 73-93.

Stoneman, Z. and Brody, G.H. (1981) 'The Indirect Impact of Child-Oriented Advertisements Aimed at Children', *Developmental Psychology*, 17(6), pp. 853-858.

Strong, E.K. (1925) 'Theories of Selling', *Journal of Applied Psychology*, 9, pp. 75-86.

Story, M. and French, S. (2004) 'Food Advertising and Marketing Directed at Children and Adolescents in the US', *International Journal of Behavioural Nutrition and Physical Activity*, 1(3), pp. 3-20.

Sukoco, B.M. and Wu, W.Y. (2011) 'The Effects of Advergames on Consumer Telepresence and Attitudes: A Comparison of Products With Search and Experience Attributes', *Expert Systems with Applications*, 38, pp. 7396-7406.

Sunikka, A. and Bragge, J. (2009), Personalisation and Mass-Customisation in the Research Literature, Mass Matching: Customization, Configuration and Creativity, 5th World Conference on Mass Customization and Personalisation (MCPC), Helsinki, Finland.

Sundar, S.S. and Marathe, S.S. (2010) 'Personalization Versus Customization: The Importance of Agency, Privacy, and Power Usage', *Human Communication Research*, 36, pp. 298-322.

Syam, N.B., Ruan, R. and Hess, J.D. (2005) 'Customized Products: A Competitive Analysis', *Marketing Science*, 24(4), (Fall), pp. 569-584.

Tam, K.Y. and Ho, S.Y. (2005) 'Web Personalisation As A Persuasion Strategy: An Elaboration Likelihood Model Perspective', *Information System Research*, 16 (3), pp. 271-291.

Tankersley, C.B. (1977) 'Attitude and Brand Loyalty: A Longitudinal Study of Multi-Attribute Models and Intervening Variables', *Journal of Academy of Marketing Science*, 5(3), pp.249-262.

Taylor, C. and Barber, N. (2012) 'Measuring the Influence of Persuasion Marketing on Young Wine Consumers', *Journal of Food Products Marketing*, 18(1), pp. 19-33.

Taylor, S.E. and Brown, J.D. (1988) 'Illusion and Well-Being: A Social Psychological Perspective on Mental Health', *Psychological Bulletin*, 103, pp.193-210.

Teng, C.-I. (2010) 'Customization, Immersion Satisfaction, and Online Gamer Loyalty', *Computers in Human Behaviour*, 26, pp. 1547-1554.

Thompson, K.E., Haziris, N. and Alekos, P.J. (1994) 'Attitudes and Food Choice Behaviour', *British Food Journal*, 96(11), pp. 9-13.

Thomson, M. MacInnis, D.T. and Park, C.W. (2005) The Ties That Bind: Measuring The Strength of Consumers' Emotional Attachments to Brands, *Journal of Consumer Psychology*, 15(1), pp. 77-91.

Tinson, J. (2009) *Conducting Research with Children and Adolescents: Design, Methods and Empirical Cases*. Oxford: Goodfellow Publishers Ltd.

Tomer, J.F. (1996) 'Good Habits and Bad Habits: A New Age Socio-Economic Model of Preference Formation', *Journal of Socio-Economics*, 25(6), pp. 619-638.

Tutaj, K. And Van Reijmersdal, E.V. (2012) 'Effects of Online Advertising Format and Persuasion Knowledge on Audience Reactions', *Journal of Marketing Communications*, 18(1), pp. 5-18.

Tymchuk, A.J. (1992) 'Assent Processes', in Stanley, B. and Sieber, J.E., (Eds.), *Social Research on Children and Adolescents: Ethical Issues*. London: Sage.

Vedrashko, I. (2006) Advertising in Computer Games, Unpublished MSc Dissertation, Boston: Massachusetts Institute of Technology (MIT).

Virgin Games (1992), MC Kinds [Video Console Games].

Valkenburg, P.M. and Cantor, J. (2001) 'The Development of a Child Into a Consumer', *Journal of Applied Developmental Psychology*, 22(1) pp. 61-72.

Van Reijmersdal, E.A., Rozendaal, E. and Buijzen, M. (2012) 'Effects of Prominence, Involvement and Persuasion Knowledge on Children's Cognitive and Affective Responses to Advergames', *Journal of Interactive Marketing*, 26(1), pp. 33-42.

Van Reijmersdal, E.A., Jansz, J., Peters, O. and Noort, G. (2010) 'The Effects of Interactive Brand Placements in Online Games on Children's Cognitive, Affective and Conative Brand Responses', *Computers in Human Behaviour*, 26, pp.1787-1794.

Vogt, P.W. and Johnson, R.B. (2011) *Dictionary of Statistics and Methodology: A Nontechnical Guide for the Social Sciences*. 4th edn. Thousand Oaks, CA: SAGE Publications, Inc.

Waiguny, M.K.J., Nelson, M.R. and Terlutter, R. (2012) 'Entertaining Matters! The Relationship between Challenge and Persuasiveness of an Advergame for Children', *Journal of Marketing Communications*, 18(1), pp. 69-89.

