The Issues at Play: Examining the Learning Potential in Advergames and Nutritional Games for Children

by

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Abstract

Advergames – digital games with advertising embedded in them developed to promote brands – sit at the intersection of marketing, entertainment, and education. While a relatively recent phenomenon, they have already generated considerable concern, particularly when it comes to the marketing of children’s foods. In this thesis, I explore whether or not advergames can be used to evaluate and improve children’s nutritional knowledge. Building on game study theories of flow and persuasive games, this study used a custom-built game focused on the promotion of healthy foods, along with pre and post intervention interviews to explore insights about the potential of advergames to contribute to healthy eating preferences. Data from this exploratory study suggest that health based advergames could serve as an intervention tool that both assesses children’s knowledge about healthy foods and educates children about nutrition. However, findings also highlight that nutritional knowledge does not necessarily translate into healthier decision making.

Keywords: Advertising; Children; Nutrition; Play; Gamification
Dedication

This thesis is dedicated to the bright, intelligent, incredible children who took part in this research.
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Glossary

Advergame  A branded environment that merges online gaming with advertising. Product usually plays a central role, engaging with the child player through entertainment and competition (Culp et al., 2010).

Advertising literacy  Education closely tied to media literacy that aims to encourage critical thinking about advertising and increase awareness of commercial messaging.

Flow  A mental state of immersion notably created by games (Csikszentmihalyi, 2008). Used to explain the pleasurable emotional state that an individual reaches when absorbed in activities that are perceived as being valuable (Boyle, Connolly, Hainey, & Boyle, 2012).

Media Literacy  Education that encourages critical thinking about media in all aspects, including sources, truthfulness and intent.

Persuasive games  Also known as serious games. Games that make effective arguments and intend to change behaviours.

Procedural Rhetoric  A technique for making arguments with computational systems and the process of uncovering meaning in the computational arguments created by others (Bogost, 2010).

Spokescharacters  Brand associated mascots or characters used for marketing purposes.
Chapter 1.

Introduction

Advertising can be seen as the art of persuasion, with the power to deeply affect our perceptions and preferences for brands, products or even people. While advertising is most notably discussed in terms of television, promotions are ubiquitous in western society, permeating everything from guerrilla displays to radio to social media. This thesis is concerned with advertising in the internet age. Specifically, this work focuses on advertising that is embedded in digital games, which is commonly known as advergaming. Advergaming, unlike product placement, refers to games that are built around the product or brand featured in the game, with brand promotion playing a central role (Culp, Bell, & Cassady, 2010). This thesis examines advergames as a promotional practice and investigates whether or not this type of game can be used to improve children’s health and potentially combat obesity.

1.1. The Persuasive Game Experience

Picture the following scenario. You, a 7-year-old child, are sitting in front of a computer screen, frantically punching your keyboard’s spacebar. On screen, Toucan Sam reacts to your actions, running and jumping just abreast of an ominous blue wave as you attempt to collect as many Froot Loops rings and bowls of cereal as possible. A smiling Toucan Sam sprints along an unending strip of beach, past palm trees and boxes of cereal depicting his likeness, dodging obstacles at your direction. Tropical steel drums and playful bouncing noises serve as the soundtrack to the happy scene. As you collect more and more Froot Loops, Toucan Sam quickens his pace and widens the gap between him and the wave, the boosts of speed accompanied by chimes of success. The display board at the top of the screen boasts your score: four bowls of cereal, 200 pieces of Froot Loops and 171 meters in distance. Eventually, inevitably, the wave catches up and crashes over Toucan Sam, ending your game. “You have one chance remaining,” the game proclaims, “Do you want to continue running?” While selecting yes will take you back to the beach, selecting no will display your score in its entirety, encouraging you to try again and simultaneously suggesting other, similar games with
familiar spokescharacters like Toucan Sam. This is Club Kellogg’s. The Club Kellogg’s site boasts over 20 similar games, all prominently featuring spokescharacters or products from Kellogg’s wide range of children’s cereals. These games, carefully engineered to capture and hold a child’s attention while offering the optimal satisfying and engaging experience, are advergames: digital games with embedded advertising. And while Kellogg’s is certainly one of the more egregious cereal companies to use this marketing tactic, they are far from the only player in this game.

1.2. Situating the Issue

New online environments have resulted in a range of new challenges when it comes to advertising directed at children. The ability of food marketers to reach children through new avenues online has raised fresh concerns about the role of the children’s food industry in the obesity epidemic. The digital world has provided marketers with new ways to engage children through wide reaching channels that, given the boundless reach of the internet, have proven extremely difficult to regulate. And relatively little is known about the effectiveness of these new innovative digital marketing strategies, which include product placement, embedded commercial messages in games and online social communities, data mining to collect information about consumers’ online activities, and advergames (Buckingham, 2011). The children’s food industry has proven especially adaptive to the new media environment. With a long history of appealing to children by building associations between fun and food, digital games have come to be a particularly effective communication tool for children’s food marketers.

1.2.1. Why Advergaming?

In recent years, the concept of using games to influence real-life choices has been hailed as key to changing behaviours. In 2012, Jane McGonigal, the Director of Game Research and Development at the Institute for The Future in Palo Alto, California, gave a TEDGlobal talk on the potential of games to help us be our best selves and to build a better world. Today that talk has attracted over 6 million views. Within her lecture, McGonigal pointed towards research about the psychology of games that illustrates how gameplay motivates us more effectively than real life (McGonigal, 2012). In a previous TED talk, McGonigal suggested that games could be the key to solving world problems
like hunger, poverty, climate change, global conflict and obesity (McGonigal, 2010). While these may sound like optimistic declarations, the statements are representative of an ideological shift in how games are being perceived in mainstream media and in academia. Most notably, this shift is towards taking games seriously as communication tools with the power to influence players with messages. As renowned games scholar Ian Bogost suggests, games have persuasive power that can reinforce current social and cultural positions or alternatively disrupt the status quo, leading to social change (Bogost, 2010).

Games that make effective arguments and intend to change behaviours are widely known as persuasive games or serious games. Persuasive games employ what Bogost refers to as procedural rhetoric. He explains procedural rhetoric as “a technique for making arguments with computational systems and for unpacking computational arguments others have created” (Bogost, 2010, p. 3). Conceptually, procedural rhetoric suggests that games can affect perceptions through both content and processes in a way that traditional media cannot. Of course, game scholars are not the only ones to recognize the tremendous power of procedural rhetoric in affecting behaviours. Bogost highlights both advertising and education as industries in which game persuasion has already taken root, though he claims these industries do not use games to their full potential (Bogost, 2010). Bogost's work on persuasive games points towards many companies that have utilized games for demonstrative purposes or simply to raise brand and product awareness (Bogost, 2010). Gaming as a marketing technique has been particularly prolific in the last decade, with entire games now being built around products or brands. Marketing, which by its very nature serves to persuade and influence behaviour, has found much success within the gaming medium, either on its own or in support of other larger promotions (Bogost, 2010). Within these games, the message (which is generally product or brand promotion), plays an integral part in the game (as opposed to pop up ads during games or product placement). These games are known as advergames.

While advergames actually have a long history dating back to the 1970’s or 1980’s (Bogost, 2010), video game use for educational or marketing purposes has been minimal compared to the current proliferation (Smith & Just, 2009). I first discovered advergames when I was working in advertising. Conducting research for a quick service restaurant, our agency found that a growing number of fast food chains were using
online games to draw children to their websites and engage them with the brand. Fascinated by the emergence and pervasiveness of these games, I undertook this thesis with the goal of broadening the current academic and general understanding of advergames and persuasive games. This thesis follows a tradition of critical game studies scholars in Canada, such as Sara M. Grimes,\(^1\) Mia Consalvo,\(^2\) Alissa N. Antle,\(^3\) and David Kaufman,\(^4\) who have all examined gaming in different capacities. By adding to the existing knowledge about how children process the messages from these games, this thesis seeks to help inform the design of persuasive games for health education, while simultaneously exploring food based advergames as an avenue for advertising to children and what that could mean in terms of food preference formation. As a number of other strategies, such as media literacy education and regulatory approaches have proven ineffective at counteracting the fun food culture and its contribution to the obesity epidemic, it is critical to examine other possible avenues for intervention, such as advergames for health. Understanding how procedural rhetoric affects children when it comes to health and nutrition will be essential when creating health games for the future, and for developing insights to guide regulation of the advergame landscape.

### 1.2.2. Why Obesity?

Since the early days of marketing to children, advertisers have drawn the ire of critics who questioned whether or not it was morally acceptable to target children. However, since the rise of television in the 1950s, the concern over direct-to-child marketing has ignited full-fledged policy debates, and raised questions about children’s media literacy and their vulnerability as consumers (Kline, 1993). Discussions about children’s susceptibility to marketing have resulted in a stark dichotomy of opinions and academic arguments that place the responsibility of children’s wellness on parents or

\(^1\)Dr. Sara M. Grimes studies children’s digital media culture, play and technology. Her work has focused on the legal and ethical considerations involved with the commercialization of children's online communities and virtual worlds.

\(^2\)Dr. Mia Consalvo studies the digital game play experience and develops best research practices for collecting and analyzing game play data and feedback.

\(^3\)Dr. Alissa N. Antle conducts research focused on interaction design for children. She has also examined how digital games can help children with anxiety and create better learning environments.

\(^4\)Dr. David Kaufman researches digital games for learning in higher education, as well as how games can impact attitudes.
marketers respectively. The specialized marketing of the children’s food industry further complicates questions concerned with the ethics of advertising to children and whether or not these promotional efforts have the potential to affect children’s behaviours or attitudes towards certain foods and products. Rising obesity rates and the perceived crisis around children’s health have exacerbated arguments about the principles of conduct held by the children’s food industry and their regulatory bodies. With global obesity rates rising and moral panic around the issue growing stronger, public and academic discourse has shifted to focus on the role of the food industry in contributing to the obesogenic environment.

Since 1980, the world has seen obesity rates more than double (World Health Organization, 2016a). There has been a dramatic increase in the number of adults considered overweight as well as those considered obese. Similarly, children have been deeply affected by this epidemic. In 2014, 41 million children under the age of five were considered overweight or obese (World Health Organization, 2016a). While this may not be surprising in high-income nations, obesity and overweight rates are also growing in low and middle income countries (World Health Organization, 2016a). The World Health Organization’s Commission on Ending Childhood Obesity warns that without intervention, it is likely that obese infants and youth will continue to be obese during their teen years and into adulthood (World Health Organization, 2016b). It is important to establish healthy eating habits and lifestyles during childhood, as food preferences are thought to be developed early in life (World Health Organization, 2016b). Obesity has serious health ramifications for both adults and children. Obesity is associated with chronic conditions such as high blood pressure, diabetes, heart disease, stroke, certain kinds of cancer, and osteoarthritis – conditions that were at one time related to old-age but today have emerged as diseases found in young adults and occasionally children (The Standing Senate Committee on Social Affairs Science and Technology Senate, 2016). These conditions, most of which fall under the category of non-communicable diseases, are often associated with an unhealthy diet. Non-communicable diseases are noted by the World Health Organization (2010) as a leading threat to human health, causing an estimated 35 million deaths per year. Additionally, being overweight and obese are related to a number of health issues with more immediate effects, such as hypertension and insulin resistance (World Health Organization, 2010). In children, poor nutrition has been found to hinder energy levels and consequently, the ability to
participate in physical activity, as well as children’s emotional development and ability to learn (Langlois, 2006). As children with obesity get older they also may face stigma resulting in discrimination in employment, healthcare, and education, which in turn affects their families, neighbors, health practitioners and governments (Canadian Obesity Network, n.d.). Because diet is cited as a modifiable risk factor, the food industry, as well as its regulatory bodies are in a position to promote healthy diets by improving the nutritional quality, availability and affordability of their products, as well as restricting the marketing of their less healthy options targeting youth (World Health Organization, 2016a). Making poor nutritional decisions and eating the wrong foods can contribute to weight gain and obesity – however other considerations, such as a societal shift towards sedentary lifestyles, as well as reduction in physical education at many schools could also be contributing to rising rates in obesity (Kline, 2011). Research has shown that marketing does play a role in creating an environment that dissuades children form making healthy choices and influences their food preferences (World Health Organization, 2010). For this reason, it is important to carefully examine how the children’s food industry promotes its products and whether new media promotions are contributing to children’s food behaviours and attitudes.

Advergames are essentially an evolved form of product placement, one in which game interaction is centered around brands or products (Hofmeister-Tóth & Nagy, 2011). Given the immense popularity of online gaming with children, perhaps it should be unsurprising that in 2006 it was estimated that U.S. companies spent $264 million on the development of advergames, a trend that was predicted to continue, growing to $676 million just three years later (Johannes and Odell as cited in Lee et. al, 2009). As food marketers continue to invest in children via games, it is imperative that we investigate the effects of these games and whether they are influencing children’s nutritional choices. This line of inquiry raises other complex questions, such as: what role does or should regulation vs. parents play in protecting children from bad nutritional decisions? Is advertising to children in general, and about food choice in particular, moral? Do food and drink promotions influence the well-being of children? Throughout this thesis, I assume a critical perspective that explores how children develop preferences and tastes, whether they understand when they are the targets of marketing, and whether marketing literacy makes any significant difference in how children interpret advertising messages.
1.3. Research Questions

The philosophical worldview proposed in this study is one of post-positivism, a deterministic point of view that shows a clear relationship between causes and outcomes (Creswell, 2014). Specifically, this study adheres to notions that knowledge is shaped by data, evidence and rational considerations. In undertaking the study, I have tried to confirm theories by collecting information through measured observations undertaken by the researcher (Creswell, 2014). While this study does not attempt to explain the underlying causes of childhood obesity (which are complex and nuanced), the purpose of the study reflects post-positivist ideals in that it proposes a plausible link between what children experience through advergames or health games, and their perceptions of certain goods and brands. Post-positivism also stresses the importance of measurability, careful observation and the study of something tangible and real (Creswell, 2014), all of which are reflected in this methodology and the use a quantitative research design.

The purpose of this thesis is to explore the educational potential of health based advergames through a pilot study. It was undertaken with the intention that if the research design and findings prove promising, this research could be replicated in a full-scale study. Specifically, this study seeks to explore four questions:

R1) Do children understand the intent behind advergames?
R2) Do brands contribute to children’s preferences when it comes to food choices?
R3) Can games be used to assess children’s nutritional literacy?
R4) Can an advergame that emphasizes healthy foods improve nutritional literacy, and, if so, does this lead to healthier food choices?

I explored these questions by using the strategies and techniques from persuasive gaming to develop a custom built advergame designed to evaluate children’s current nutritional knowledge and build on that knowledge through gameplay. I designed the game with the hope that it would demonstrate which foods children believe to be healthy and unhealthy and offer them feedback on the foods that they chose. The design included feedback for heuristic learning opportunities regarding nutrition. A quasi-experimental research design was undertaken using this game (along with pre and post
intervention interviews) to investigate whether or not this type of intervention could be used to evaluate and improve children’s nutritional knowledge and preferences.

1.4. Chapter Overview

Part I of the thesis provides an extended discussion about the historical context that first established a connection between fun, entertainment and children’s food. This section serves as background and justification for the approach I took in designing and conducting the study. Part II outlines my research design and provides an overview of my findings.

Chapter 2 provides the background and context and justification for this work. The chapter begins with the historical context that created the child consumer, and discusses how the children’s food market was formed. Beginning with the transitory post-war era of advertising, within this chapter, I detail the commodification of childhood and the trajectory of direct to consumer advertising focused on children. This chapter, which outlines the early days of children’s food advertising on radio and television, provides the history and context of the fun food culture that has allowed for the development of advergames.

Chapter 3 discusses the current state of the children’s food industry and explains how marketers have successfully drawn on notions of fun and entertainment to sell foods and beverages through the use of digital games. The rise of advergames, as well as persuasive games in general are explored in Chapter 3, which also highlights the popularity of online games and how they have been used as communication tools. Through a discussion of online gaming for either promotional or educational uses, this chapter details how marketers and educators differ in their approaches to gamifying persuasive messaging and dissects why games serve as an effective vehicle for behaviour change.

Chapter 4 discusses two avenues of intervention that have evolved as a result of the fun food culture. In this chapter, I critically examine regulation and media literacy programs – two strategies aimed at mitigating the effects of food advertising on children. Through a discussion of current regulatory loopholes, I argue that regulation has failed to keep up with the online space, leaving advergames relatively unsupervised. I outline
how parents, educators and policy makers have sought to combat the obesity crisis through media literacy and advertising literacy, and review the considerable work and resources that have gone into developing this strategy as a form of intervention. The chapter argues that these strategies have not been effective and closes by explaining the need for new methods in the fight against advergames and their potential contributions to the obesity crisis and fun food culture.

Chapter 5 provides the research rationale behind this study. A review of literature about advergames and healthy eating identifies a gap in knowledge regarding persuasive games for health, and identifies the need for further study about whether or not advergames can increase nutritional knowledge in addition to encouraging healthy food behaviours. This chapter situates my research within the context of other studies involving advergames for health and points towards the potential of advergames to intervene on an educational level. I suggest that rather than simply influencing children’s behaviour, advergames can be used to assess and improve children’s nutritional knowledge. Chapter 5 also introduces my research objectives and empirical research and discusses the rationale behind the methods involved in the study. This chapter explains how I designed the custom-built health based advergame which has been central to my study and the approach I took in developing my research design.

Chapter 6 describes the findings from this pilot study, as well as some of the possible implications of this work. Chapter 6 argues that the results suggest the need for some changes in game design, followed by a larger, full-scale replication of this research. The chapter includes a discussion of the limitations of the study, and suggestions for future research.