Ward, S., Wackman, D.B. and Wartella, E. (1977) '*How Children Learn to Buy: The Development of Consumer Information Processing Skills'*. Beverly Hills, CA: Sage.

Watts, K. (2008) *Protecting Children from Unhealthy Food Marketing*, A British Heart Foundation and Children's Food Campaign Proposal for a Statutory System to Regulate Non-Broadcast Food Marketing to Children, London: British Heart Foundation and Children's Food Campaign.

Wells, W. D. (1993) 'Discovery-Oriented Consumer Research', *Journal of Consumer Research*, 19(4), pp. 489-504.

WHO/FAO (2003) *Diet, Nutrition, and the Prevention of Chronic Disease*, A Report to a Joint World Health Organisation (WHO) and the Food and Agricultural Organisation (FAO) of the United Nations Expert Consultation, WHO Technical Report Series 916., Geneva: WHO.

Wicker, A.W. (1969) 'Attitudes vs. Actions: The Relationship of Verbal and Overt Behavioural Responses to Attitude Objects', *Journal of Social Issues*, 25, pp. 41-78.

Wind, Y.J. and Rangaswamy, A. (2001) 'Customerization: The Next Revolution in Mass Customization', *Journal of International Marketing*, 15(1), pp. 13-32.

Winkler, T. and Buckner, K. (2006) 'Receptiveness of Games to Embedded Brand Messages in Advergames: Attitudes towards Product Placement', *Journal of Interactive Advertising*, 7(1), pp. 24-32.

Winter, S., Richter, K-F, Baldwin, T., Cavedon, L., Stirling, L., Duckham, M. (2011) Location-Based Mobile Games for spatial Knowledge Acquisition, In Janwicz, K. (Eds.), Belfast: Cognitive Engineering for Mobile GIS.

Wise, K., Bolls, P.D., Kim, H. Venkataraman, A. and Meyer, R. (2008) 'Enjoyment of Advergames and Brand Attitudes: the Impact of Thematic Relevance', *Journal of International Advertising*, 9(1), pp. 14-29.

Wolf, M.J.P (2001) *The Medium of the Video Game*, Austin: University of Texas Press.

Wright -Isak, C., and Faber, R.J. (1997) *Comprehensive Measurement of Advertising Effectiveness: Notes From the Marketplace.* Paper presented at the Advertising and Consumer Psychology Conference, New Jersey.

Wright, P., Friestad, M. and Bouch, D.M. (2005) 'The Development Marketplace Persuasion Knowledge in Children, Adolescents, and Young Adults', *Journal of Public Policy and Marketing*, 24(2), pp. 222-233.

Wu, S-I, (2001) 'A Study of Brand Preference and Loyalty on the Taiwan to Singapore Air Route', *Journal of International Marketing and Marketing Research*, 26(1), pp. 3.

Yates, B.L. (2001) 'Media Literacy and Attitude Change: Assessing the Effectiveness of Media Literacy Training on Children's Responses to Persuasive Messages Within the ELM', Broadcast Education Association, 46th Annual Convention, April 20-23, Las Vegas: Nevada.

Yee, N. (2006) 'Motivation for Playing Online Games', *Cyberpsychology and Behaviour*, 9, pp. 772-775.

Yoon, H.J. (2013) 'Understanding Schema Incongruity as a Process in Advertising: Review and Future Recommendations, *Journal of Marketing Communications*, 19(5), pp. 360-376.

Young, B. (1990) *Children and Television Advertising*, Oxford: Clarendon Press.

Zajonc, R.B. and Markus, H. (1982) 'Affective and Cognitive Factors in Preferences', *Journal of Consumer Research*, 9(2), pp. 123-131.

Zeithaml, V.A., Berry, L.L. and Parasuraman, A. (1996) 'The Behavioral Consequence of Service Quality', Journal of Marketing, 60(2), pp. 31-46.

APPENDICES

Appendix A: Customisation[30] options in advergames[31]

Create a name for 'my' game player
Choose hairstyle of clothing for 'my' player
Choose the gender for 'my' player **
Play as a specifically chosen brand character
Play as a specific non-brand related character
Choose opponent
Choices involving the mode of play (25%)
Level of difficulty
Speed of play
Words to put in a puzzle
Game mode (e.g. race vs. capture the flag)
Choices involving design of the game space (23%)
Colours within game **
Name of game space
Music of musical beats
Colour/ flavour of brand package
Product design (e.g. candy design, surprise inside)
Pictures to put on the wall in 'my' room

** Methods which were included in 'Jaffa Cake Challenge' advergame.

[30] Moore (2006) refers to those options in her study as 'personalisation'. The definitions provided in chapter 2, however, support the notion that those examples are of customisation rather than personalisation.

[31] Those are illustrative examples, but there are more options for customisation.

Appendix B: Examples of advergames

Below are examples of advergames consulted for the purpose of development and design. The purpose was to create a high quality advergame, similar to those that already exist in the market.

Brand	Link	Game
Coca-Cola	http://www.gahe.com/Coca-Cola-Christmas-Truck	Puzzle game; illustrative integration (Coca-Cola truck); sounds effects
Coca-Cola	http://wallofgame.com/free-online-games/arcade/248/Coca-Cola_Polar_Race.html	Obstacle game; no brand integration
Coca-Cola	http://www.gamesbox.com/games/19458/Coca-Cola-Landmower	Collect game; associative integration
Coca-Cola	http://www.gamesbox.com/games/19077/Cola-Truck	Driving game; associative integration
Doritos	http://www.games.co.uk/game/doritos-dip-desperado	Illustrative brand integration; very simple game (drag the chip and click a button)
Fanta	http://games.mi9.com/play_fanta-dash/	Illustrative brand integration; collect game (very simple)
Kellogg's Froot Loop	https://www.clubkelloggs.ca/en/dino-dig/yellow-dig.html	Brushing up to find fossils; brands are in the background (associative brand integration)
Kellogg's Bars	https://www.clubkelloggs.ca/games/building-with-the-bars/	Stacking bars; illustrative brand integration
Kellogg's Frosted Flakes	https://www.clubkelloggs.ca/games/tonys-grand-slam/	Speed clicking game; not engaging; no brand integration (baseball)

Kellogg's Froot Loop	https://www.clubkelloggs.ca/games/amaze-a-wave/	Collect game; brand + spokecharacter illustrative integration; good audio sounds
Kellogg's Froot Loop	https://www.clubkelloggs.ca/games/forest-frenzy/	Collect game; brand & spokescharacter illustrative integration; good audio sounds
Kellogg's Apple Jacks	http://freegame3.com/game.php?id=28376	**Customized game**, choice of character and choice of glider (i.e. three options to choose about frame, handle, colour and design of glider), 'glide and collect' game; illustrative integration
Kellogg's Apple Jacks	http://www.hasbro.com/en-gb/media/my-little-pony-friendship-is-magic-applejack-game:E300C93D-5056-900B-1050-A310A192B6BD	Click and collect game (collecting apples); no brand integration; 1 option to **personalise** (choice of level of difficulty)
Kellogg's Rice Krispies	https://www.clubkelloggs.ca/games/slow-your-mo/	**Personalised game** (8 choices of tools; 8 choices of sounds; 10 choices of target); stretch and throw game; illustrative brand integration; not an engaging game; repetitive sound effects
Kellogg's Eggo Waffle	https://www.clubkelloggs.ca/games/tune-topper/	**Personalised game** (14 options of different food toppings); associative brand integration
McDonalds	http://www.happymeal.com/server/views/games/ghostsurfer.html	Illustrative brand integration, engaging, fun game; obstacle course game; option for two players/ trying to beat each others' score
	http://www.mcvideogame.com/index-eng.html	**Demonstrative integration**
Nesquik	http://www.y8.com/games/nesquik_quest	**Personalised adventure game** (choice of 8 space/background choices); associative brand integration/ illustrative spokescharacter integration

Appendix C: Original scales

Attitude towards the brand (Pecheux and Derbaix, 1999)

[Name of brand] - I like it.

[Name of brand] - It is fun.

[Name of brand] - It is great.

[Name of brand] - It is useful.

[Name of brand] - I like it very much.

[Name of brand] - It is practical/ handy.

[Name of brand] - It is useless.

Persuasion knowledge, original scales, (Van Reijmersdal *et al*., 2012)

Understanding of intent	
Question	Possible answers
Why do you think this game is online?	1. To make children like Pepsi and Leys 2. To show what you can buy in a supermarket 3. Because children like it 4. Because the Dutch queen likes it

Understanding of source	
Question	Possible answers
Who created this game?	5. Pepsi and Leys 6. My teacher 7. A supermarket 8. A gaming website 9. The researcher

Appendix D: Consent forms & Information sheets/ DBS certificate

Institutional consent form and information sheet

Part I: Information sheet

Re: A Digital Research Project – It's Child's Play

Dear _____,

My name is Shelly Chapman and I am a doctoral researcher at Cranfield University, School of Management, under the supervision of Dr. Stan Maklan. This document explains what we are doing in this research project and sets out what will be involved for the school.

The advance of interactive media (e.g. video and online games) has changed consumers' media habits, and this research project investigates the link between online computer games and children's behaviour. As part of this research we are looking for children aged between 5-7 and 11-12 years old to take part.

We will get consent from the parent/ guardian and their children if they wish to participate in the research. The study is entirely voluntary and even after consent has been given, the parent/ guardian is entitled to withdraw their child at any time without giving a reason. I, obviously, also need your consent as the head of the school, and similarly you can withdraw from the project at any time.

I will take every care to reduce disruption to a minimum for the school's routine. I will need access to the school's ICT lab, where children will play a computer game for 6 minutes followed by a questionnaire. The total testing time should not exceed 15 minutes.