The seventh and final chapter of this thesis concludes with a summary of this research and what it has contributed to the field of knowledge. Through a discussion of the previous chapters, this chapter discusses the overarching argument of this thesis and how the empirical research undertaken has attempted to address gaps in knowledge. The thesis ends with closing remarks and suggestions for how persuasive games for health can be used in the future.
Part I: Background
Chapter 2.

Background, Context and Justification

2.1. Introduction

This chapter sets up the background, context and justification for my empirical research. Beginning with a review of the history of advertising to children through traditional mediums such as television and radio, this chapter first explains how children’s food marketers have come to associate notions of fun and food. This chapter contains critical history that contextualizes how marketers have normalized the idea of children as consumers; developed the children’s food category as separate and distinct from that of adults; and how, through the use of tactics like games, premiums and clubs, marketers have conflated food and entertainment. Ultimately, I argue that these associations set the stage for the rise of advergames, or the actual integration of play and food.

2.2. The Beginnings of the Children’s Food Market & The Rise of Fun Food

This historical review seeks to situate advergames within the broader context of advertising history in order to convey the importance of the relationship between advertisers and food. In order to understand the current state of digital marketing to children and the somewhat revolutionary rise of advergames, it is necessary to understand how and why associations of fun and play came to be incorporated with the marketing of children’s food. Taking a historical approach, I examine the rise of the child market, exploring how and why food manufacturers and advertisers became interested in children, and outlining the tactics used to help encourage children to become consumers. Examining the formation of children’s food as a distinct category, this chapter explores the use of games, contests, merchandizing tie-ins, and clubs to engage children with advertising and cultivate them as persuaders within the home, and then purchasers in their own right. This background information is essential to understanding how the fun food culture emerged, and how advertising came to play a controversial role in children’s health.
### 2.2.1. A Shift in Family Dynamics

The early decades of the 20th century represent an important period in the development of children’s food markets. During the earliest years, food advertisers recognized children as consumers of their products and realized there was a need for child-specific advertising. However, advertisers mainly directed their efforts to parents with appeals to their child’s well-being (Asquith, 2015a). Children’s products, including clothing and medicines (as well as foods), were promoted through iconography of children and commodified conventions of childhood, emphasizing the need for parents to recognize their children’s specialized sensitivities and needs (Kline, 1993). This was in part due to the early 20th century change in family dynamics. Newly inaugurated family roles established fathers as wage earners, mothers as home makers and children as a separate category, meant to be taken care of (de Regt, 2004). This division of labour in the household also represents an ideological shift from earlier decades when children served as important economic contributors to the family. Children were increasingly expected to spend their time obtaining an education and in Canada, the United States and parts of Europe, this period brought with it the enactment of labour legislation to discourage children from workplace activity (Barman, 2011; de Regt, 2004; Fried, 2014). Children were previously seen as being able to contribute monetarily and economically, however towards the 1930’s children were associated with sentimentality and a need to nurture or protect (Cook, 2004). Product appeals, including those of the food industry, adapted quickly to correlate their brands with family values that emphasized the importance of caring for your child and providing for your family. During this time companies also began to differentiate themselves by emphasising their unique brand and brand values. Companies worked alongside advertisers to equate known brands with superior products and caring for your family, while simultaneously creating an air of suspicion and distrust around non-branded or non-advertised goods (Jacobson, 2004). Children’s magazines, which were one of the first mediums to recognize children as consumers, additionally sought to help children differentiate between brands, insisting on trademarks as signs of quality that could be trusted (Jacobson, 2004).

Within the food industry, with so many similar companies and products, branding and packaging came to play a critical role in a company’s success. Branded, individually packaged foods were marketed extensively, leading food to be the most heavily advertised product from 1900 to 1920 (Asquith, 2015a). Companies established
trademark characters and corporate brand images for their food products, unlike previous years when packages had been linked to production facilities or the actual owners of the company (Asquith, 2015a). Children were frequently used as an appeal to differentiate branded products – child imagery was used to champion purity, progress, virtue and innocence while also representing children as discerning young customers who would not tolerate inferior products (Jacobson, 2005). Advertising was also used to play on nurturing ideals and maternal anxieties, taking an educational tone to coach parents on the needs of their children and encourage emotional concern (Kline, 1993), particularly when it came to diet. As Daniel Cook remarks on this time, “the child also stands for something other than itself – for ‘the family’ and specifically for the purchasing power of the family. It provides the strong link in the chain from familial affect to commerce” (Cook, 2000, p. 492). Marketers could appeal to parents on behalf of the children, a particularly effective technique during the Great Depression, when parents were reluctant to spend on themselves.

2.2.2. The Child Perspective

The depressed economic conditions of the 1930’s offered fewer opportunities for marketers to encourage gratuitous spending in adults. However, the 1930’s marked a point at which manufacturers and advertisers began to see children as consumers worthy of their efforts (Cook, 2000). In 1932 a writer for Printer’s Ink Monthly argued for the development of specially designed packaging for children – suggesting that companies should take children’s tastes and preferences into consideration when designing packages meant to appeal to them (Cook, 2000). Similarly, during this time companies began to make strides to learn more about children’s tastes, researching developmental stages of children and experimenting with how to best tailor goods and services to this new market (Cook, 2000). Creating stronger connections with children became imperative for the companies that wished to thrive during the depression. For the first time child psychology was applied to children’s market behavior in order to help advertisers, merchants and retailers form bonds with and resonate with children (Cook, 2000). After learning that children preferred a sense of novelty and belonging in their products, advertisers were quick to make use of this new research, leading to a jump in the use of clubs and premiums in the sale of children’s goods (Cook, 2000). Much like today, cereal companies were particularly effective in their communications with
children, pioneering some of the most popular clubs and most innovative loyalty
programs. Food manufacturers created packaging and informational charts purporting to
educate children and parents about food production, and cultivated the idea that
marketers were working to serve children by educating them about the merits of different
foods and food brands (Cook, 2000). A popular technique involved an educational angle,
that stressed the importance of a balanced breakfast in proper child development while it
promoted a company’s own products. This marketing technique was coupled with
gamification – that is the process of adding positive gamelike elements or enjoyable
characteristics to improve engagement (Kim, 2015). Cream of Wheat Company
launched a H.C.B. breakfast club aimed at ‘correcting’ children’s breakfast habits
through a gamified system of badges, wall charts and gold stars, which they promised
would prompt children to eat a balanced breakfast (Jacobson, 2004). Membership in the
club came at no added charge, and was promoted and endorsed in women’s magazines
as a more effective coercion tactic than scolding or nagging your children (Jacobson,
2004). Through this careful messaging, companies could carefully position themselves
as resources or helpful child-rearing stratagems for parents, especially exasperated
mothers, who simply wanted their children to eat their breakfasts. At the same time, by
offering fun trinkets, club memberships or gamified wall charts with their products,
children’s food marketers could foster a sense of loyalty with children. The H.C.B. club
was particularly innovative with their marketing, requiring proof of purchase requests for
prizes to include children’s names and addresses, ostensibly so that children could
receive their membership package along with other benefits if they continued to
participate with further proof of multiple purchases (Asquith, 2015b). However, Asquith
(2015) notes in his account of advertising history that these box tops also served as
some of the earliest examples of data mining that generated market insights for
companies about their child consumers, enabling companies to learn more about the
demographics of their market. The H.C.B. was also adept at creating promotions that
encouraged the consumption of their product every day. Children who reached a perfect
breakfast completion chart were offered an exclusive prize: they would learn the secret
meaning behind the club’s initials (Jacobson, 2004). These appeals to exclusivity and
belonging helped to promote an association of novelty and fun with these children’s
breakfast foods, which could be achieved only through the regular purchase and
consumption of their product. While the practice of selling children food products with the
offer of a premium or a membership to a club may be common practice today, the
inception of clubs like H.C.B. represents a pivotal point in the history of marketing to children. The use of clubs in particular was such a successful practice that some argue it cemented the concept of the children’s market as well as the practice of advertising to children (Asquith, 2011).

2.3. Radio Sponsorship and Children’s Programming

Membership to children’s breakfast clubs was promoted across a variety of mediums, including magazines, newspapers, radio and eventually television. The clubs proved to be exceptionally popular, recruiting 375,000 within the first 16 months of launch (Asquith, 2015a). Food advertisers interested in reaching children found comic strips to be an effective way to promote their product through a story while also including offers for club membership and prizes (Asquith, 2014). Similarly, children’s radio, which had already proven to be tremendously successful, was inundated with advertiser sponsored radio programs aiming at introducing children to new brands – a tactic that was particularly popular with food advertising (Asquith, 2014). While the symbiotic relationship between children’s advertisers and content producers had already been struck between magazine publishers and marketers, this relationship would continue to evolve through the use of radio.

The growing popularity of radio made it easy for sponsors to create serial programs that children (even those that were very young) could listen to daily, without needing their parent’s participation. Radio allowed advertisers to speak directly to children, circumventing parental approval. Magazines were effective vehicles for reaching white middle and upper class child audiences, however, radio allowed advertisers to reach wider economic audiences of children (Jacobson, 2004). Radio programs and clubs allowed sponsors and advertisers to reach large audiences of children with a single broadcast. What have been come to be seen as hallmarks of children’s advertising, such as promotions, branded characters, endorsements and partnerships can be traced to the early days of children’s broadcast media (Asquith, 2014), which more often than not came alongside significant sponsorship. In New York City alone over 100 children’s radio programs were launched, with more than half sponsored by food advertisers (Asquith, 2011). Serial programs encouraged children to listen in every day, something essential for branded products aiming for daily consumption – such as breakfast foods (Asquith, 2014). Notably, breakfast cereal also
helped to further develop and encourage the formation of the children’s food industry, creating presweetened cereal towards the end of the 1940s as a child friendly product (Asquith, 2014). Food advertisers used radio programs to introduce listeners to their products by linking them to specific characters. Popular culture heroes were developed for children to ‘worship’ in order to foster stronger emotional ties with children (Cook, 2000). These characters functioned as beloved icons for children as well as serving as vehicles for product promotion. Little care was taken to disguise promotions as part of the story. Often products were transparently announced as the character’s favourite food (Asquith, 2014). As Lisa Jacobson notes, “this strategy of enticement further blurred the lines between commercials and programming, which were never very fixed to begin with, since sponsors rather than networks created the radio programs” (Jacobson, 2004) (Jacobson, 2004, p. 193). Through both regular radio segments and reoccurring serial comics, food manufactures and advertisers could keep children steadily entertained while also encouraging positive associations of entertainment and fun with their brand. 

Ralston’s Hot Wheat cereal, which sponsored the popular serial radio program Tom Mix Straight Shooters, offered a ‘Straight Shooters’ club that promised listeners a wide array of prizes including blow dart guns, rings, badges, periscopes, mini-telegraph sets and decoders – which could be used to find secret messages within the program (Asquith, 2014). These promotions helped to establish a rapport with the children while also creating a sense of exclusivity. Prizes and premiums also encouraged prolonged engagement with the radio program and the brand, helping to keep Ralston products top of mind, even when the program had ended for the day. Asquith, who conducted an extensive review of advertiser-sponsored clubs in the 1930’s, points to radio as an important player in children’s brand socialization, noting, “what’s remarkable about the strategies of children’s radio advertisers was the way in which they encouraged children to recognize brands, differentiate between brands, feel connected to a specific brand, and attach feelings of exclusivity, pride, and excitement to branded consumption” (Asquith, 2014, p. 24). Clubs and premiums, enabled by the medium of radio, provided the basis for children to form emotional attachments and positive attitudes towards specific products in otherwise homogenous categories. Perhaps more importantly, the use of clubs and premiums by advertisers aided in developing children’s understanding of different brands and drove brand loyalty. The bonding of entertainment with the sponsor’s message changed how children experienced and understood radio (Jacobson, 2004), as well as how children perceived certain brands.
2.4. Children’s Television Programming, Sponsorship and Merchandising

The post-war period of relative economic stability greatly changed the course of commercialization for both children and adults. Goods that were previously sparse during the war began to be manufactured in earnest, inspiring a desire for a more luxurious and leisurely lifestyle for the entire family (Kline, 1993). American families embraced new technology as a sign of domestic prosperity, particularly when it came to labor saving devices and commercial television (Kline, 1993). Entertainment and leisure came to the forefront of American values, especially when it came to consumption as a sign of success. While in 1950 less than 10% of American families had a television set, by the end of the decade this number had drastically increased to 87% (Alexander, Benjamin, Hoermer, & Roe, 1998, p. 2). Television programming in the 1950s attempted to appeal to the entire family, as most households had only one set, and shows were often sponsored by one company – similar to what was seen in radio advertising in earlier decades (Alexander et al., 1998). To entice and placate the family, 1950s TV programming and advertising portrayed consumption as a simple solution to the tensions arising from the changing family dynamics and domestic order. As shifts in traditional family roles and adjustments to the affluence and peace of the post-war period created a sense of pressure within the domestic sphere, tensions of family life and generational differences were framed as issues that could be resolved through possessions. Kline (1993) argues that advertisers and producers acknowledged the tensions of family life on screen, but put them in the background, focusing advertising narrative squarely on the role of the product to relieve anxieties inherent in changing generational relations. Television was able to unite the family in more ways than one. It stimulated common brand loyalties and refocused families in terms of consumer socialization (Kline, 1993). Television advertising, marketers and producers quickly discovered that they had a tremendous ability to affect sales, even prior to the widespread adoption of the TV set (Alexander et al., 1998). Throughout the 1950s, most children’s programs were sold as packages of shows and commercials set by the sponsor and the advertising agency (Alexander et al., 1998). Early children’s programs were designed to delight the whole family in order to enhance the appeal of television and foster the sale of sets. As a result, advertising that took place during children’s programs was generally focused on products geared towards adults (Alexander et al., 1998). However, the lack of interest in
advertising products directly to children meant that programming to children was underfunded and limited due to the dynamics of commercial media. What few children’s programs were available were usually scheduled during blocks of time when fathers were working and mothers were preoccupied (Kline, 1993). With no source of income and little spending money, children were simply not a profitable draw for advertisers within the new economy. Sponsors and advertisers with products that may have interested children found it more cost effective for them to invest in family programs that were directed towards the whole family, rather than sponsoring kid’s programs (Kline, 1993). However, children did have a keen interest in television, and were able to recall advertising for specific brands and products surprisingly well. Research from the 1950s quickly revealed that children had a remarkable ability to retain the information they learned from advertising, even when it was for products not aimed at their audience (Alexander et al., 1998). As time went on, children’s keen interest in the screen as well as their proven ability to absorb and remember the information being presented to them caught the attention of advertisers and manufacturers. This set the stage for children’s programming and children’s advertising to take root – and provided marketers with new opportunities to grow their strategies from radio days.

The widespread adoption of television offered the opportunity for marketers to build on the previously established strategies of radio – namely conflating product endorsements with children’s entertainment (Jacobson, 2004). While radio and comic strips pioneered the children’s market, television revolutionized marketing to children. In other words, while “the ideological groundwork had already been laid during the interwar years for widespread acceptance of children’s consumption” (Jacobson, 2004, p. 215), television was the medium that truly normalized the practice of advertising to children. Television advertisers and programs built upon communication techniques from the radio days – using premiums and products to extend children’s brand engagement and seemingly enhance children’s enjoyment of television programs (Jacobson, 2004). Efforts to blur programming and advertising intensified on television – advertisers and show developers would come together to create shows that were almost entirely based on the products they were selling. As early advertising was largely inundated by food commercials, this practice was quickly picked up by the children’s food industry, which capitalized on comic strips and radio’s previous efforts by pushing the agenda that food and entertainment were inexplicably linked.
One of the most famous early examples of the blurred lines between entertainment and food advertising is NBC’s *Bonomo, The Magic Clown*, which debuted in 1949 as *The Magic Clown* and ran until 1959 – albeit with a number of different actors portraying the titular clown (Bonomo Turkish Taffy, 2017). The program largely consisted of a man in a clown suit who performed magic tricks and doled out candy to children in the studio audience (Hollis, 2001). The show was inextricably tied to its sponsor, The Gold Medal Candy Company of New York, which sold Bonomo’s Turkish Taffy (Hollis, 2001). In fact, in what was entirely unprecedented at the time, the company had created the show purely as a way to gain media exposure for the product (Bonomo Turkish Taffy, 2017). The studio audiences, who were regularly featured eating taffy that was handed out to them during the show (Samuel, 2001) wore promotional fezzes related to the packaging of the taffy (Kaufman, 1999) for the broadcasts, as did a prominently featured promotional sidekick character, who was appropriately named Laffy (Hollis, 2001). Laffy the puppet also performed magic – casting spells that became hard sells for the three available flavours of Bonomo’s Turkish Taffy and even Bonomo’s Peanut Brittle (Samuel, 2001). The show revolved almost entirely around the product, from characters to plotlines to format, and allowed children to engage with what was essentially a program long commercial. The clown was eventually renamed Bonomo and the show retitled *Bonomo, the Magic Clown* (Bonomo Turkish Taffy, 2017). The show built on the previous success of radio clubs, promoting a club membership, and magic gift items for children that weren’t able to participate in the live audience tapings (Bonomo Turkish Taffy, 2017). Gold Medal Candy Company even partnered with other children’s food companies for further promotion. They entered co-sponsor agreements with both Duncan Yo-Yo and Cheerios to have Turkish Taffy featured on boxes with the offer of a free bar of taffy as a premium (Bonomo Turkish Taffy, 2017). The show proved extremely effective, bolstering sales to an estimated 100 million bars a year during the 1950’s and 1960’s (Kaufman, 1999). According to Gold Medal, *Bonomo, The Magic Clown* was the first of its kind, inspiring successful shows that followed (such as the Mickey Mouse Club and Wonderama (which also advertised Bonomo’s Turkish Taffy)) which actually emulated the strategies of *Bonomo, The Magic Clown* (Bonomo Turkish Taffy, 2017). These marketing techniques were soon noticed by other food manufacturers who began using similar strategies in appealing to children. With little to no regulation, it was not too long before children’s television became a collection of program length commercials.
Another, though perhaps less egregious example of the practice of mixing entertainment and food promotion, was NBC’s children’s show *Howdy Doody*, which premiered in 1947 and immediately became a strategy to connect products with child audiences (Samuel, 2001). While initially seen as a way to promote the sale of television sets (Rautiolla-Williams, n.d.), *Howdy Doody* quickly evolved to become a program that consisted largely of promotion. Products were pushed by stars of the show to children and their mothers, who it was assumed occasionally watched television with their children (Samuel, 2001). *Howdy Doody* is widely regarded as one of the first children’s television shows, and as such, was extremely popular with children. While Gold Medal may have set the stage with *Bonomo, The Magic Clown*, the *Howdy Doody* developers quickly created their own formula for how to create a profitable children’s television’s program. The *Howdy Doody Show* was exemplary for the time for several reasons, one of which was the flagrant integration of advertising for multiple brands and products into the program. The show, which began as a puppet show airing on NBC, starred Howdy Doody, the country boy marionette, who came along with a merry group of puppet friends with their own personalities and characteristics. Eventually Howdy was replaced with a live boy, with red hair and freckles, accompanied by a number of other live characters, some of which replaced former puppet versions of themselves. The show frequently incorporated slapstick humour, songs, and even lessons. As with breakfast clubs, the *Howdy Doody* writers may have incorporated educational material to please parents and position themselves as aids in child development. The use of lessons in the show could also help to temper parental concern about television consumption, while furthering associations of education, entertainment and advertising. In one storyline, Howdy Doody ran for ‘President of all the kids,’ which created the opportunity for a lesson about the American electoral process, and provided an entertaining plotline (Giordana, 2017). The show offered realistic looking campaign buttons free to the show’s audience, which resulted in an unexpectedly high response from children, who mailed in over 60,000 requests (Giordana, 2017). While prior to this event there was little research to inform producers about how many viewers tuned in to *Howdy Doody*, this unprecedented move and its response created solid evidence about just how many children the program was able to draw in. As the popularity of the show became evident to advertisers, advertisers began to flood the program with offers of sponsorship. Colgate, Wonder Bread, Mars Candy, and Ovaltine signed up to advertise with the program and *Howdy Doody* made history as the first television show to have
sponsorship scheduled up to two years in advance (Coombs & Batchelor, 2014). The show frequently and forcefully incorporated messages from these sponsors into the program. Lawrence R. Samuel’s examination of postwar television advertising recalls a July 1952 episode in which Howdy’s beloved group of friends discussed the benefits of Kellogg’s Rice Krispies and Colgate’s Toothpaste, while the next day’s episode featured a conversation between Buffalo Bob and Howdy Doody about the glory of Wonder Bread. However, the sponsorship and transparent attempts to sell to children had no effect on the audience numbers. In fact, the show gained such wild popularity amongst its child audience that before long it was nationally syndicated (Giordana, 2017) and was extended to airing five days a week on NBC, a first for the network (Rautiolla-Williams, n.d.). Ironically, the show was a victim of its own success – in a way. The demand that it had helped to create for advertising ultimately caused the show to be moved to Saturday mornings, as it was assumed the prime evening television spots should be used to advertise to adults rather than children (Rautiolla-Williams, n.d.). The show fared less well in its new slot and eventually faded away. By the time the show ended, it had aired 2,343 episodes, not including the Canadian and Cuban offshoots that it had spawned (Rautiolla-Williams, n.d.).

While television regulation today makes a point of forcing advertisers to distinguish between regular programming and advertising, the early days of children’s advertising were something of a wild west – a frontier environment in which entertainment and advertising coalesced in deliberate strategies to exploit children’s inexperience. With the growth of both integrated advertising and traditional commercials, television as a medium was overwhelmed with advertising. By the late 1940’s an estimated 1,000 companies had taken to advertising via commercials on television, leading to a surge in the development and growth of advertising agencies (Coombs & Batchelor, 2014). However, children’s marketers seemed to prefer interweaving advertising into the plots of their programs. This tactic, known as host selling, was popular with 1950s children’s advertisers. Studies showed it was used in up to 62% of children’s product appeals (Alexander et al., 1998). As children’s programming grew as an industry, companies began experimenting with merchandising, creating paraphernalia related to the television shows. Disney’s Disneyland, which was a children’s program intended to be watched by the whole family, quickly illuminated television’s immense potential for merchandising, and the company soon realized this was even more
profitable than movies (Kline, 1993). Disney’s *Davy Crockett* (an adventure show that was a part of *Disneyland*), was so popular with audiences that it was credited with inspiring the sales of millions of coonskin caps in the span of just a few months (Kline, 1993). Recognizing the correlation between children’s television, merchandising and profitability, other companies quickly sought to capitalize on appealing to child audiences through merchandising. By the 1960’s television programmers had developed a preference for cartoons as a cost-effective and low-effort way to keep children entertained (Kline, 1993). The saturation of the children’s television market led many cartoon characters to become household names, and some TV shows developed licensing material, which allowed them to use the program characters and their likeness to market everything from vitamins to cereal (Kline, 1993).

The bond between children’s media and associated marketing grew throughout the 1960s and 1970s with toy spin-offs of popular children’s TV characters and the use of anthropomorphic brand spokescharacters for all products marketed to children (Kline, 1993). Children could recognize the characters they loved from Saturday morning cartoons on the products they saw in the supermarket. Popular American children’s animation studio Hanna-Barbera used its many beloved characters to partner with Kellogg’s, a long-time user of spokescharacters. This allowed Kellogg’s to sponsor Hanna-Barbera’s initial syndicated series (Hollis, 2015). This partnership proved extremely beneficial for both parties. With so many additional resources, Hanna-Barbera was enabled to create many successful series, while Kellogg’s could use their characters in both commercials and on packaging. This was so fruitful for Kellogg’s that they would eventually eliminate most of their original established spokescharacters in favour of the easily recognizable Hanna-Barbera characters (Hollis, 2015). Other similar partnerships of the time include Warner Bros. Bugs Bunny partnership with General Foods’ Kool-Pops and Dolly Madison’s sponsorship of Charlie Brown’s *Peanuts* specials and later syndication (Hollis, 2001). Encouraged by similar partnerships to manufacture toys using characters now associated with foods, these kinds of sponsorships conflated notions of fun and play with food.

While the complete commercialization of television in the 1960’s made the direct control of sponsorship unnecessary (McAllister, 2010), the practice of merchandising and product tie-ins with children’s food companies never waned in popularity. By using the characters that children recognized and loved, brands could encourage positive
associations with their products at home through advertising, and in the stores through association. As toy companies and children’s snack producers flooded the children’s broadcasting Saturday morning time slot, networks began to realize the potential profit involved. For a time, children were not only exposed to tie-ins and merchandising, but were also inundated with an extreme amount of commercial advertising during programming breaks. Networks began to disproportionately allow for more advertising per hour during the Saturday morning cartoon block, compared to network prime time viewing aimed at adults (Horgan, Choate, & Brownell, 2001). By the 1990s there were almost sixty different product-tied animations advertised on children’s television, representing the majority of children’s programming and almost the entirety of the new production effort (Kline, 1993). As advertisers put more focus on children’s television programs and increased their spend to an estimated $500 million in the 1990s (Leccese 1989 as cited in Goldberg, 1990), concerns about television content and the effects of advertising began to grow amongst parents and policy makers, and incited a decades long argument that has remained until this day.

Advertising budgets for products directed at children continued to grow throughout the 2000s. A report by the American Psychological Association in 2004 (APA, 2004) estimated that advertisers were investing more than $12 billion dollars per year in children, resulting in youth exposure to more than 40,000 commercials each year. Reviews of Saturday morning children’s programming found that 57% of the ads children were exposed to during this time were for food, with the bulk of the promoted foods considered fats and sweets (Taras and Gage, 1995 as cited in French, Story, & Fulkerson, 2002). While the majority of this media advertising is spent on television promotions, advertising directed at children has also expanded to broadcast, print, event marketing and in school marketing (Story & French, 2004). And just as advertisers have expanded their media scope, the children’s food industry has similarly expanded their techniques, crafting emotional appeals in their advertisements using fantasy, promises of fun/happiness, vows of athletic ability and notions of being hip or cool (Wicks, Warren, Fosu, & Wicks, 2009). To appeal to young children, advertisers for foods and beverages use animation, visual effects, sound effects and jingles in order to gain and hold children’s interests, and to generate positive associations and product preferences (Wicks et al., 2009). Appeals to fun have also spread to the foods themselves, which are frequently promoted based on unique characteristics such as interactivity (stackable,
stretchable, shreddable, peelable) or transformative properties (colour, shape, size), with some products even providing games to play using the products themselves (Elliott, 2008). The ability to physically play with your food added a layer of interactivity to children’s food that further intertwined notions of fun and food, while the continued use of cross-promotional tie ins with movie/TV characters, star athletes and celebrities, blurred the lines between entertainment and commercial intent. These strategies, along with the wide adoption of internet enabled devices, would set the stage for the development of a whole new kind of branded entertainment marketing.

2.5. Conclusion

This chapter has provided the historical context that led to the creation of the child consumer, the children’s food market, and most importantly, the development of the fun food culture. This chapter ultimately argues that these events, in particular the establishment of fun food, have created the ideal conditions for advergames. As notions of play, entertainment and food become further entwined, and advertisers increasingly look towards new forms of media to engage with children, it is critical to examine these new avenues of promotional messaging and what they mean for children’s brand and food preference formation. Advergames, which it has been argued to negatively influence children’s lifestyle choices and contribute to growing childhood obesity issues, must be further examined in order to understand what makes this unprecedented form of advertising so successful and potentially harmful.

The next chapter examines the rise of advergames and argues that this medium represents a unique and effective form of communication for advertisers to connect with children. Within the next chapter, I discuss the key characteristics of advergames and examine what makes them different from previous forms of advertising, and why we should be concerned about this new form of advertising. Through a discussion of casual games, persuasive games and educational games, Chapter 3 contends that games as a medium represent a distinct opportunity to influence preferences and behaviour. Food and beverage marketers, who are proficient in crafting promotional messages that resonate with their target audience, are particularly adept at using games to communicate with children. As advertising has been shown to be a contributor to children’s long-term lifestyle behaviours and preferences, I use Chapter 3 to argue that
advergames require further examination, particularly in light of the current children’s obesity epidemic.
Chapter 3. The Rise of Advergames

3.1. Introduction

The previous chapter outlined the historical context from which children’s food advertising emerged, and examined how food and fun have been linked by advertisers to create lucrative markets for their products. Through a thorough discussion of children’s food marketing, Chapter 2 established the context and conditions that would give rise to advergames. This chapter further explores how the children’s food industry has grown its strategies and associations between fun and play into actual games centered around products or brands. While television remains the largest source of children’s media consumption, in recent years, mobile media, video games, and computers have gained considerable traction with children (Common Sense Media, 2011), offering brands the opportunity to engage with children on multiple media platforms. As children’s media behaviors gravitate towards online entertainment, marketers and educators alike have witnessed the potential to create deeper connections with children through avenues that allow for dynamic interaction. Here, I explore the popularity of digital games and how they are being used for both marketing and educational purposes. I address the techniques being used by children’s game developers to optimize a player’s experience and discuss what makes games such a compelling and effective form of communication. I argue that games offer an opportunity to affect children’s behaviours in relation to food preferences. Material presented here not only addresses the emergence of advergaming, but also offers a rationale for my decision to explore the use of advergaming as a means through which children’s food preferences may be altered to benefit children’s health (rather than sell more branded products).

To understand the debate behind games that blur concepts of entertainment and marketing, one must first examine the rise of digital games, their overwhelmingly popularity and just what keeps players coming back for more. In this chapter, I will argue that the development of the casual games market has created a larger market for games, one that includes children amongst its wide audience. The rise of the casual game market, as well as the recognized potential of persuasive games, has set the stage for advergames. Advergames, as I will discuss in this chapter, are unique,
powerful and worth further exploration because of their rampant popularity as well as their ability to influence through procedural rhetoric.

3.2. What Are Casual Games?

In recent years, online gaming has become exceptionally popular with children. An NPD Group, Inc. study from 2007 showed that almost 80% of children ages six to eleven that went online sought out digital games (Lee, Choi, Quilliam, & Cole, 2009), a statistic that has likely increased with the ubiquity of internet enabled devices and unsupervised use. A 2015 study conducted by children’s digital research company PlayScience found that 44% of children play their favourite game app every day, while 41% play at least a few times a week (Bryant & Levine, 2015, p. 1). Companies and educators have embraced the popularity of games, adding game like features to their promotions in order to promote, teach, engage and drive loyalty (Kim, 2015).

Incorporating game features has been proven to influence behavior – even the inclusion of game-like elements as reward mechanisms have allowed pseudo-games to thrive, becoming advertising platforms and supplying a plethora of marketing data (Hughes & Lacy, 2016). Whether being used by corporations or educators, data collected through games can be important in assisting game developers to create the games that will gain and keep the interest of an audience, while providing ongoing information about that audience. Expectedly, this raises troubling questions about the ethics of using games to advertise to children and collect data about their online media activities. Further objections arise when considering how these games, developed to maximize engagement and appeal to children, may be used to influence their behaviors or preferences.

The advancement and adoption of new technologies has not only made games more appealing and accessible to a wider audience, but has also helped to usher in a new wave of games, referred to by some as casual games. Casual games typically require little video game prowess from the user, while also requiring less computer memory and processing power than traditional computer games (McGonigal, 2012). Designed for the largest possible audience, casual games are popular leisure activities for children and teenagers (Gerling, Fuchslocher, Schmidt, Krämer, & Masuch, 2011). While these games certainly do denote a more casual relationship between the user and the game in terms of the investment of time and effort, it does not make the relationship
to the casual game any less significant for the user (Juul, 2009). The title casual games simply serves as a genre label to contrast these games with the historically complex, time intensive (and machine resource intensive) game designs. The rise of casual games and their massive popularity are a testament to the changing landscape of games, which once felt restricted to an expert audience (Juul, 2009). The development of casual games as a genre has created a wave of more accessible, simplistic games that are suitable for a much wider, less experienced gaming and computing audience (Gerling et al., 2011; Juul, 2009; McGonigal, 2012), which has increased interest in gaming amongst a previously untapped, or under realized market. Studies show that web based casual games engage more than 200 million regular users each month, making them one of the most popular leisure pastimes (Casual Games Market Report 2007).

Understandably, the success of casual games has not gone unnoticed by other sectors – this new market potential has led several gaming and non-gaming companies such as including UbiSoft, Eidos, Vivendi, THQ, Atvision, MTV and Google to announce casual game focused initiatives (Casual Games Market Report 2007). In fact, casual games have become so popular that even traditional video game giants have taken notice. Nintendo, perhaps the most well-known game corporation, has been vocal in their strategy to appeal to broader, non-gaming audiences (Juul, 2009). Their casual games will place less focus on graphics and game conventions and instead will focus more on creating entertaining and satisfying games that demand less of a time commitment from users (Juul, 2009). Similarly, brands and advertisers have sought to capitalize on the mass popularity of casual games. In recent years, major agencies such as Young & Rubicam as well as Starcom Media launched videogame divisions specifically devoted to branded entertainment and gaming.

3.3. Persuasive Games

Along with the popularity of casual games, the gaming industry has also seen a considerable surge in what are often referred to as persuasive games. Sometimes called serious games, these games differ from ordinary video games because they employ procedural rhetoric in order to “make arguments about…the way systems work in the material world” (Bogost, 2010, p. 47). The arguments embedded in procedural rhetoric persuade the user towards a specific philosophical view or call for action that represents
the persuasive element of these games. Bogost’s definition of persuasive games also notes the need for effective persuasion in order to classify a game as a persuasive game, describing persuasive games as “videogames that mount procedural rhetorics effectively” (Bogost, 2010, p. 46). The procedural rhetoric of a game, which Bogost argues requires the active participation of a player, is more persuasive than other more passive forms of media consumption (Bogost, 2010). The procedural rhetoric, or processes of a game, allow players to persuade themselves by playing the game, by receiving messages and enacting the meaning through gameplay (Smith & Just, 2009). This process makes games a particularly effective medium for persuasive or influential messaging. For this reason, persuasive games have been used for a range of serious purposes such as training in the healthcare sector, encouraging good financial habits, teaching media literacy, or even to inspire world peace through simulations of political conflict resolution. These examples demonstrate that games are increasingly being used to encourage attitude and behavior changes in the real world. However, persuasive games are most commonly used for the purposes of education and advertising.