All the information about participants in this study will be kept confidential and data will be anonymous and stored securely.

If you have any questions or require further information about this study, do not hesitate to contact me.

Yours faithfully,

Shelly

Shelly Chapman
LLB (Hons) MSc
Doctoral Researcher

PART II: Consent form

1. I have read and understood the information sheet about the research project "It's Child's Play". I have had the opportunity to consider the information and ask questions.

2. I confirm that I have the authority to give permission for my school to take part.

3. I understand that my school's participation is voluntary and that we are free to withdraw at any time.

4. I understand that the information gained will be anonymous and that children's names as well as the school's name will be removed from any material published as a result from this study.

5. I agree that the research project – "It's Child's Play" - has been explained to my satisfaction and I agree for my school to take part in the above study.

Name of head teacher (PRINT): _____

Signature: _____

School name:_____

Date: _____

Parental/ guardian information sheet and consent form

Part I: Letter/ Information Sheet

Dear parent/ guardian,

Re: Your child's participation in a digital research project

I am a doctoral researcher from Cranfield University, School of Management, and am conducting a research about computer games aimed at young children.

Description

Your child is invited to participate in a research project that investigates the effectiveness of online computer games. Your child will be presented with a computer game, appropriate to his/hers age group, which s/he will be invited to play a few times.

Procedure

After having completed a few sessions of the game, the children will be required to complete a short questionnaire. The project will take place in your child's ICT lab at school.

Time involvement

Your child's participation will take approximately 15 minutes at the most.

Participant's rights

If you agree for your child to participate, please be aware that his/hers participation is voluntary and you, as well as your child, have the right to withdraw your consent at any time. Your child's privacy and anonymity will be maintained in all published and written material resulting from this work.

Many thanks for taking the time to read this letter and for your help.

Yours faithfully,

Shelly

Shelly Chapman
LLB (Hons) MSc
Doctoral Researcher

Part II: Consent Form

I _____ (please insert your name) hereby consent for my son/ daughter (delete as appropriate) to participate in the research project 'It's Child's Play'.

By signing the form I confirm that:

1. I have read the information on the information sheet.
2. I understand that:

- My child may not directly benefit from taking part in this research
- My child is free to withdraw from the research at any time
- While the information gained from this research will be published, my child will not be identified in any way, and all individual information will remain confidential

Name of child (PRINT): _____

Name of parent/ guardian (PRINT): _____

Parent's/ guardian's signature: _____

Child's age: _____

Date: _____

Please return this form to your child's form teacher by Tuesday, 3 June

If you have any questions, concerns or suggestions about this research please contact the researcher via email: shelly.chapman@cranfield.ac.uk or phone: +44 (0)7515 476738

Children's information sheet and consent form

Part I: Information Sheet

	My name is Shelly, and I am a doctoral researcher from Cranfield University. I would like to invite you to participate in a research about online computer games. It is called 'Child's Play'.
	I am exploring (yes, exactly like a detective!) how children behave when they play fun games on the internet.
	The research will take place during an ICT class at your school. If you agree to take part in the project, I will ask you to play a game for 6 minutes. After that, I will ask you a few questions. It is up to you whether you take part in the project.
	If at any point during the project, you decide that you want to stop, you can do so.
	Any questions? - if you have any questions about this research, just ask me, and I will do my best to answer.
	If you do want to take part, please read the form on p.2, sign it and return to your school teacher.
	If you are interested, you can find out the results of this research by contacting me.

Part II: Consent Form

I hope you understand everything. If you would like to participate in this project, please sign below. By signing the form you confirm that:

- I have read and understood the information about the research
- I understand that I can stop my participation at any time
- I want to participate in the project 'It's Child's Play'

If you understand the statements above, you need to decide if –

You want to take part in the project (Please tick the relevant box):