3.3.1. Games for Education

Within western society, we value the idea of play when it comes to children. It is highly accepted that children learn and develop through the act of play. Play, which children are naturally motivated to do, helps children to test their abilities, explore, experiment, create, imagine and improve cognitive and emotional development – skills which are essential to constructing knowledge (Lieberman, Fisk, & Biely, 2009). Game play in particular has been found to be tremendously beneficial for children’s learning – unlocking new potential to engage, motivate and stimulate children’s minds (Blades, Blumberg, & Oates, 2013). Games are after all, a subset of play, a system that allows players to be a part of an artificial conflict that includes clear, set rules and a quantifiable

6 See Farm Blitz, created by and for low-income adults to teach financial literacy (https://financialentertainment.org/play/farmblitz.html)
7 See Fake It To Make It, a simulation game meant to help players identify fake news (http://www.gamesforchange.org/play/fake-it-to-make-it-2/)
8 See PeaceMaker, created by Impact Games LLC., about creating peace in the Middle East (http://www.peacemakergame.com/)
outcome (Salen Tekinbaş & Zimmerman, 2004). Play has long been characterized in western society as a central factor in children’s development (Sutton-Smith, 1997). In the digital age, the concept of play has evolved to focus on the pedagogical potential of digital game play. Associations between play and the curriculum have been shown to increase motivation in school (Sutton-Smith, 1997), leading to a wave of excitement over how gamification could transform what many see as an uninspired public school system. While exactly how and to what extent games and gamification should be incorporated into the classroom has been a subject of debate between teachers, scholars and the public, there has been cautious enthusiasm about the potential of games to bring the classroom to a new frontier of learning (Kim, 2015; Lieberman et al., 2009; Liu, 2011; Weaver, 2011). As instruments of learning, well-designed games can serve as valuable pedagogical tools, which can provide new avenues for subjects, or “spaces in which to review, rehearse, or test concepts learned from lectures or other educational activities (Hughes & Lacy, 2016, 323).” However, while free play is often acknowledged as beneficial to the learning and development of children, creating games with specific lessons and pedagogical aims proves to be a far more complicated endeavor.

3.3.2. Issues with Games for Education

Learning through play is an appealing idea, as Hughes and Lacy (2016) note, however, in the classroom setting the environment is already thwarted by the conditions of authority. The power dynamics of the environment puts adults in a position of enforcement and coercion, forcing children to play educational games. The dynamics of relationships between adults and children in the classroom setting are already at odds with the necessary attitude for playing a game. To engage in playing a game, a player must have what Bernard Suits, renowned games scholar, refers to as a lusory attitude. A lusory attitude explains the necessary state of mind to play a game: an acceptance of the limitations of the rules and the goals of the game (Suits, 1978). Suits argues that playing a game is a voluntary attempt to overcome the unnecessary obstacles of the game in pursuit of the goal (Suits, 1978). Freedom and choice are essential to games and play. Given this argument, educational games within the classroom settings are at an environmental disadvantage. Within the classroom, children are subject to certain rules and standards of behavior – they lose a sense of autonomy as they must follow the curriculum, adhere to the code of conduct, and conform to other rules of the classroom.
Studies show that in a formal educational setting these games are often seen as mandatory assignments rather than play (Liu, 2011), which may be damaging to the voluntary nature and lusory attitude that Suits believes is critical in playing games. Gamification of education in many senses fails to recognize that “players do not necessarily care about the points, levels, or badges but instead value the choices or the agency that produces those symbolic rewards” (Hughes & Lacy, 2016, 319). Sutton-Smith (1997) argues that using game forms to stimulate learning in educational settings can easily be reduced to a reinforcement technique that uses enjoyment and motivation to increase children’s willingness to pursue the skills and goals that adults require of them. When play is turned into work through the gamification of education, children lose independence, and thus they lose the inherent pleasure of work (which may be found in a state of flow), and instead they see badges, points, trophies and rewards as performance measures used by adults to grade them (Hughes & Lacy, 2016). In this sense, games for learning within the classroom setting potentially fail because of a fundamental misunderstanding of how games work and what makes them compelling. While appropriating elements of games to appeal to the rewards systems of the brain may work for marketing purposes, when it comes to education, children are keenly aware of the coercive environment in which they are playing.

### 3.3.3. Marketing Games as Motivators

Many successful “gamelike” platforms have been based on little more than positive feedback through rewards like badges, point-earning and countdowns to the next prize – focusing on compulsion towards progress rather than traditional game traits (Hughes & Lacy, 2016). These gamelike platforms tend to focus on the feeling of accomplishment users will get from each perceived accomplishment, such as reaching the next stage or earning a prize. While it may seem as though gamelike platforms are missing critical casual game characteristics, the impulse to advance can be a strong motivator to continue playing. The desire to progress can be a powerful force when considering gamelike platforms built for commerce, such as gamified loyalty programs. The incorporation of gamelike elements into marketing can have a notable influence over consumer behavior (Hughes & Lacy, 2016). Game makers and developers are able to motivate consumers and players strictly by appealing to the brain’s reward system (McGonigal, 2012), associating purchases or interactions with a sense of achievement.
and satisfaction. Hughes and Lacy (2016) are quick to note that gamers who participate in these forms of gamification are chasing a sense of accomplishment and skill rather than a tally of points or a trophy. However, the incentive towards reward and a sense of mastery still serve as a powerful way to engage users. And, while appealing to these reward systems through loyalty programs is nothing new to marketers, gamified incentives mixed with a tight feedback loop and feeling of flow caused by casual games creates a perfect storm of attraction and compulsion for users – particularly when those users are children.

3.4. What are Advergames?

Advergames are by nature casual games, persuasive games and educational games. Advergames sit at an intersection of online gaming and advertising, which results in an evolved form of product placement, one in which the interaction with the game is centered around gameplay with the brand (Hofmeister-Tóth & Nagy, 2011). Advergames, which are typically browser based online games, are “offered to consumers for little or no money in an attempt to build brand awareness” (Casual Games Market Report, 2007, p.57). For instance, in Kellogg’s cost free online game Froot Loops Run-A-Wave, children are invited to play as long-time spokescharacter Toucan Sam as he dodges obstacles and catches Bloopers pieces (a closely related spin off cereal) or Froot Loops cereal bowls to earn points (see Appendix A). The fast-paced game, which increases in difficulty over time, demands the full attention of the player, encouraging them to interact with the product and brand for extended periods of time. This allows Kellogg’s the opportunity to advertise Froot Loops to children under the guise of entertainment, while also introducing them to the Bloopers product. Advergames can be found on the branded websites of popular children’s food products, which are often promoted on product packaging or even on television (Common Sense Media, 2014), giving advertisers the opportunity to extend their audience engagement with the brand. The repeated exposure to brand identifiers such as logos, spokescharacters and other brand material in conjunction with other platforms enables marketers to build stronger bonds with children and associations of positive sentiments with their brand (Culp et al., 2010). The reinforcement of the same brands, characters and messages increase the likelihood that those communications will impact and resonate with their audience.
While educators have struggled to design the right kinds of educational games and integrate them into the curriculum, marketers have spent considerable funds and research to find the best way to communicate with children through game based learning and engagement with their brands. In 2006, it was estimated that U.S. companies spent $263 million on the development of advergames, a trend that was predicted to grow to $676 million just three short years later (Johannes and Odell as cited in Lee et al., 2009). As illustrated by the earlier Froot Loops example, advergames are regularly aided by the appearance of cartoon animals or other spokescharacters who serve as recognizable staples meant to build trust with children (Musicus, Tal, & Wansink, 2015). Appearing on packaging, on television, on branded websites, and now in advergames, the children’s food category has frequently employed the use of cartoon images to build loyalty, sometimes involving tie-ins from characters from children’s television shows to help increase brand awareness and recognition (Charlene Elliott & Brierley, 2012). Marketing appeals like this, that cater to fun and play, are able to reach new heights when paired with expertly crafted online games.

Studies show that approximately 80% of food websites that are promoted on children’s television networks feature advergames (Panic, Cauberghe, & De Pelsmacker, 2013, p. 264). This crossover allows marketers to reach children in both online and offline settings, and to increase their ‘face time’ with the child, expanding their potential to create resonating relationships and build trust with the child viewer. While television has a limited window within which to engage the child, the potential for online games, especially those that encourage a state of flow and the compulsion to keep playing, is much higher. Mihaly Csikszentmihályi, who first conceptualized flow (Boyle et al., 2012) describes it as a mental state of immersion notably created by games (Csikszentmihályi, 2008). Flow (which is discussed in more detail below), represents an important element in what makes marketing games, and casual games in general, so enticing. Unlike television ads, which offer only passive consumption and are only able to capture children’s attention for 15 to 30 seconds, the online environment offers a much longer opportunity for engagement, with the most popular advergame sites averaging visits of 24 minutes (Harris, Schwartz, & Brownell, 2012). The children’s food industry has proven to be especially adept at building successful games, developing sites that draw in over one million children every month (Harris, Speers, Schwartz, & Brownell, 2012).
3.4.1. Situating the issue of Advergames

The success of advergames in connecting with children raises concerns about the nutritional quality of the food being advertised to children across a multitude of platforms. Analysis of popular advergames have found that they frequently promote fast food, candy and gum, cereals, soft drinks, and salty snacks – and almost all categories of advertised foods lack nutritional value and contain an abundance of sugar or fat (Culp et al., 2010). In fact, multiple studies have shown that foods with more fat and sugar and less nutritional value are advertised at higher frequencies to children than healthy foods on both television and online (Culp et al., 2010; Harris, Schwartz, et al., 2012; Lee et al., 2009). One advergame entitled Froot Loops Toss, which was available on the brand website until 2005, even encouraged a preference for Froot Loops over fresh fruit in its game, awarding children with 10 points for consuming the cereal within the game, while awarding fruit with only half of that (Moore & Rideout, 2007). Advergames frequently invite children to play with foods, but very few of the food games serve to educate children with nutritional or health information (Lee et al., 2009). As concern over child obesity and diet grows, critics of advergames regard this form of advertising as a major source of concern, and claim repetitive exposure to these games could affect children’s brand food preferences as well as their perceptions of food.

Games have the potential to have a tremendous positive effect on children’s behaviours. They can elicit feelings of satisfaction, encourage children’s active participation, stimulate creative thinking and build skills (Weaver, 2011). However, games can also be used to manipulate the emotions or attitudes of players, a criticism that some gamification scholars claim runs contrary to the goals of education (Weaver, 2011). In the case of advergames, the games are used to encourage positive feelings towards the brand or product. Although this was also the case with radio programs, sponsored television and licensing deals, advergames are generally less recognizable to both parents and children as marketing devices, compared to traditional advertising. Children’s television programs today are required to offer clear distinctions between programming and advertising, however the integrated advertising involved in advergames makes any differentiation between the two almost impossible, especially as many advergames do not offer breaks in play.
The lack of breaks involved in advergames help to encourage and maintain a state of flow within the games. Flow is integral to the effectiveness of advergames as a driving force of continued play, as the pleasure that comes from being in flow can help encourage extended gameplay (McGonigal, 2012), while also fostering more positive feelings towards the brands (Ham, Yoon, & Nelson, 2016), at the same time it encourages extreme focus on the task at hand (Csikszentmihalyi, 2008). While initially the concept of flow was used to explain the pleasurable emotional state that an individual reaches when absorbed in activities that are perceived as being valuable (Boyle et al., 2012), today it is a popular term used by game designers to describe the engagement and subjective optimal pleasure obtained when players are working at the edge of their ability (McGonigal, 2012). Studies about flow have found that even adults have issues self-regulating when it comes to digital games, and that flow has an impact on habit strength, self-reactive outcome expectations and self-regulation (Lee and Larose as cited in Boyle et al., 2012). The positive feelings of accomplishment and enjoyment evoked from game play can also be transferred to the products or brands involved in the advergame, leading to greater brand associations with fun (Ham et al., 2016). When flow and positivity are elicited from gameplay, the positive entertainment experience can leave children less likely to question the content of the game.

The immersive and compelling nature of these games as opposed to the obvious designated break period in a television programme provides less of a chance to activate whatever discriminating defense children may have learned to recognize advertising. They may be less likely to think critically during advergame play (An & Stern, 2011). During television commercials, the individual viewing the commercial is able to passively consume advertising content. In contrast, advergame consumption involves high levels of concentration while actively interacting with the advertisers messaging (Waiguny, Nelson, & Terlutter, 2014). This forces players to focus their attention on the goals of the game. Unsurprisingly, given their popularity with the children’s food industry, advergames have been the focus of considerable ire and criticism, as well as academic research spanning multiple disciplines.

### 3.4.2. Advergames: What We Know

Advergaming has been investigated by a wide range of scholars from fields such as psychology, advertising, public health, media studies, public policy and more. Some
of the most comprehensive studies on the topic of advergames were led by Jennifer Harris, Marlene B. Schwartz, and Kelly D. Brownell, in association with the Rudd Center for Food Policy & Obesity. Their research examined the online advertising efforts of games found on cereal company-sponsored websites and third-party websites (2009, 2012). The researchers chose to specifically look at cereals because studies have shown that children see more advertising for breakfast cereal than other packaged foods (Harris et al., 2012). Cereals are a category of tremendous concern, as they are heavily marketed towards children, with those with the lowest nutritional value and the highest amounts of added sugar are marketed the most aggressively (Harris et al., 2012).

Additionally, while children’s cereals market extensively through multimedia campaigns, companies spend the bulk of their youth marketing budget on television and online efforts (Harris et al., 2012). With high marketing budgets, multi-platform campaigns and a long history of appealing to children through notions of play using toys, games and spokescharacters, cereals provide a rich category for the study of advertising to children via online games.

The research conducted by Harris (Harris et al., 2012) offers an investigation into the state of the advergame market for children’s cereal in 2009 and 2012 respectively. The team’s research identified 15 cereal company-sponsored websites for child brands in 2011 – they were owned by General Mills, Kellogg’s and Post (Harris et al., 2012). One notable difference between the studies from 2009 and 2012 was the elimination of the two most popular child-targeted advergame sites, Millberry.com and Postopia.com (Harris et al., 2012). While the report acknowledges that by 2012 a number of the games from Postopia.com had been migrated to a new smaller advergame site called PebblesPlay.com, and General Mills had developed several product specific advergaming sites, the elimination of Millbery.com and Postopia.com is recognized as a tremendous triumph for critics of advergames. This is presumably because the games previously hosted on these sites have either been eliminated or spread across a variety of sites, making them harder for children to find or to binge-play on one website. The assessment by Harris and her team found that the three advergame websites with the highest number of child visitors in 2011 belonged to Kellogg’s, led by FrootLoops.com (161,900 unique child visitors per month), AppleJacks (116,200) and CornPops.com (59,500). This was followed by three General Mills advergame sites that averaged between 29,300 and 52,300 unique monthly visitors (Harris, Schwartz, et al., 2012, p.
21). This report (Harris, Schwartz, et al., 2012), remains one of the most thorough works examining the reach and saturation of the advergame market. Although valuable, it is restricted to the cereal category and relatively dated. Advances in communication technology and marketing techniques since release of Harris’ (Harris et. al., 2012) work create the need for a fresh, contemporary reassessment of the advergames landscape.

Another key work in the field of advergames is Elizabeth Moore’s (2006) work with the Kaiser Family Foundation, which examines advergames within the larger context of marketing to children. Moore’s investigation of online marketing to children consists of a content analysis of major food advertisers’ websites in 2005. Basing website selection on food brands advertised to children on television, Moore’s team identified 96 brands to study across various food categories. Their survey of the advergame market found the vast majority (73%) of studied websites contained at least one game relating to food brands, and confirmed that children are very receptive to advertising that is delivered through online games (2006, p. 5). The study found that the amount of games available on each website seemed to correlate to the number of child visitors to the site. Sites with higher visitor numbers had an average of 22.4 games while sites with fewer visitors averaged 4.5 games (Moore, 2006). Moore’s work also confirmed the use of multi-platform approaches, illustrating that 85% of the top food brands that target children through television advertising also use branded websites to market to children online (Moore, 2006, p. 27). This content analysis additionally highlighted some key characteristics about the games found on these sites, commonalities included game genres, customization techniques and attempts to prolong gameplay.

Moore’s (2006) content analysis highlighted several key characteristics about the games found on branded food websites, including commodities like game genres, customization techniques and tactics to prolong gameplay. Moore found that most advergames could be classified as either an arcade game, sports game or an adventure game. The overwhelming majority (90%) of the advergames examined in the study were found to incorporate lively music or sound effects and the significant majority of the games were animated (Moore, 2006, p. 5). Game mechanisms included hand-eye coordination or reflexes, and some relied on memory drills or spatial skills. All games emphasized entertainment and brand exposure, and most featured brand logos, product packaging, an easily recognizable food product, a brand character or a combination of
these brand identifiers. The majority of the games (80%) featured two or more of these identifiers, while 97% contain at least one (Moore, 2006, p. 6). Another identifying feature of the advergames examined was the option of personalization. To increase children’s engagement with the games, some advergames offered the user an opportunity to make choices about such things as a game avatar, opponent, or designing the game environment (Moore, 2006). According to this study 39% of the games incorporated at least one of these elements (Moore, 2006, p. 6). Similarly, the advergames examined in this study also utilized a range of features aimed specifically at extending the user’s game play. These tactics included multiple levels, time limits or game points – all designed to help players measure their success in the game and increase repeat plays by inducing flow. Within this study, 45% of the games featured multiple levels, 69% used game points and 40% incorporated time limits (Moore, 2006, p. 7). Additionally, the majority (71%) of the games encouraged repeat plays through the explicit offer to play again at the end of the game, while other advergames offered options to post high scores publically to incite competition with other users (Moore, 2006, p. 7). While many advergames offered users the chance to replay their game, or offered suggestions of other advergames to extend brand or product exposure, only 18% of these games provided an ad break or ad alert for children (Moore, 2006, p. 29).

Jennifer Culp, Robert Bell and Diana Cassady’s (2010) research on the characteristics of food industry web sites and advergames has also provided considerable insight into the study of marketing to children. Their work specifically sought to examine the online techniques and strategies used by children’s food marketers, in an effort to prolong engagement with their brands. Their research examined websites belonging to two popular children’s networks and found that many food companies targeting children used these sites as an extension of their television advertising, which encouraged children’s engagement with the brands or products and primarily promoted foods low in nutritional value with high amounts of sugar and fat (Culp et al., 2010). Games were overwhelmingly popular as a promotional strategy, featured on 81% of the children’s websites examined (Culp et al., 2010, p. 197). Although these scholars explored the content of the online ads regardless of food category, fast-food establishments (42%), followed by ready-to-eat/convenience food (32%) and cereal (13%) were found to be advertised the most frequently (Culp et al., 2010, p. 199). Specifically looking at the games and how they manage to prolong
children’s game play, the study found 91% offered a play again option, 52% offered an opportunity to work towards a new level of game skill and 32% motivated the player with the option to post their scores publically (Culp et al., 2010, p. 199). Pro-nutritional messages occurred on 36% of the examined sites, and 29% had a physical activity message (Culp et al., 2010, p. 199). However, these were encountered on the websites, not necessarily within the advergames.

Culp et al. (2010) exclusively study online marketing of companies that promote their websites on television, and argue that advergames serve as a way to extend television advertising (Culp et al., 2010). They contend that repeated exposure to brand identifiers such as logos, spokescharacters and other brand materials through multiple platforms enables advertisers to build stronger bonds and associate positive sentiments with their brands (Culp et al., 2010). This study suggests that children are not engaging with advergames instead of seeing TV ads, or that one platform functions more effectively than the other. Rather, the study argues that that exposure to multi-media marketing influences the impact of this advertising on children. While the study does not focus on advergames as a standalone advertising strategy, the authors offer excellent background information about the techniques and strategies employed by advergame developers and provide compelling arguments regarding the power of multi-platform advertising.

3.4.3. Exploratory Survey of Advergame Sites

While past studies have created an overview of the advergame market, the studies are not without limitations. All previously mentioned studies, while integral to guiding this research, are now somewhat dated, particularly when considering the fast pace of digital marketing and increasing prevalence of internet enabled devices. Given the shifts in media behavior and ever wider adoption of new technology, it is important to investigate whether or not past findings can be confirmed in an informal assessment of the current cereal and snack advergame market.

In order to see if findings from previous studies undertaken by Harris et al. (2012) and Moore (2006) remained salient against a backdrop of time and digital advancement, I conducted a brief survey of the sites mentioned in Harris et al.’s Cereal f.a.c.t.s. 2012 Report, which investigated the prevalence of advergames, as well as the common
practices and tactics involved in cross platform marketing and mechanisms used to engage children in food-related advergame play. I found that two of the three most popular web sites (which promoted Apple Jacks, Corn Pops and Froot Loops cereals respectively) were no longer active. Although FrootLoops.com is still operational and contains a variety of games, AppleJacks.com and CornPops.com are no longer functioning. Instead, Kellogg’s now uses ClubKelloggs.ca as an aggregate site for multiple games built around their various brands. Similarly, LuckyCharms.com, which was identified as the children’s cereal website with the fourth highest number of monthly visitors (Harris, Schwartz, et al., 2012) was found to no longer contain games. Instead, games were now hosted on LuckyCharmsFun.com. The relevance of these changes are further discussed in section 4.4.1.

In order to further investigate the advergame market, the advergame sites of two snack items were randomly selected from Moore’s (2006) work. The brands selected were Doritos and McDonald’s, which have the advergame sites Doritosmix.com and Happymeal.com respectively. All sites in the survey were found to host a variety of different advergames. At the time of this survey, LuckyCharmsFun.com hosted 11 different branded advergames, ClubKelloggs.ca contained 21 different advergames, and Doritosmix.com featured four games. While Happymeal.com listed only two games on their site, they also featured two creative activities (digital colouring and designing). All sites were heavily branded, though only the two cereal sites offered special rewards and prizes for becoming a member or playing more frequently. On LuckyCharmsFun.com, 8 of the 11 games are locked to first time players, who must accumulate enough points (represented on the site through “emeralds”) to play them. Emeralds can be earned through game play, though unless the player opts to join Lucky’s “Adventurer Club” (which also unlocks “secret content”), emerald progress will be lost by leaving the site. Similarly, Club Kellogg’s offers the opportunity to earn badges and awards, as well as track and share high scores by ‘joining’ as a member (www.ClubKelloggs.ca). The site features games centered around many of their child targeted products, including Froot Loops (12 games), Rice Krispies (4), Frosted Flakes (1), Eggo (3), and Corn Pops (1). Of these games, 17 feature spokescharacters, with one game including multiple spokescharacters from various Kellogg’s products coming together.

LuckyCharmsFun.com in contrast, is focused on only the Lucky Charms product and all 11 games feature Lucky, the spokescharacter for the cereal. McDonald’s games
feature an anthropomorphized version of a happy meal (named Happy) as the main character, while in the Doritos games the user plays directly as the product (a Dorito’s chip) in all featured games. While three of the four sites do contain warnings that the promotional material on the site is advertising, the messages are positioned in the bottom or top corners of the screen and not immediately noticeable to players engaged with the games.

An advergame from each of these sites was chosen at random for an analysis of the content, characteristics and techniques used, in order to gain insights which could help inform design of my game. These games were ClubKelloggs.ca’s Amaze-a-Wave, LuckyCharmsFun.com’s Shooting Stardom, Happymeal.com’s Happy Ghost Surfer, and Doritomix.com’s Chip Defender. While the clear majority of the game characteristics confirmed the findings from Moore (2006) and Culp’s (2010) works, there were several key differences. Of these games three-quarters use spokescharacters, while one has the user play directly as the product. All games feature brand logos, vivid colors, lively music, and simple, repetitive game mechanisms (dodging obstacles, jumping, clicking etc.). All games offer a score keeper, milestones involving points, time keepers or personal bests, and explicit offers to continue playing after the game had ended. Two of the games also suggest other games on the site that the user may be interested in. Half of the games showed a disclaimer during game play warning children that the game was advertising, however during the survey, only one of the games had a popup that encouraged children to take a break and go outside. One game offered multiplayer modes, however the tactic of personalization for avatars, opponent selection, or game environment did not appear to be a characteristic of these advergames, contrary to the findings from Moore’s (2006) work.

While not a characteristic that Moore (2006) or Culp (2010) examined, this survey found that half of the games offered excellent interruptability in the form of a pause function, further illustrating their classification as casual games. Two of the four games would pause when the user clicked away from the screen, though during active game play all games required constant engagement, usually through needing to repeatedly click the mouse or push a button to progress throughout the game. This shows that while the games do offer a level of interruptability necessary for casual games, they also involve a high amount of active participation from the user. While this survey indicated that there may be some gaps in knowledge about the current
advergame market, particularly when it comes to studies exploring issues such as engagement and ad breaks, the overall tactics and strategies identified by older studies remain consistent and food advergames aimed at children remain ubiquitous in the online space.

The rise of casual games and their subsequent adoption by the children’s food industry have led to a unique time and space in children’s food marketing. While techniques of the past such as cereal clubs, prizes and appeals to exclusivity remain popular tactics used within the children’s food industry, they are now being enacted online through the use of persuasive games. The popularity of digital games, as well as the potential education value and pleasurable experience, contribute to the phenomenon of advergames, which have considerable potential to impact children’s health. The children’s food marketing industry has proven themselves capable of building emotional connections and associations between fun, food and play throughout history. However, they are now able to conflate those notions directly through the use of engaging games that market their products through procedural rhetoric.

3.5. Conclusion

This chapter has provided a review of literature about advergames and shown how they have saturated the online market. It has also shown how advergames are structured to create entertaining, replayable games that keep children engaged on advertiser’s websites for prolonged periods of time. I have used this chapter to argue that the rise of advergames presents a cause for concern due to the promotion of traditionally unhealthy foods via advergames. The review of previous studies examining the tactics and characteristics used to make compelling advergames also provides context for the approach that I took in developing and evaluating a game to conduct my empirical research. A more thorough discussion of how these works influences and informed my study will be further discussed in the Chapter 5. Advergames, I ultimately argue, represent a unique intersection between online gaming and advertising, but also between food and play.

This is especially relevant when considering concerns about child obesity in North America. With children’s health and well-being currently under scrutiny, we must carefully examine what kinds of strategies are being mounted against fun food culture,
particularly in its online, gamified form. While my empirical research presents a possible intervention to be used in the fight against fun food culture, it is also important to review what has been done thus far to protect children against food marketing advertising and encourage healthy behaviours in the face of both traditional and digital advertising. The next chapter will examine arguments for the protection of children against advertising and detail what has been done to counter fun food culture in the face of this new promotional environment. Advergames, this chapter will argue, are a cause for concern as they can circumvent or slip through many regulatory loopholes, and present significant challenges for media literacy attempts due to their immersive nature and difficulties in detecting their promotional intent.
Chapter 4. Advertising to Children and Industry Responses

4.1. Introduction

The ethical implications of marketing directly to the unique group of younger consumers (ages 12 and under) that make up the children’s market has led to a wealth of research about children’s media literacy, advertising awareness and consumer smarts. While the previous chapters focused on the development of the children’s food market and how that has led to the development of advergames, this chapter focuses on the considerable controversy that has taken place in the wake of children’s advertising.

As fun food culture proliferates and the direct marketing of foods and drinks to children continues to grow, policy makers and parents have developed a range of strategies aimed at mitigating the influences of advertising. Here, I critically examine two approaches designed to mitigate the effects of the fun food culture on children: media literacy and regulatory responses. Through a discussion of the regulatory environment and what has been done to counter act and study the effects of food and beverage advergames, I argue that regulations have not kept up with technology, leading to a relatively unsupervised avenue of communication. Through an examination of media literacy and its limitations, I argue that these strategies are not effective against advergames because of the unique nature of advergames, and I contend that we must find other ways to counteract the potentially dangerous effects of advergames on children’s health. While these strategies are meant to help reduce the harmful effects of food advertising to children, they have significant limitations, particularly when applied to advertising. Ultimately, I argue for the need to investigate advergames as a medium to teach children about healthy foods and influence their behaviours and preferences towards better lifestyle decisions. This view – that advergames can be used as a means to positively influence children to make healthy food choices – has been central to my decision to develop a and evaluate an advergame aimed at promoting healthy food choices among children between the ages of 5-8 years old.
4.2. Consumer Socialization

Concern about direct to child marketing has over time led to a number of empirical studies that sought to understand the persuasive effects of advertising on children (Goldberg, 1990). Evidence from these studies has suggested that commercials do in fact have considerable influence over children (Goldberg, 1990). Critics of marketing to children argue that children’s vulnerability to media and marketing renders them unable to defend themselves cognitively or psychologically against advertising. While advertising to rational consumers such as adults appears to be fair game, this view argues that children should constitute a protected class of citizens due to the inherent imbalance of power between adults (the advertising agents) and children (Browne, Biksacky, & Frondorf, 2009). This view often takes the stance that marketing to children is a form of exploitation, because children, due to lack of experience, do not understand how and why advertising exists. This argument is often made by doctors, parents, teachers and legal scholars (Browne et al., 2009). This argument also points towards the relatively limited personal experience and lack of information sources that children are able to draw on to form defenses against the media. Their lack of knowledge and experience makes young children relatively trusting of the media, and means that they may not be able to separate fact from fiction, or programming from advertising product claims (Sheehan, 2014). Because children are viewed as unable to process information in the same way as adults, it is argued that they may not be able to be rational consumers (Browne et al., 2009). Fundamentally, this view suggests that children are less capable of making informed decisions in the face of advertising and therefore must be protected by the government or other adults around them.

Scholars concerned with children’s advertising literacy often use a developmental stage framework inspired by Jean Piaget’s theory of cognitive development to explain how children’s relationships with brands and products correlates to their biological age (Livingstone & Helsper, 2006; Nairn, 2010). This model is used to define what children can be expected to know and understand by certain points in their lives. Theories of consumer socialization, which rely on the same framework, often draw on age-related developments (specifically, from developmental psychology) to point towards how maturity relates to cognitive skills, defenses and capacities (Buckingham, 2011). While consumer socialization is defined more broadly as the “processes by which young
people acquire skills, knowledge, and attitudes relevant to their functioning as consumers in the market-place” (Ward 1974, p. 2 as quoted in Roedder John, 1999), age is often used to provide developmental milestones for organizational purposes. Within this context, a child’s ability to process information and understand intent is influenced by experience as well as by their parents, peers, media and marketing (Buckingham, 2011). As children get older and they are exposed to further socialization, they are able to draw on more experiences and resources to make rational purchasing decisions (Buckingham, 2011). This view asserts that through this continuous development children gradually progress as consumers by gaining economic knowledge that influences their consumption abilities.

Research on child development and advertising suggests that before the age of 5, children are not able to consistently differentiate between advertising and programs, and are not able to see advertising as a form of persuasion (Livingstone & Helsper, 2006). While preschool aged children do perceive a difference in programming and advertising on television it is based on perceptual attributes rather than understanding (Roedder John, 1999). Children between the ages of 5-7 have difficulty grasping the concept of marketing – while they are often able to recognize brands by their logo or characters, they do not understand the persuasive intent behind the messaging (Kline, 2011). By age eight, or what is referred to as the ‘concrete operational stage’ by Piaget, children start to understand the persuasive intent and bias behind advertising (Roedder John, 1999). By age 8, children may even start to recognize that there is a reason to distrust advertising and form an understanding that advertising may sometimes be untruthful in order to sell something (Sliburyte, 2009). Until age 10, children - even those who are old enough to be skeptical of advertising -- have difficulty distinguishing unclear commercials (Sliburyte, 2009). These findings have led many critics to argue that advertising to children is an unethical practice, particularly when it comes to products that may affect their health and wellbeing.

4.3. The Effects of Advertising on Children’s Diets

Children’s health has become tied to discussions of children’s advertising in the wake of what is often referred to as an obesity crisis. Many critics of children’s advertising point towards marketing as an influential force in shaping children’s food preferences and perceptions. Given that advertising aims to influence purchase
decisions and most food advertising (at least on television) is for foods that are high in fat, salt or sugar using nutrient profiling (referred to as HFSS foods), many critics say that it stands to reason that these advertisements are contributing to the incidence of unhealthy diets among children (Buckingham, 2011). Research has shown that marketing does play a role in creating an environment that dissuades children from making healthy choices and influences their food preferences (World Health Organization, 2010). In fact, studies have shown that food advertising directed at preschool and school-aged children does significantly affect children’s food preferences. A 2002 review conducted by Coon and Tucker discovered that:

1) children exposed to advertising will choose advertised food products at significantly higher rates than children who were not exposed;

2) findings from food purchase request studies based on surveys, diaries, experimental trials, and direct observation of mother-child pairs shopping have consistently shown that children’s exposure to food television advertising increases the number of attempts children make to influence food purchases their parents buy;

3) purchase requests for specific brands or categories of food products also reflect product advertising frequencies; and

4) fewer studies have been conducted on food advertising effects on actual food intake, in part due to difficulty in controlling children’s exposure to advertising or to foods outside experimental settings. (as cited in Story & French, 2004, p.11).

While it remains extremely difficult to link causality with the marketing of children’s foods, there is empirical evidence that suggests there is a strong link between the two. Two extensive systematic reviews of the literature (conducted by the United Kingdom Food Standards Agency and the U.S. Institute of Medicine) found that food advertising can also undermine children’s current nutritional knowledge, encourage a preference for nutritionally poor foods, influence the purchase of (or pestering for) these foods, and make children more likely to consume unhealthy foods (Ad hoc Working Group on Science and Evidence for Ending Childhood Obesity, 2016). The evidence linking children’s health and food marketing to children is so strong that some critics suggest eliminating the promotion of unhealthy foods will be the most important step in fighting childhood obesity. One report, prepared for the World Health Organization by the Ad Hoc Working Group on Science and Evidence of Ending Obesity, stressed the importance of reducing children’s exposure to unhealthy food promotions, citing past
research that has found unhealthy food promotion to be a significant independent factor in the childhood obesity epidemic (Ad hoc Working Group on Science and Evidence for Ending Childhood Obesity, 2016). In fact, this report insisted that children’s exposure to unhealthy food marketing must be radically reduced in order for any obesity rate reduction efforts to be successful (Ad hoc Working Group on Science and Evidence for Ending Childhood Obesity, 2016). Similarly, a recent Heart and Stroke Foundation Report on the Health of Canadians (2017) highlighted the need for food and beverage marketing reform in order to protect children and support parents. While decidedly less emphatic, in the United States the Federal Trade Commission has also emphasized the importance of responsible marketing in supporting healthy lifestyles and diets for children.

4.4. Advertising Regulation in North America

A general consensus around the need to protect children from the marketing messages of advertising, particularly those that are promoting HFSS foods, has led to the development of a number of strategies, including regulation of the advertising industry and the creation of media literacy programs. Because of the children’s food industry’s long history of marketing using television and the historical public outcry that followed, television is the most widely regulated medium for promoting food and beverages to children all over the world. A World Health Organization report on the regulation of food marketing to children found that 85% of the 73 countries surveyed enforced some kind of regulation regarding television commercials directed at children (Hawkes, 2004, p. 14). However, many countries enact a voluntary opt-in regulation, which critics argue leaves considerable room for loose interpretations and optional adherence (Heart & Stroke Foundation, 2017). This section will highlight some of the historic issues with regulation in North America, and then move on to address some of the unique challenges regulating advergames and the online environment.

In the United States, advertising regulation are largely self-imposed. In 2007, the Council of Better Business Bureaus introduced the Children’s Food and Beverage Advertising Initiative (CFBAI) (Harris et al., 2015), which represents a self-regulation program made up of 18 voluntary food and beverage companies and restaurants (Council of Better Business Bureaus, 2017). Participating businesses pledge to advertise healthy choices during child-directed media programs on television (Harris et al., 2015).
as well as on child-directed websites and other media (Council of Better Business Bureaus, 2017). However, the effectiveness and adherence of self-regulation remains in debate. While a statement from the CFBAI claims that it has made significant improvements to the children’s food marketing landscape in the U.S., the Rudd Center for Food Policy and Obesity has challenged this characterization (Council of Better Business Bureaus, 2015).