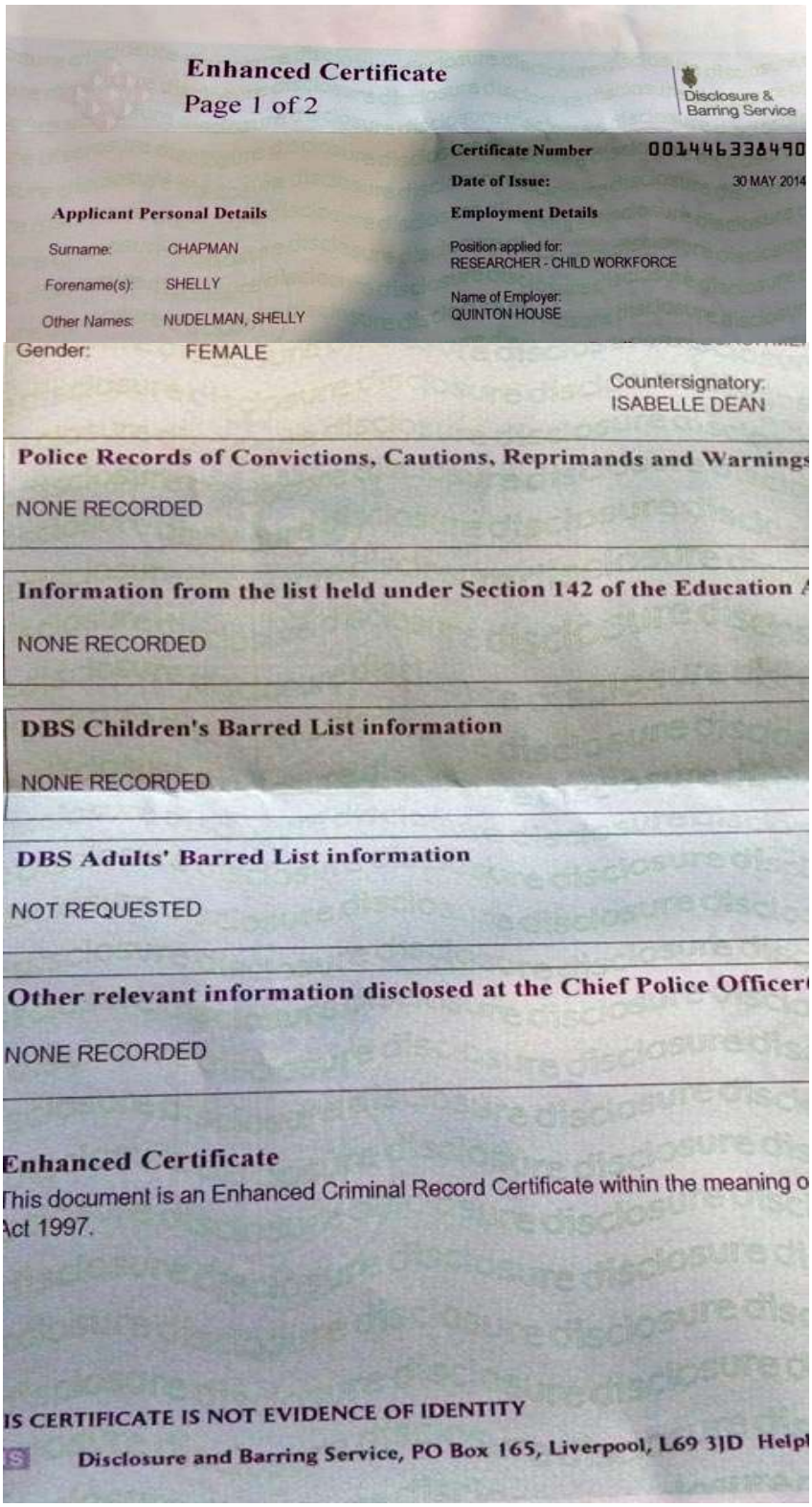
☐	☐
YES	**NO**

Your name (PRINT): _____

Date: _____

<u>Please return this form to your teacher by Tuesday, 3 June</u>

DBS Certificate



Enhanced Certificate
Page 1 of 2

Disclosure & Barring Service

Certificate Number 001446338490
Date of Issue: 30 MAY 2014

Applicant Personal Details

Surname: CHAPMAN
Forename(s): SHELLY
Other Names: NUDELMAN, SHELLY
Gender: FEMALE

Employment Details

Position applied for:
RESEARCHER - CHILD WORKFORCE

Name of Employer:
QUINTON HOUSE

Countersignatory:
ISABELLE DEAN

Police Records of Convictions, Cautions, Reprimands and Warnings

NONE RECORDED

Information from the list held under Section 142 of the Education A

NONE RECORDED

DBS Children's Barred List information

NONE RECORDED

DBS Adults' Barred List information

NOT REQUESTED

Other relevant information disclosed at the Chief Police Officer

NONE RECORDED

Enhanced Certificate

This document is an Enhanced Criminal Record Certificate within the meaning o
Act 1997.

IS CERTIFICATE IS NOT EVIDENCE OF IDENTITY

Disclosure and Barring Service, PO Box 165, Liverpool, L69 3JD Help

Appendix E: Research instrument (pilot and full study)

Original questionnaire (pilot)

What is the number on your card?

_____

What is your age?

_____

Are you a boy or a girl? (Please tick the relevant box)

☐ Boy

☐ Girl

How often do you play computer games? (Please tick the relevant box)

☐ Never

☐ Once a week

☐ 2-3 times a week

☐ Nearly every day

How often do you play memory card games? (Please tick the relevant box)

☐ Never

☐ Once a week

☐ 2-3 times a week

☐ Nearly every day

Please tick the biscuit you would like to eat now (please tick only <u>one</u> box)

☐ Penguin 

☐ Jaffa Cakes 

☐ Cadbury's Fingers 

☐ Hobnobs 

Questions about the game (Please tick the relevant box)

	No, not at all 	No 	A little 	Not Sure 	Maybe, yes 	Yes 	Yes, very much 
Do you like this memory card game?							
Do you think this game is fun?							
Do you think this game is boring?							
Do you think this game is great?							
Do you think this game is stupid?							