The Rudd Center points towards loopholes in how child-directed advertising is defined within the initiative, as the initiative does not include carbonated beverages or ads that children who watch teen or adult programming may be exposed to (Council of Better Business Bureaus, 2015; Harris et al., 2015). The Rudd Center’s 2013 study on banner and display advertising also found that unhealthy foods and beverages were still being heavily advertised by these companies on children’s websites. This research revealed that three-quarters of the advertisements on popular children’s sites were for foods with high levels of sugar, fat or sodium, despite being designated by CFBAI companies committed to providing healthier choices (Orciari, 2013). In a review of the current state of advertising to children, the Rudd Center found that most companies participating in CFBAI did not advertise healthier snacks to children, and recommended that CFBAI implement higher nutritional standards when it comes to children’s products. The Federal Trade Commission’s review of food marketing to children and adolescents (2012), which also assessed efforts of the CFBAI, found that some participating companies simply advertised brands rather than specific products – failing to ensure that all brand products met CFBAI nutrition standards (Harris, Schwartz, et al., 2015). The CFBAI refuted these claims, stating that while the first and second most advertised food categories (fast food and cereals respectively) may be deemed unhealthy by the Rudd Center, their overall ingredients and makeup have been improved and have become healthier since the launch of the initiative (Council of Better Business Bureaus, 2015).

Scholars of health communication have pointed out that the children’s food industry can manipulate regulatory systems through offerings that mislead the public about nutritional improvements to their products (Dutton, Campbell, Elliott, & McLaren, 2012). For example, critics point towards marketers’ tactics of claiming less sodium per serving by decreasing the individual serving size rather than reformulating the product (Dutton et al., 2012). This sentiment was echoed in the Rudd Center’s report, which
examined nutritional makeup of products from brands that spent upwards of $200,000 on television advertising in 2014.

The Rudd’s Center’s report found that CFBAI-approved snacks were often smaller than other advertised sweet snacks and yogurts, which resulted in a lower calorie count and less sugar per serving (Harris et al., 2015). This strategy provides the illusion of a nutritionally improved product, although nothing in the product makeup has changed at all. Sweet and savory snacks are of particular concern, as they accounted for approximately 60% of the analyzed advertising (Harris et al., 2015, p. 7). The Rudd Center’s evaluation of advertised snacks in these categories found that when sweet and savory foods were evaluated using the United Kingdom’s Nutritional Profile Index (NPI) (a scoring system used to identify nutritious foods that are appropriate to advertise to children), none of the brands assessed (both CFBAI and others) met the minimum nutritional requirements (Harris et al., 2015). NPI scores must meet a minimum score of 64 in order to be advertised to children in the UK, however, the Rudd Center’s evaluation found that the highest median NPI score for advertised sweet and savory snacks was 58, meaning they would have been prohibited from advertising to children under 16 on television in the United Kingdom. While all of these products were advertised on television in the United States, only one quarter of them also met the United States Department of Agriculture (USDA) Smart Snacks nutritional standards, meaning they could be sold in children’s schools outside of meal programs (Harris et al., 2015, p. 7). This suggests that the self-regulation in place in the United States may result in the promotion and sale of snacks of a lower nutritional standard than that of comparable nations, such as the UK. These criticisms, together with the potential for the manipulation of unclear audience and serving definitions by certain parties, illustrate that self-regulation is simply not as strict (both in terms of standards and adherence), as regulation that is enforced by the government. While participants of the CFBAI may have improved the current state of food advertising to children by some standards, it is clear that there are issues and loopholes that must be addressed in order to ensure that the products being marketed to children are of a reasonable nutritional quality.

In Canada the government and corporations work together to enforce both statutory and self-regulation (Hawkes, 2004). Through the government’s Broadcast Code of Advertising to Children and Advertising Standards Canada’s Children’s Committee, the country seeks to review and approve any advertising aimed at children
Beyond the media landscape of broadcast, the Canadian Children’s Food and Beverage Advertising Initiative (CAI) provides the self-regulation criteria for advertising in Canada (Ad Standards, 2015) with the expect of Quebec. The province enacted the Consumer Protection Act which prohibits television advertising directed at children under the age of 13 (Hawkes, 2004). The enforcement of this ban is overseen by a government agency. In contrast, the rest of the country depends heavily on self-regulation, and the children’s food industry is involved in developing government-set regulations. This has led some critics to point towards potential conflicts that may be a detriment to children’s best interests (Dutton et al., 2012). While the CAI stresses the importance of better-for-you products in advertising of foods for children under the age of 12, many of the companies who have voluntarily pledged to be a part of the initiative (e.g., Kellogg’s, McDonald’s, Kraft) make up some of the most frequently advertised products on children’s websites (Heart & Stroke Foundation, 2017). In most countries, online advertising does not yet fall under the same scrutiny or regulation as television.

A recent Heart & Stroke Foundation study that evaluated online advertising on children’s preferred websites found that almost all (90%) of the products advertised were deemed unhealthy when classified by the World Health Organization’s Pan American Health Organization Nutrient Profile Model. Additionally, as critics have pointed out, self-regulation and the involvement of the children’s food industry in crafting government regulation leaves the potential for marketers to simply brand their products as healthier vs. the competition – using misdirection about ingredients or changes in serving sizes to manipulate the regulatory system (Dutton et al., 2012). To combat this, in 2006 the Heart and Stroke Foundation, along with other Canadian health focused charities such as the Childhood Obesity Foundation, began a coalition focused on restricting marketing to children (Ball, 2016). The group, which has 10 members and 30 endorsements across the country, aims to ban all food and beverage marketing directed at youth under the age of 16 (Ball, 2016). Pointing towards Canada’s rising childhood obesity rates and Canadian children’s consumption of processed and ultra-processed foods, the coalition claims that current self-regulation is failing because the corporations involved in regulating marketing to children are the same groups that seek to benefit from marketing to children (Heart and Stroke Foundation of Canada & Childhood Obesity Foundation, 2016). In addition, unlike the U.S., in Canada we are not privy to the amount spent on marketing food and beverages to children – the Canadian government does not require
that companies report the amount of money they spend marketing food to children, and companies are not forthcoming with this information (Heart and Stroke Foundation of Canada & Childhood Obesity Foundation, 2016). This lack of transparency makes it more difficult to gauge the extent to which Canadian food and beverage marketing directed at children, and hampers efforts to determine the best course of action to take to regulate food advertising to children. The coalition also points towards the dramatic changes that have taken place in the last decade of children’s marketing as evidence for the need for a wider definition of commercial marketing which includes the use of branded online environments, viral marketing and advergames within the regulatory framework (Heart and Stroke Foundation of Canada & Childhood Obesity Foundation, 2016).

The online space is of particular concern to the Coalition, as a Canadian study recently found that 83% of food and beverage websites, many which contained games, targeted children ages 12 or younger (Heart and Stroke Foundation of Canada & Childhood Obesity Foundation, 2016). The coalition calls for all levels of government to take action to restrict commercial marketing to children and youth, and is advocating for new regulations to be statutory in nature (Heart and Stroke Foundation of Canada & Childhood Obesity Foundation, 2016). The failure of industry led regulation shows that in order for food and beverage companies to adhere to new restrictions, they must be legally enforced by those with authority.

In 2016, the Government of Canada also announced that they were working to improve the Canadian food environment through the promotion of new approaches to healthy eating. This included the protection of vulnerable populations – including children, who they acknowledge are particularly susceptible to marketing messages (Government of Canada, 2016). The announcement also identified the need to revise Canada’s now outdated food guide, which was typically used to teach children about healthy eating in schools (Government of Canada, 2016). Under Premier Justin Trudeau, the Liberal government pledged to “help families make better food choices” through a series of measures, one of which included introducing “new restrictions on the commercial marketing of unhealthy food and beverages to children, similar to those now in place in Quebec” (Liberal Party of Canada, 2017, para. 1). This pledge also included enacting new regulations to eliminate trans fats and reduce salt and to improve nutritional labels for processed foods (Liberal Party of Canada, 2017). These pledges
and commitments to a building a better food environment in Canada can also be seen as an acknowledgement of the failure of self-regulation and the need for government intervention in order to protect the best interests of Canadian children.

Critics of self-regulation in the United States and Canada have often argued that the government needs to do more to support parents and protect children when it comes to unhealthy environments – perhaps by way of banning advertising to children all together. While it is frequently acknowledged that food marketing alone is not the cause of children’s unhealthy lifestyles, it is considered to be a significant contributor to the current obesogenic environment (Hawkes, 2004; Heart & Stroke Foundation, 2017). At the time of the World Health Organization’s report on the global regulatory environment governing food marketing to children, two countries and one province (Quebec, Canada) had banned television advertising to children altogether (Hawkes, 2004). However, it is not clear if the effects of advertising to children were reduced by this ban.

Citing countries that have at some time banned advertising to children, such as Sweden, Norway, Greece and Canada’s Quebec, Buckingham (2009) argues that the complete abolishment of advertising to children usually results in the failures of such regulation, and generally serves as more of a high profile symbolic move against obesity, rather than one with any conclusive positive effects. He further argues that decisions to ban food advertising aimed at children are generally nothing more than politically driven government attempts to look as though they are fighting childhood obesity without enacting any significant change. Highly critical of Ofcom’s 2007 restrictions on television advertising of food and drink products to children in the UK, Buckingham insists that the ban existed only because it was a relatively easy and highly publicized way to take action and quell rising public discontent (2009). Similarly critical, Kline (2011) argues that these ineffective bans have been led by moral panic largely due to public anxiety around children’s health and status as vulnerable consumers that need protection. Moreover, Kline argues that a ban on food marketing cannot be expected to significantly improve children’s health, as heavy media consumption and the cultivation of sedentary lifestyles cannot be detangled (2011). A ban on advertising makes no attempt to reconcile the many other elements involved in the obesogenic environment. Instead, a ban oversimplifies the necessary lifestyle changes needed to improve overall health, implying a cause and effect relationship between marketing and obesity. Kline suggests that a total ban on children’s television marketing ignores some of the critical
factors leading to childhood obesity, and warns against a television advertising ban serving as a catch all solution to a complex problem designed to satisfy public outcry.

Discussions around children’s health and obesogenic lifestyle risks have led to an extreme anxiety over who is responsible for children’s rising obesity – parents or big food companies (Kline, 2011), and while parents may feel sated by an advertising ban, Buckingham (2009) points out that a reduction of television advertising to children is likely to result in advertisers pushing their efforts into other avenues which may be harder to regulate, rather than reducing their attempts to reach children. Kline (2011) further argues that a ban on children’s advertising is unlikely to stop children from being exposed to marketing when watching television with their parents or families. Indeed, a regularly cited limitation of the regulation of children’s advertising is that much of the food advertising that children are exposed to on television appears during other kinds of programming, such as programming directed at teens, adults or families (Harris, Schwartz, et al., 2015). And even when regulation functions as intended, advertising from nearby provinces or regions can wreak havoc on any attempts to entirely block child directed advertising content. With so much cross-border advertising, it can also be very difficult to measure what kind of effect marketing bans have actually had on children’s diets within regions that have enforced them (Hawkes, 2004). While proponents for regulatory reform have recognized the need to manage cross-border media (Heart and Stroke Foundation of Canada & Childhood Obesity Foundation, 2016), it is currently unclear how statutory regulation would tackle such a challenge.

4.4.1. Challenges Associated with Advergame Regulation

Regulation in the borderless realm of the internet can be very difficult for a variety of reasons, including cross-border accessible promotions and the embedded nature of online advertising. Given the nature of online marketing, there are many challenges to regulating advergames and other marketing strategies that take place on the internet. Online marketing to children is deemed inherently difficult to manage because of the challenges involved in transferring existing rules to the internet, as well as the wide range of online techniques used to market to children (Hawkes, 2004). In addition, the cross regional reach of the internet can be a problem when regulation criteria differ in neighboring countries (Hawkes, 2004). When it comes to advergames, Pempek and Calvert (2009) claim that there are very few regulations and legal restrictions (as cited in
Staiano & Calvert, 2014). One aspect that is particularly difficult to regulate is exposure time, which can lead children to sustained periods of engagement with commercial messaging (Staiano & Calvert, 2014). Another factor is the game/entertainment characterization of these advertisements. Most regulation in terms of children’s advertising (including that which is stated in the International Code of Advertising Practice) stresses that advertising must not mislead or exploit children’s inexperience through deception (Hawkes, 2004). In fact, the Identification of Advertisements of the International Chamber of Commerce (ICC) International Code of Advertising Practice states that:

Advertisements should be clearly distinguishable as such, whatever their form and whatever the medium used; when an advertisement appears in a medium which contains news or editorial matter, it should be so presented that it will be readily recognized as an advertisement. (1997, Article 12)

However, advergames by their very nature are not clearly recognizable as advertising. In order for advergames to be clearly distinguishable as commercial content, advertisers would need to label them as such – something few marketers currently do. Evidence of a lack of compliance with the ICC International Code of Advertising Practice (1997) when it comes to advergames can be found in Dahl, Eagle and Baez’s (2009) content analysis of web-based advergames. Their study, which sought to examine the nature of advergame sites produced by 15 high-profile, multinational children’s food marketers, scored each site independently based on the content/advertising divide and the presence of nutritional information, alongside other elements such as encouragement to purchase, social invitations, registration, privacy, and downloadable material or other activities (Dahl et al., 2009). The researchers noted that despite self-regulation clearly stating the need for a distinction and separation between advertising content and informational content, only ten of the 13 sites with games actually did this. However, the ten web sites which distinguished between advertising and informational content made no effort to make their commercial intent clear, and failed to mention their commercial purpose in any way (Dahl et al., 2009). An and Kang’s (2013) study, which considered the reach and effectiveness of online ad breaks, also found a distinct lack of advertising breaks that clearly differentiated informational content from advertising content. An and Kang (2013), who analyzed 164 food brand websites directed at children found that fewer than 20% contained ad breaks, 34.5% of which required an adjustment of the screen to be seen. The link between the web sites and their
persuasive messages is further disguised by the fact that some of the brands use domain names that are not directly related to their product (Dahl et al., 2009; Purswani, 2010). Additionally, advergames are increasingly distanced from their commercial intent by new features that allow them to be removed from the online space and commercial website surroundings by downloading the games directly to computers or laptops. Dahl et al. discovered that a portion of the online websites reviewed in their study encouraged kids to download the games so they could be played even when the children were not on the website (Dahl et al., 2009). This removal of advergames from the online space further complicates regulation. While the authors of the study note that this may not be a technical breach of self-regulation codes in Britain (where the study was based), it does add a new element to the separation between advertising and other content, and it makes it more difficult for both children and adults to distinguish advertising from other messaging.

These studies (An & Stern, 2011; Cauberghe & De Pelsmacker, 2010; Dahl et al., 2009; Dias & Agante, 2011; Harris, Speers, et al., 2012; Panic et al., 2013; Pempek & Calvert, 2009) and criticisms highlight serious issues about how regulation can be applied or ignored in the online space due to the convergence of advertising and other content on websites, and games directed towards children. Additionally, much like the loopholes of television regulation, the definitions of what exactly constitutes the online child audience can be unclear, and therefore manipulated. In Canada, the CAI (2017, p. 2) has a specific mention of “any interactive game directed primarily to children under 12…where the company’s food or beverage products are incorporated into the game” – however this definition and similar clauses found in other self-regulation initiatives calls into question how marketers define their audiences online. How do marketers categorize games primarily directed at children under 12? Are they simply able to re-categorize their games as directed at teens and families while positioning children as additional, accidental exposure? While the CAI makes ostensible efforts to combat these questions by claiming that “a number of factors are used to determine if advertising is directed primarily to children” (Ad Standards, 2015, p. 3), some of the factors suggested, such as “the overall impression of the advertisement… [and] whether the medium is used primarily by children under 12 years of age” (Ad Standards, 2015, p. 3) could be considered highly subjective. Other concepts such as the target demographic definitions have the same issues as television self-regulation – they can be dependent upon the
threshold of the audience percentage – that is how much of the audience is made up of each age group. With the exception of Mars Canada Inc. (a company widely known for confectionary), which defines “advertising directed primarily to children under 12” as 25% or more of the audience, all other participants in the Canadian self-regulatory initiative use the threshold of 35% or more of the audience. However, the percentage of an audience that falls below an age threshold is something which is very difficult to measure, particularly with internet use (Ad Standards, 2015).

Other factors the CAI mentions are whether or not the medium is primarily used by children under the age of 12 and whether or not age-screening mechanisms are in place (Ad Standards, 2015). The Kaiser Family Foundation’s study of popular children’s brand’s websites found that while online marketers were careful to screen out children under the age of 13 when it came to website membership opportunities or purchases, some sites requested no information at all from those who were casually visiting the site (Moore, 2006). With no age screening mechanisms, it would be nearly impossible to know what age group is primarily using the site and accessing the games. The internet also enables companies to disguise the extent of their advertising by hiding behind multiple domain names or country codes. For example, the Cereal f.a.c.t.s report (2012) notes five Kellogg’s sites with child content. While a review of these sites today shows that several have been shut down (Applejacks.com and CornPops.com) and others have removed child content (FrostedFlakes.com and RiceKrispies.com) – as of 2017 a wealth of advergames and child directed content is still available on ClubKelloggs.ca, a consolidated marketing site for Kellogg’s products with a Canadian country code domain. Despite being registered with a Canadian domain, these games remain easily searchable for children online, though they may not be considered in assessments of American food and beverage marketing towards children. With marketers using different country codes and website domains that can be accessed around the world, it makes country specific regulation as well as accurate monitoring of adherence very difficult. While these examples may not serve as conclusive evidence that marketers are able to subvert any set rules and regulations when it comes to the online space, these critiques do offer some substantial loopholes that explain how the online space presents new challenges to the possibility of statutory reform. With self-regulation proving to be somewhat ineffective and entire government bans producing similar effects that are at best shown to be inconclusive, it’s clear that we must look towards other strategies to
combat how advergames are able to resonate with children and shape their perceptions about foods.

4.5. Media Literacy

After so many decades of concern about advertising directed towards children, several solutions have been developed to help children understand the persuasive intent of advertising and, in doing so, help them to resist some of the perceived effects of marketing. Some of the most popular and practiced forms of defense against advertising include media and advertising literacy. While they are not exactly the same, advertising literacy is often discussed within the framework of media literacy education as one component of a larger pedagogical aim (Malmelin, 2010). Media literacy encourages children to think critically about the media that they consume, and advertising literacy is specifically concerned with “the consumer’s ability to understand advertising and to recognize various types of commercial phenomena in the media” (Malmelin, 2010, p. 132). These approaches, which despite their differences are often spoken about interchangeably, were developed largely to curtail the effects of media and marketing to children by empowering them to analyze the messages that they are receiving from the media (Cortes, 1992).

Concerns over television content as well as movies, radio, music, newspaper and magazines, led educators to believe there was a need to teach media-based pedagogical skills within the classroom. Of course, one aspect of these concerns was advertising and how television and other media advertising was shaping children’s attitudes, values and ultimately actions (Cortes, 1992). By the 1990s there was a growing distrust of media, and the idea of arming students with the means to resist media manipulation and the persuasive effects of advertising were deemed critical to the future success of children. The Grunwald Declaration on Media Education, which was issued at UNESCO’s 1982 International Symposium on Media Education, called for national authorities to support efforts to implement media education programs, and stressed the duty of parents, educators, media and decision makers to shape responsible citizens through media education (UNESCO, 1982). Media literacy courses in public schools in Canada and the United States began to appear between the late 1980s and early 1990s (Rothenberg, 1990). One aspect of media literacy, it should be noted, seeks to have children critically think about the commercial intent of the media
they consume, and to consider where it comes from and how/why it is made. This is the advertising literacy component. While a number of articles regarding advertising literacy appeared in the 1990s (see Buckingham 1993; O'Donohoe & Tynan, 1998; Cortes, 1990; Brian Young, 1990), ideas of what exactly advertising literacy means have ranged from being able to recognize advertisements as promotions, to understanding persuasive intent and the strategies behind the advertisements. Proponents of media literacy believe that the ability to think critically about media, sources and commercial intent significantly dilutes the power of advertising to influence children and affect their purchase intentions or requests. Understanding advertising plays an important part in media literacy, and is emphasized in many of the curricula of schools that teach media education. In Texas (which has 4 million K-12 students enrolled in schools), in order for students to graduate, they must complete a test that includes analysis of persuasive advertising techniques (Hobbs, 2004). The Maryland State Department of Education developed a partnership with the Discovery Channel to create a curriculum to incorporate media literacy into English, Social Studies and health classes (Hobbs, 2004). In Colorado, thousands of teachers were given day long training in media literacy along with print and video materials to incorporate into their lessons (Hobbs, 2004). The Center of Media Literacy offers hundreds of videos, books and other resources for students, parents, and educators (Hobbs, 2004) and the Federal Trade Commission (FTC) created materials specifically to address the subject of advertising literacy education, which included a free game-based website, a curriculum to be used by educators in the classroom, teaching tools and ad literacy related activities for parents and children to do together (admongo.gov). A number of non-profits and informal sector efforts have also been undertaken to promote and further develop media education as a deterrent to the effects of advertising (Buckingham, Banaji, Carr, Cranmer, & Willett, 2009).

While considerable efforts have been undertaken in an effort to temper the strength of advertising through media and advertising literacy, there are significant limitations to this line of defense. Despite the considerable resources that have been invested in development, implementation and promotion of media and advertising literacy education programs, it is questionable whether this kind of training is an effective intervention for children in the face of marketing messages. In order to properly assess the potential of media literacy as a defense against the promotional messages of
advertisers, it is important to consider the flaws involved in media literacy education programs, and whether they are an effective method of fighting advertising aimed at children. In the next section, I review the common critiques of media literacy programs and limitations which have been identified in relation to media literacy education.

4.5.1. Challenges Associated with Media Literacy

There are many critiques about the assumed relationship between advertising literacy and the effects of advertising on children. The idea behind media and advertising literacy is that those with more literacy will be less influenced by the media, and those with lower literacy will be more susceptible to advertising messages (Livingstone & Helsper, 2006). As young children are exposed to less media and media education, it is also assumed that younger children are more vulnerable to advertising than older children (Livingstone & Helsper, 2006). However, a review of empirical findings found little to suggest that young children are any more affected by advertising than teenagers, despite the fact that teenagers should be more media literate according to this approach (Livingstone & Helsper, 2006). While advertising literacy may seem like an aid in encouraging children’s consumer socialization, other factors have been found to be influential in children’s understanding of advertising and persuasion. For example, children from households with higher education levels have been found to understand persuasive intent at younger ages than children of parents with lower education levels (Young, 2010). Studies have found that the impact of brand advertising on children’s preferences and requests varies based on the family context as well as the child’s age, gender and social background (Kline, 2011). This suggests that the same factors may play a role in determining the child’s persuasion knowledge and thus may affect the impact of brand advertising. There are numerous social, educational, or economical issues that could influence children’s perceptions or understanding of advertising, as well as how the promotional messages of advertising resonate with them. However, it is not clear that an awareness of the intentions behind advertising lessens the effectiveness of messages.

Understanding the persuasive strategies or intentions underlying marketing may not actually help children as a cognitive defense against advertising. Roedder John’s (1999) review of consumer socialization research shows that when supplied with knowledge about the intent behind advertising and a skepticism of the truthfulness of
marketing claims, children ages eight and older are deemed capable of activating their cognitive defenses and responding in “a mature and informed manner” (p. 190). However, possessing the skills and knowledge to defend against advertising does not necessarily mean children will use them. Even children who are old enough to have some knowledge about persuasive intent may have to be encouraged and reminded in order to activate these defenses (Kline, 1993) at a time when they and are still developing their capacity to retrieve and initiate their knowledge (Roedder John, 1999). As Buckingham (2011) points out, even adults, who by all accounts should possess these defenses and fully understand the persuasive intentions behind advertisements, are by no means immune to the influence of marketing. While these critiques do not reduce the value of media literacy education, they do suggest that advertising literacy alone may not be enough to help children recognize the persuasive intent behind marketing, and media literacy education may not be effective at thwarting commercial appeals to children. What these critiques suggest is that even with significant media training and education, children may still be influenced by advertisements, particularly when that advertising does not resemble traditional forms of marketing. As these scholars suggest that media literacy cannot effectively shield children from the persuasive effects of advertising it will be essential to examine alternative strategies that may be more effective in countering advertising and fun food culture.

4.5.2. Media Literacy as a Strategy for Mitigating the Influence of Advergames

The effectiveness of media literacy as strategy for mitigating the effects of advertising is further questioned by the rise of gaming in the internet age. The development and use of advergames has paved the way for a new, more nuanced layer in debates about media literacy. They are an unusual product of their time in that they offer a very different, more insidious approach to persuasion. One common criticism of advergames is that they are much more difficult for children to recognize as advertising (An, Jin, & Park, 2014; An & Stern, 2011; Folkvord, Anschütz, Nederkoorn, Westerik, & Buijzen, 2014; Ham et al., 2016; Mallinckrodt & Mizerski, 2007). Even parents have been found to have difficulty recognizing the persuasive attempt in advergames (Evans & Hoy, 2016). While marketers and other advertising advocates often cite parents as the ultimate gate keepers for children’s media consumption, the massive popularity of online games and frequent lack of supervision of children’s online activities sometimes means
that parents aren’t aware that the games that their children are playing are steeped in advertising. Evans, Carlson and Grubbs Hoy (2013) found that even when parents are made aware of the existence of advergames and provided with examples and definitions of what constitutes an advergame, there is still confusion over what games qualify as advergames. This finding suggests that even adults, with significantly more persuasion knowledge and advertising literacy than children, may have difficulty recognizing the promotional nature of advergames. Even children who are properly inculcated with an attitude of skepticism towards advertising may have difficulty seeing the persuasive messaging behind advergames. Studies have found that TV ads and advergames function very differently in terms of how they affect children and activate children’s defenses towards marketing (An & Stern, 2011; Panic et al., 2013; Staiano & Calvert, 2014). One key characteristic that differentiates television advertising from advergames is that while television advertising’s effects are impacted by persuasion knowledge, within the advergame landscape, persuasion is determined by the attitude of the player towards the game (Panic et al., 2013). Even when children are armed with some degree of advertising literacy, advergames are able to turn persuasive messages into an entertaining experience – circumventing children’s defenses against promotional messages and making them more susceptible to persuasion (Staiano & Calvert, 2014). In other words, the persuasive intent of advergames can be hidden behind the enjoyment felt during the game (Staiano & Calvert, 2014). This effect is so strong that even when children are given cues about the nature of advergames, such as a disclaimer at the beginning of the game, it does not increase persuasion knowledge.

Multiple studies (An & Kang, 2013; An & Stern, 2011) have demonstrated that ad breaks are not effective in activating children’s defenses, or even assisting them in detecting the commercial nature behind advergames. While television breaks can activate children’s defenses by signalling a change in programming, advergames lack the same kind of obvious commercial break. This means that even when children are armed with the knowledge of advergaming’s intent to persuade, this knowledge is not necessarily used as a defense against the game’s effects (Panic et al., 2013). Interestingly, Mallinckrodt and Mizerski’s 2013 study found that understanding an advergame’s persuasive intent will not necessarily impact children’s brand and category preferences. On the contrary, their research revealed that more children preferred the advergame’s promoted product once they identified the game’s persuasive messaging
versus those that did not identify the game’s promotional intent (Mallinckrodt & Mizerski, 2007). However, within the study only a quarter of the children were actually able to correctly identify the game’s source. This may be due to the immersive nature of advergames which blur the lines between entertainment and advertising. Compared to television, which has clear programming breaks for children, marketing disguised within the pleasure of gameplay offers an extended entertaining opportunity for children to interact with brands. When compared with television advertising, research finds that children’s persuasion knowledge is significantly lower after exposure to an advergame than a television commercial (Panic et al., 2013). The inability of children to activate their persuasion knowledge and defenses against advertising speaks to the food industry’s ability to design transfixing and flow inducing game play experiences.

Flow, as previously discussed, refers to the deep enjoyment that comes from being fully immersed in an activity, often involving overcoming obstacles and achieving a goal, such as in games (Csikszentmihalyi, 2008). Flow has been found to directly influence a player’s feelings towards both the advergame and the brand. Ham, Yoon and Nelson’s 2016 research, which was conducted with adult audiences, investigated how the flow experience impacts persuasion inference. The researchers discovered that the more flow experienced by players, the more they attributed positive feelings and attitudes towards the advergame and the food brand involved (Ham et al., 2016). Additionally, the study illustrated that a player who is experiencing a state of flow is less likely to scrutinize the source of the game when considering purchase intentions. The amount of flow experienced was found to be related to unlikelihood of skepticism regarding the source of the game (Ham et al., 2016). This may be because of the amount of focus and immersion required when playing a game that can induce flow. When a game has been optimized to provide an entertaining or overwhelming experience for a child, it may leave the player unable to use whatever cognitive defenses they have against advertising (Waiguny, Nelson, & Terlutter, 2012). Green and Brock (2000) argue that because a wealth of cognitive resources are required to reach a state of flow and remain in that state, there is less cognitive capacity remaining for other use (Waiguny et al., 2012) such as thinking critically about the game’s source or intentions. In this way, persuasive messages from advergames are received differently than those from traditional media because so much of the player’s attention and cognitive resources are being used on auxiliary aspects of the advergame. The focus on factors like storyline
or obstacles within the game are something that can make it more difficult for children to active the persuasion knowledge needed to activate their advertising literacy (Staiano & Calvert, 2014). This suggests that children, even when equipped with proper consumer socialization and persuasion knowledge, may be unable to draw on those resources while playing advergames due to both to the insidious nature of advertising integrated within the game and the lack of cognitive capacity due to the state of flow induced during gameplay. However, if advergaming can resonate with children on both conscious and unconscious levels, and advertising breaks or cues have found to be ineffective, then what kind of regulation or intervention is effective against advergaming?

Through an examination of the development and implementation of media literacy, as well as the considerable research behind these programs, here, I have argued that media literacy is not always an effective strategy. While media literacy is not without value, it has shown to be inadequate as a counter to the effects of children’s food advertising. As advertising has evolved in the age of the internet, it has become even more evident that media literacy alone cannot shield children from marketing messages, particularly when those messages are wrapped in entertainment, making it difficult for even adults to recognize them as advertising. For these reasons, it is essential that we look towards other forms of strategies in order to negate the persuasive effects of unhealthy food advertising and encourage children to make better lifestyle decisions.

4.6. Conclusion

This chapter has critically examined two approaches to mitigating the influence of fun food advertising on children: regulatory approaches and media literacy. Although the underlying intention behind both approaches seek to protect children from the deleterious effects of fun food advertising, material in this chapter has shown that both approaches have limitations, particularly when applied to the recently emerged area of advergaming. Within this chapter, I have argued for the need for a new strategy to lessen the effects of the fun food culture and encourage children to make healthier food choices.

In the next chapter, I discuss how I have sought to address shortcomings in previous strategies for mitigating the influence of the fun food culture. Here, I have
provided the context behind the problem of advergames and have argued for the need to look towards research into other avenues of intervention. The next chapter outlines the research rationale and process for this study, and situates the proposed strategy in relation to other studies involving healthy advergames.
Part II: Research Design and Findings
Chapter 5. Research Design

5.1. Introduction

The previous chapter introduced a number of strategies that have been designed and implemented in order to counteract the fun food culture and its potential impact on the obesity crisis. I argued that ultimately, we need to look towards more effective strategies to reduce the harmful influence of unhealthy food marketing messages aimed at kids. This chapter provides an overview of the strategy or intervention which, with this research, I am proposing: a healthy advergame for children. In this chapter I present the rationale that led to my decision to design and develop a healthy advergame, and evaluate it, as a central component of my research. Here, I discuss the tools I used for data collection, providing the rationale behind my chosen methodologies and offering an explanation as to how I undertook my analysis. I begin by reviewing previous studies that have illustrated the potential for advergames to serve as an intervention that encourages healthy lifestyle choices for children. I then situate my own research amongst this work. Ultimately, I argue that while these studies have shown the potential of healthy advergames to influence children’s food choices, these studies have a number of shortcomings which I seek to address through my own game development and subsequent research.

5.2. Using Healthy Advergames to Influence Children’s Food Choices

As discussed in earlier chapters, advergames are immensely popular with children. These entertaining, brand immersive, free games offer enticing environments for children to play and explore. They also allow marketers to encourage exposure to their brands. Advergames can be classified as persuasive games – that is, games that seeks to change behavior. However, given that advergames frequently advertise unhealthy or non-nutritious foods, there is the potential that these games are being used to encourage damaging behaviours and attitudes in children, leading to unhealthy lifestyle decisions. While there are far fewer studies about the effects of advergames on children in comparison to television advertising, the impact these games have on the health and diet of children is of critical importance in the current obesogenic
environment. Hence, below I review a number of studies that have explored how and to what extent advergames influence children’s food preferences and behaviours.

In 2009 Pempek and Calvert conducted a study to examine whether or not the promotion of nutritious foods and beverages could influence healthier snacking with low-income African American children. Conducting their study in urban public elementary schools in Washington, DC, Pempek and Calvert recruited 30 children ages 9-10 to take part. Using a popular Pac-Man arcade game as a prototype, Pempek and Calvert created two versions of their game: one that promoted healthy foods and one that promoted less nutritious snacks. While the healthier version of the game rewarded players 10 points when Pac-Man consumed healthy snacks, and penalized them 10 points for less healthy choices, the less healthy version of the game did the opposite (providing points for unhealthy foods while subtracting points for healthy choices). The foods and beverages in the game were depicted with photographs, and featured orange juice and bananas as healthier options and soda and a bag of potato chips as less healthy options. The game featured multiple levels, and at level two, four additional snacks were included as choices in the maze, including an apple and bag of baby carrots for healthier snacks and a chocolate chip cookie and chocolate candy bar as less healthy options. Each child (with the exception of those in the control group) played one version of the advergame (either healthy or less healthy) through twice. After game play children who had played the game were asked three questions about the advergame and four questions regarding their media use. After the survey, children were required to select a food and a beverage of their choice. Results showed that children who had played the advergame promoting unhealthy foods were more likely to choose snacks of poorer nutritional quality compared to the other children. Children who played the advergame that promoted healthier foods were more likely to choose healthier options. This suggests a direct relationship between the games children play and their preferences for certain types of food, illustrating that actual selection and consumption choices are impacted by promotional advergames. Pempek and Calvert’s findings demonstrate that concerns surrounding the link between advergames and less healthy lifestyle choices may be warranted. However, this study also suggests that potential of advergames to promote and encourage healthy diets, something that my study investigates further.
A similar study investigating advergames and their effect on snack consumption found that playing games that promoted unhealthy foods led children to consume less healthy snacks (fruits and vegetables) and more nutrient-poor snacks (Harris, Speers, et al., 2012). Harris et al. adapted a previous study on the effects of television food advertising in order to measure the impact of advergames. The researchers conducted their study with 152 children ages 7-12, exposing them to advergames promoting unhealthy foods, healthy foods or non-food computer games (control group). During this study, children in the experimental groups played advergames that promoted either Pop-Tarts and Oreos or Dole fruits and vegetables for 12 minutes, and then were given a choice of snack foods: carrots, grapes, Goldfish crackers, fruit snacks, potato chips and cookies. Children were told they could snack as much as they wanted and were left alone with the snacks for a period of five minutes. After this, children were asked to complete a questionnaire about how much they enjoyed each food and how healthy they thought that food was. Children were then allowed to continue snacking for 20 minutes. Results showed that children in the unhealthy food condition group consumed less of the healthy snacks available than the control group and healthy advergame group. Additionally, they consumed 56% more unhealthy snacks than those playing the healthy advergame and 16% more than the control group (Harris, Speers, et al., 2012, p. 62). Children who were exposed to the healthy advergame consumed significantly more healthy snacks than those who played the unhealthy game, and also more than those in the control condition. This study demonstrates the power of advergames to affect both the kinds of foods that children eat as well as the quantity. Most importantly, this study illustrates the potential of advergames to influence positive lifestyle choices, as well as demonstrates the potential contributions that advergames could be making to the obesity epidemic.