Questions about the Jaffa Cake (Please tick the relevant box)

	No, not at all 	No 	A little 	Not sure 	Maybe, yes 	Yes 	Yes, very much 
Do you like Jaffa Cakes?							
Do you think Jaffa Cakes are fun?							
Do you think Jaffa Cakes are great?							
Do you think Jaffa Cakes taste great?							

Why do you think you are playing this game? (Please tick only <u>one</u> box)

- ☐ To show what you can buy in a supermarket
- ☐ Because children like playing with it
- ☐ To make children like Jaffa Cakes
- ☐ Because the queen likes it

Who created this game? (Please tick only <u>one</u> box)

- ☐ Tesco
- ☐ Jaffa Cake Company
- ☐ Sainsbury's
- ☐ A Gaming Website

Revised questionnaire (full study)[32]

What is the number on your card?	What is your age?
_____	_____

Are you a boy or a girl? (Please tick the relevant box)

☐ Boy ☐ Girl

How often do you play computer games? (Please tick the relevant box)

☐ Never ☐ 2-3 times a week

☐ Once a week ☐ Nearly every day

How often do you play memory card games? (Please tick the relevant box)

☐ Never ☐ 2-3 times a week

☐ Once a week ☐ Nearly every day

Which digital games do you play at home?

_____

_____

[32] The original questionnaire for the full study contained three pages with 12 size Ariel font. The reason this questionnaire is spread over four pages is due to the different document formatting for this thesis (e.g. page margins for the questionnaire were narrower and it did not have a heading).

Please tick the biscuit you would like to eat now (please tick only one box)

☐	Penguin		Cadbury's Fingers	
☐	Jaffa Cakes		Hobnobs	

Why do you think this game is online? (Please tick only one box)

- ☐ To show what you can buy in a supermarket
- ☐ Because children like playing with it
- ☐ To make children like Jaffa cakes
- ☐ To help improve children's memory

Who created this game? (Please tick only one box)

- ☐ The school
- ☐ A gaming website
- ☐ A supermarket
- ☐ Jaffa cake company

Questions about the game (Please tick the relevant box)

	No, not at all 	No 	A little 	Not Sure 	Maybe, yes 	Yes 	Yes, very much 
Do you like this memory card game?							
Do you think this game is fun?							
Do you think this game is boring?							
Do you think this game is great?							
Do you think this game is stupid?							

Questions about Jaffa Cakes (Please tick the relevant box)

	No, not at all 	No 	A little 	Not sure 	Maybe, yes 	Yes 	Yes, very much 
Do you like Jaffa Cakes?							
Do you think Jaffa Cakes are fun?							
Do you think Jaffa Cakes are great?							
Do you think Jaffa Cakes taste great?							

How often do you eat Jaffa Cakes? (Please tick the relevant box)

☐	Never	☐	2-3 times a week
☐	Once a week	☐	Nearly every day

Do you intend to ask your parents to buy Jaffa Cakes? (please tick only one box)

No, not at all	No	A little	Not sure	Maybe, yes	Yes	Yes, absolutely
						

Thank you very much!

APPENDIX F: The experiment protocol

Introduction

Before the children entered the lab, all computers were set according to the groups that were about to play it. Upon entering the class, the teacher introduced me as a marketing researcher from Cranfield University.

Reminder of the purpose of the experiment

Children were reminded again what the experiment is about, and time was allowed for any questions. Children were told that if at any stage they would like to stop their participation, they are welcome to do so. The instructions below were read from a script to reduce the possibility that some participants will receive different instructions from others, with the consequent possibility of experimental error entering the results.

> *"Hi everyone! My name is Shelly and I am a researcher investigating how children play games on the internet via your computers or any other devices such as Xbox or tablets. You are here because you agreed to take part in my research. I will ask you soon to play a game for 6 minutes, and after that I will ask you to fill in a questionnaire. If you decide that you want to stop, you can do so. Is everything clear? Does anyone has any questions?*"

If there are any questions – I answered them. If none, children were instructed to proceed. This was followed by distributing numbers to children according to which they were divided into three groups.

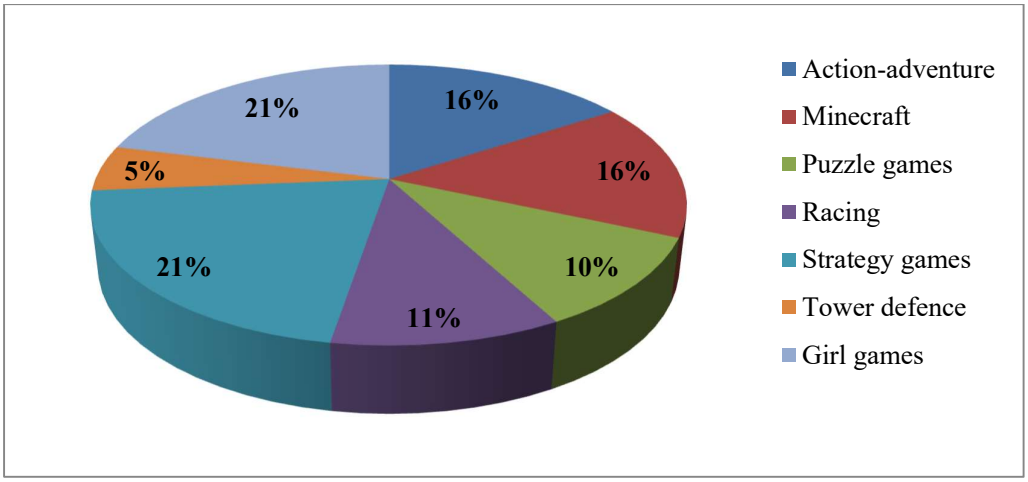
Instructions

Children were briefly instructed how to play the game:

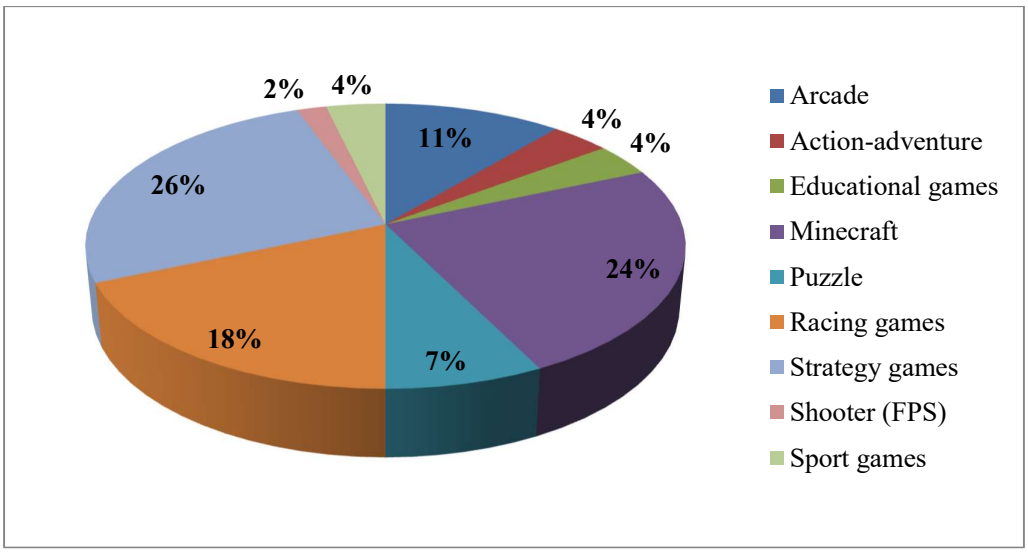
1. Use your mouse to flip the cards
2. Reveal two pairs to make a match
3. Match all the pairs together to win
4. Try to play as many games as you can

Appendix G: Game genres children play

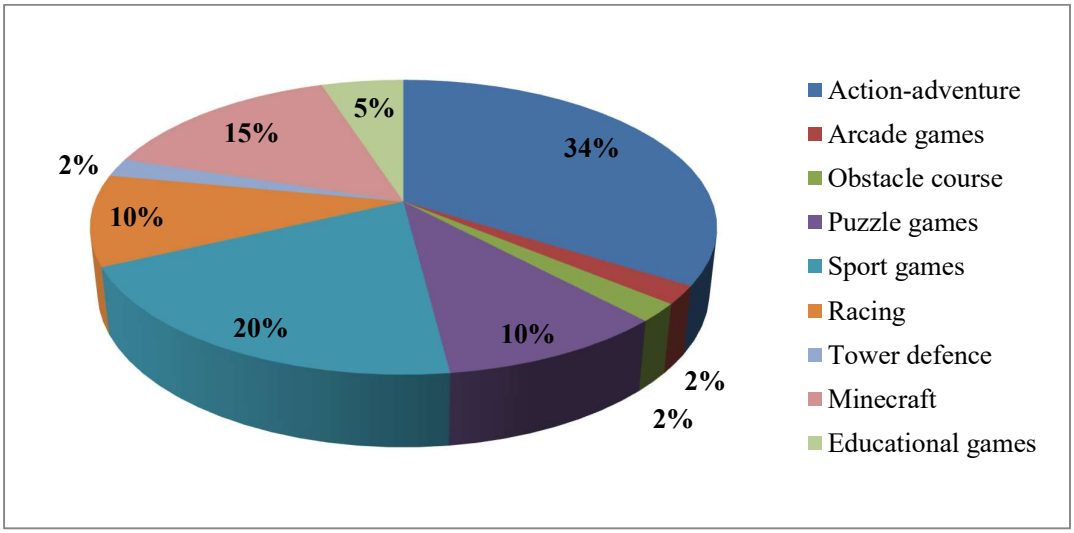
Game genres that young females (5-7 year olds) play



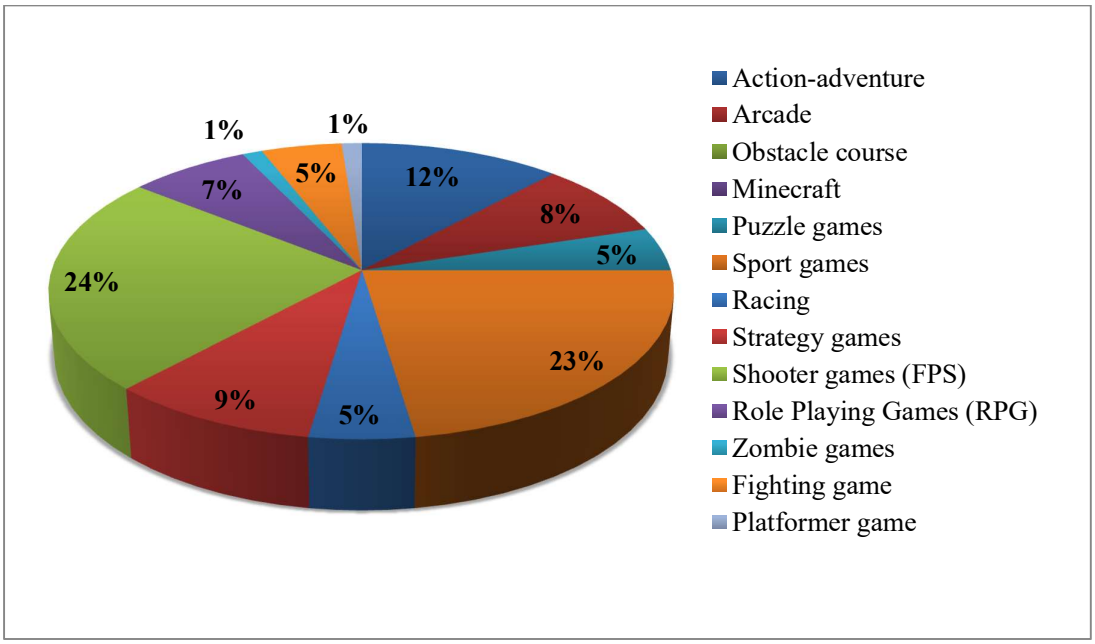
Game genres that older females (11-12 year olds) play



Game genres that young males (5-7 year olds) play



Game genres that older males (11-12 year olds) play



Appendix H: Stimulus – the advergame

Images of Jaffa Cake used for the advergame


McVitie's
ffa Cakes


McVitie's
Jaffa Cake
McVitie's
Jaffa Cake
McVitie's
Jaffa Ca

Prototype I (pilot): character customisation options

Frozen

Nemo

Cars

Back of cards cusomisation options

Cars

Nemo

Choice of cursor

Prototype II (full study): Character cusomisation options

Winter wonderland

Underwater world

Cars

Back of cards

Choice of cursor

High experimental condition

Winter wonderland


00:12
McVitie's
Jaffa Cakes
PAIRS MATCHED : 0
New Game


00:02
McVitie's
Jaffa Cakes
PAIRS MATCHED : 0
New Game


00:16
McVitie's
Jaffa Cakes
PAIRS MATCHED : 3
New Game


00:08
McVitie's
Jaffa Cakes
PAIRS MATCHED : 0
New Game


00:12
McVitie's
Jaffa Cakes
PAIRS MATCHED : 0
New Game


00:17
McVitie's
Jaffa Cakes
PAIRS MATCHED : 3
New Game

Underwater world


00:48
Jaffa Cakes
PAIRS MATCHED 2
New Game


00:32
Jaffa Cakes
PAIRS MATCHED 1
New Game


00:21
Jaffa Cakes
PAIRS MATCHED 1
New Game


00:11
Jaffa Cakes
PAIRS MATCHED 0
New Game


00:12
Jaffa Cakes
PAIRS MATCHED 1
New Game


00:11
Jaffa Cakes
PAIRS MATCHED 0
New Game

Cars


00 : 31
McVitie's
Jaffa Cakes
PAIRS MATCHED : 3
New Game


01 : 02
McVitie's
Jaffa Cakes
PAIRS MATCHED : 8
New Game


00 : 18
McVitie's
Jaffa Cakes
PAIRS MATCHED : 2
New Game


00:07
McVitie's
Jaffa Cakes
PAIRS MATCHED : 2
New Game


00:25
McVitie's
Jaffa Cakes
PAIRS MATCHED : 2
New Game


00:19
McVitie's
Jaffa Cakes
PAIRS MATCHED : 2
New Game


00:11
McVitie's
Jaffa Cakes
PAIRS MATCHED : 0
New Game


00:29
McVitie's
Jaffa Cakes
PAIRS MATCHED : 2
New Game


00:28
McVitie's
Jaffa Cakes
PAIRS MATCHED : 2
New Game

Final screen