Advergames have also been found to encourage excess snacking using gratuitous food cues. A 2004 Dutch study about advergames and snacking found a clear link between playing advergames containing food cues and increased caloric intake (Folkvord et al., 2014). This study, which was conducted with 261 children between the ages of 7-10 compared the snacking behaviour of children who were exposed to an advergame promoting energy-dense snacks (snacks high in fat, sugar, and/or salt) with that of children playing an advergame promoting non-food products. The study further investigated how children snack by rewarding half the children in each group if they
could refrain from eating. Children in the study played an online memory game promoting either energy-dense snacks or non-food products. Two bowls of snacks were provided during gameplay: 1) jelly candy and 2) milk chocolate candy shells, which were weighed before and after gameplay to calculate caloric intake. The games were virtually identical, except for the promoted foods. The food advergame promoted a candy brand and eight different confectionary items from this brand, while the non-food advergame promoted a toy brand and eight toys from that brand. The memory game required children to match pairs of the toys or foods (depending on their group). The progress of the game was portrayed to the player through a timer, and the game provided an unpleasant audio cue when incorrect pairs were selected. Folkvord et al. (2014) found that children who played the game promoting energy dense snacks ate significantly more than children who played the advergame promoting non-food products. These snack promotions were found to be effective even when the children were asked to refrain from eating with the incentive of a prize. Children who avoided snacking were promised a reward, however most were unable to refrain from snacking, which illustrates the ability of these games to discourage self-motivation and self-control (Folkvord et al., 2014). Children who played the advergame promoting food items ate significantly more than the children who played the non-food game both with and without the inhibition and reward task. These findings show that the promotion of foods in advergames can prompt children to eat more than children who do not play advergames marketing snacks. Aside from illustrating the significant effects that advergames can have on diet, this study also demonstrates that even when motivated by rewards to refrain from unhealthy snacking, children are susceptible to the triggering effects of advergames. This study suggests that advergames have considerable power to affect children’s behaviour and encourage consumption. However, what is unclear from this study is whether or not the same effects could be recreated with healthy snacking options. For example, could the promotion of healthy foods instead of unhealthy foods encourage children to eat more fruits and vegetables?

Similar to most promotions for children’s foods, advergames are at odds with health goals, and have been found to undermine the current nutritional knowledge children possess. A study by Mallinckrodt and Mizerski (2007) investigated the effects of a Froot Loops advergame that promoted the cereal, while also encouraging a preference for Froot Loops over fresh fruit. The treatment group (which consisted of 294 children,
ages 5-8) played through the advergame at least twice (approximately five minutes of play) before being provided with a questionnaire regarding their food preferences and the commercial nature of the game. A control group of children was not exposed to the advergame before the questionnaire. The advergame used for the study was called *Froot Loops Toss*, and incorporated many of the typical advergame characteristics, including logo, trademark and spokescharacter – however, the game also promotes Froot Loops as preferable to fresh fruit. During the game, players must feed a monster by throwing food into its mouth – earning points when the task is completed correctly. The preference for Froot Loops over fruit is promoted through audio cues as well as the point system, which rewards fruit with five points, while Froot Loops pieces are rewarded with ten points. Mallinckrodt and Mizerski found that while playing the game did not affect children’s beliefs about the nutritional value of Froot Loops cereal, children who played the game promoting Froot Loops preferred that cereal more than other cereal options and other food categories (including fruit) significantly more than children in the control group. This suggests that while children may not actually believe the claims promoted in advergames, or have their nutritional knowledge negatively affected by gameplay, the promotional message may still impact their preferences or behaviours. Advergame promotions for unhealthy foods may not influence the existing nutritional knowledge that children may possess (i.e. that fruits are healthier than sugary cereal), however, gameplay may still encourage positive feelings towards the foods or brands in question. While these findings suggest that advergames may not be able to thwart children’s current nutritional knowledge, it is unclear if advergames that seek to educate by promoting healthy foods may be able to add to that existing knowledge.

A similar study undertaken in Portugal by Dias and Agnate (2011) exposed 231 students in second and third grades from five different middle-class schools to either a healthy or less healthy advergame. These games were identical to each other (apart from the health of the foods being promoted) but were slightly more complex than those used in other studies. The objective of the games was to grab snacks (of a healthy or unhealthy nature respectively depending on the game) and dodge obstacles. Players were penalized ten points if they grabbed an obstacle (bombs or bullets) in error. The game ended after ten obstacles were grabbed, or after roughly five minutes had elapsed. These games also featured multiple levels of increasing difficulty. After playing the game children were asked to pick three snacks that they would like to eat from a
selection of six food photos. The children were then asked to perform the same exercise with six different photos of foods. The study found that the children who played the healthier version of the advergame were more predisposed to choosing healthy foods (70% selected three or more healthy options), while those that played the advergame promoting unhealthy foods more frequently selected nutrient-poor options (Dias & Agante, 2011, p. 167). Seventy percent of the children who had played the healthier advergame chose three or more nutritious snacks, while 63% of the children exposed to the less healthy advergame chose three or more foods considered less healthy (Dias & Agante, 2011, p. 167). This study demonstrates the potential of advergames to influence children’s preferences and behaviours depending on the kinds of foods being promoted.

Dias and Agnate (2011) also analyzed the nutritional knowledge of the children involved in their study through a simple questionnaire using visual aids. Children were presented with pairs of foods and asked to choose which foods they thought were healthier. While the researchers had initially expected the nutritional knowledge would be affected by game play (i.e. children who had played the less healthy game would be inclined to believe those foods were healthier), the majority of the children were able to correctly identify the healthy foods correctly. Results provide no evidence that nutritional knowledge would be influenced by the game they played. While this hypothesis was disproven within Dias and Agnate’s study (2011), this research only promoted either healthy foods or unhealthy foods. Rather than having a pedagogical aim of teaching children to distinguish between the foods, each game only featured foods in a healthy or less healthy category. Children were rewarded for foods in their specific category, and obstacles were always bombs or bullets. The study aimed to see how these promotions would affect nutritional knowledge, but did not seek to improve that knowledge through gameplay. It did not address the issue of whether or not the inclusion of both healthy and unhealthy foods in the game affected nutritional knowledge. This study also left me wondering whether or not rewarding healthy food options and penalizing unhealthy food options could change findings about nutritional knowledge.

5.2.1. Gaps in the Literature

Studies outlined in the previous section justify concern about the power of advergames to influence children’s choice in unhealthy foods. However, findings from these studies also point towards the prospect of using simple advergames to prompt
children to make better choices when it comes to their food, and suggest that doing so may aid efforts to fight childhood obesity. The use of advergames to promote healthy food choices within these studies reflects a belief that there can be purposes for advergames beyond commercial uses (Ham et al., 2016), including to promote healthier lifestyle choices. The studies reviewed have demonstrated that healthy advergames can increase players’ attitudes and intentions towards healthy eating as well as the relative ease in converting these games to promote healthier options. However, the games which sought to explore the impact of advergames on food choices investigated the effects of playing advergames, with a focus on influence rather than education. While these games used promotional or manipulation techniques to encourage certain behaviours, they did not aim to actually improve knowledge about nutrition, or affect conscious choice. Mallinckrodt and Mizerski’s (2007) research as well as the study conducted by Dias and Agnate (2011) investigated nutritional knowledge to an extent. However, Dias and Agnate (2011) built games that focused on either healthy or unhealthy foods, promoting only one category or the other, while Mallinckrodt and Mizerski’s (2007) study focused only on unhealthy advergames’ negative effects on nutritional knowledge. Rather than promote one category of food (healthy or unhealthy), there is a need for a strategy that will help children heuristically learn the difference between healthy and unhealthy options. Studies which have sought to explore the potentially beneficial relationship between advergames and healthy food choices (Dias & Agante, 2011; Harris, Speers, et al., 2012; Pempek & Calvert, 2009), while extremely influential in shaping my own research, do not address the potential of advergames to impact children’s food behaviours and preferences based on education rather than influence. In order to change behaviour on a more meaningful level, I decided to explore whether or not advergames can be used in conjunction with education in order to influence children’s preferences, behaviours and nutritional knowledge. With the current obesity epidemic threatening children’s health, it is critical to examine all possible strategies which may have a positive impact on children’s lifestyle choices. While previous studies have shown the power of advergames to influence children’s preferences, we must also consider how we can train future generations to make healthy, well-informed decisions based on knowledge rather than promotion.

In addition, most of the studies that explored the relationship between advergames and healthy food choices focused on children between the ages of 7 and
12. As children form their eating behaviours and preferences quite early on in their lives (Birch, Savage, & Ventura, 2007), it is ideal to encourage children to eat healthy foods at a young age. Pempek and Calvert (2009) conducted their research with children ages 9-10, while Harris et. al (2012) worked with children ages 7-12 and Dias and Agnate’s study was composed of children ages 7-8. Only Mallinckrodt and Mizerski’s (2007) research was concerned with young children (age 5-8). The rest of the studies focused on older children, who already have well-formed taste preferences. Research has shown that infants prefer sweet or salty foods, and that bitter flavors, such as those found in certain vegetables may be less easily accepted if not introduced quickly (Birch et al., 2007). As many children as young as five are now considered to be obese or overweight (World Health Organization, 2016a) this may suggest the need to provide education and intervention as early as possible in order to prevent unhealthy diet preferences from continuing into adulthood.

Finally, while the research reviewed in this chapter shows that advergames can influence healthy food preferences, these studies are missing key features that could aid children in discriminating between healthy and non-healthy foods, including how factors such as brand recognition and packaging factor into children’s perceptions of healthy vs. unhealthy foods. Additionally, it is unclear if branded products compared to unbranded items would change the results.

These gaps in the current knowledge of how advergames can be used for health purposes illustrate the need for further research in this field. My own research, which similarly examines how advergames can be used to encourage healthy food preferences and behaviours through improving nutritional knowledge, attempts to address the shortcomings of previous studies which have incorporated healthy advergames. Next, I outline how I have sought to further our understanding of the potential of healthy advergames in my game and research design, by addressing issues and questions which have, until now, remained unaddressed.

5.3. Research Questions

Within my own research project, I sought to recreate aspects of some of the studies which have addressed the potential of healthy advergames, while addressing some of the current gaps in the body of knowledge about the use of advergames to
promote healthy foods. Inspired and informed by the previous academic studies illustrating the prospective power of healthy advergames compared with unhealthy advergames (Dias & Agante, 2011; Harris, Speers, et al., 2012; Pempek & Calvert, 2009), I sought to build on the previous work, while also utilizing the digital environment as a gamified tool to assess and potentially improve nutritional knowledge. In order to do this, I designed a game to encourage healthy food preferences and behaviours by improving nutritional knowledge through education rather than influence. The game design offered heuristic learning opportunities by providing feedback to the children based on their food selections within the game. However, unlike the games used in previous studies, this game allowed children the chance to cycle through the foods in the game more than once. This strategy was meant to encourage learning, as children could receive feedback on their choices and react accordingly. Unlike previous studies, the game that I built also allowed for the incorporation of both healthy and unhealthy foods, instead of featuring one or the other. This way children were exposed to better learning opportunities, as they were meant to consciously discriminate between healthy and unhealthy foods. The game was also designed to allow me to assess current nutritional knowledge. I then used the game in a pilot study undertaken with children aged 5-8, which included a pre-game interview, game play, and post-game interview.

Previous research in this field and the gaps in current knowledge led me to conduct a pilot study using a custom designed and built health based advergames with specific pedagogical aims. This pilot study sought to test the game and explore the efficacy of my game and research design on a small scale prior to conducting a full-scale study. A thorough review of previous studies concerned with health based advergames led to the development of four key research questions:

R1: Do children understand the intent behind advergames?

R2: Do brands contribute to children’s preferences when it comes to food choices?

R3: Can we use a game to assess children’s nutritional literacy?

R4: Can an advergame that emphasizes healthy foods improve nutritional literacy, and, if so, does this lead to healthier food choices?
In order to investigate these research questions, a two-pronged approach was developed. To address these questions, I custom built a healthy food advergame. I then had children between the ages of 5-8 complete a pre-test interview prior to game play, they then played the custom designed game, and they subsequently completed a post-game play interview. Both interviews were undertaken with a quantitative focus, with the game serving as a pedagogical tool and a means through which to assess – together with pre-game play interviews – nutritional literacy. The interview portion of this study also provided a baseline to assess the possible effects of game play.

Table 5.1 below provides an overview of the relationship between the research questions, game and research design elements, and strategies for analysis. Following the table, an overview of each element is provided.
<table>
<thead>
<tr>
<th>Research question</th>
<th>Game/ Research Design element(s)</th>
<th>Approach to Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1: Do children understand the intent behind advergames?</td>
<td>Research design: Pre-test interview question 3 and post-test interview question 1.</td>
<td>Quantitative coding and analysis of interview responses.</td>
</tr>
<tr>
<td>R2: Do brands contribute to children's preferences when it comes to food choices?</td>
<td>Game design elements: Inclusion of branded and unbranded foods.</td>
<td>Data gathered from food choices from gameplay provides insights about preference (or lack of preference) for branded foods. This data was compared to pre / post interview data. Analyzed to see whether recognized brands (of healthy or unhealthy foods) were selected more frequently than other foods.</td>
</tr>
<tr>
<td></td>
<td>Research design elements: Post-test interview questions 2-3.</td>
<td></td>
</tr>
<tr>
<td>R3: Can we use a game to assess children's nutritional literacy?</td>
<td>Game design elements: Inclusion of healthy and unhealthy foods.</td>
<td>Data gathered from food choices from gameplay shows what foods children believe are healthy or unhealthy during gameplay. These choices are compared to the pre/post interview responses regarding top of mind answers regarding healthy and unhealthy foods.</td>
</tr>
<tr>
<td></td>
<td>Research design elements: Pre-test interview questions 4-5 and post-test interview question 6.</td>
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<tr>
<td>R4: Can an advergame that emphasizes healthy foods improve nutritional literacy?</td>
<td>Game design elements: Inclusion of feedback about food choices within the game. Foods cycle throughout the game giving children the ability to learn from previous mistakes.</td>
<td>Data gathered from food choices from gameplay shows whether children were able to correct previous mistakes based on heuristic learning opportunities. Compared to interview questions regarding if children believed they had learned and if they could name foods from the game that were healthy outside of the gameplay environment.</td>
</tr>
<tr>
<td></td>
<td>Research design elements: Post-test interview questions 4 &amp; 6.</td>
<td></td>
</tr>
<tr>
<td>R4: if so, does this and lead to healthier food choices?</td>
<td>Research design elements: Post-test interview question 5.</td>
<td>Children's answers were assessed as either healthy or unhealthy depending on how they were categorized within the game.</td>
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</tbody>
</table>

My overall research design involved building an advergame designed to assess and build on children's nutritional knowledge, and using data generated by advergame

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9 See Appendix B for pre-test and post-test interview questions.
play, along with a pre-gameplay and post-gameplay interview to address my research questions.

Specific details about how I collected data to respond to each of these questions, as well as the approach I took to analysis of data, is addressed in detail in sections 5.5.2 and 5.6.1 below, after a more detailed description of game design (as the game was used to collect some data), and a more detailed overview of each of my research instruments (game design and data collection through the game; pre-gameplay and post gameplay interviews).

To answer my first research question, I compared overall performance (measured through data generated through game play scores, added to scored interview questions), with a few simple media literacy questions. These questions were asked both before and after game play, and aimed to assess whether the children were aware of the intent of the games they play, where the games they usually play came from and whether they understood the educational persuasive intent behind the advergame that they played during the study.

Question R2 was investigated through game play data as well as interviews. Through game play I was able to analyze how many brands children selected of both healthy and unhealthy foods. In the post-game interviews children were also questioned about whether they knew what a brand was and whether they recognized any brands in the game. Responses to the post-test interview questions were compared to data collected through game play – specifically how many branded vs. unbranded foods were selected.

Research question 3 was addressed by having children play through the game, which collected data about their selections, which allowed me to assess and score their gameplay. Data from game play was compared with pre-test questions 4 and 5 as well as post-test question 6. However, this was to confirm that children were properly interpreting the goals of the game and playing correctly.

The fourth research question was assessed using both interviews and data generated through game play. Nutritional literacy was assessed through using questions with the children during the pre and post-game interviews. Specifically, in pre-test interviews children were asked to name healthy foods and unhealthy foods (pre-test
questions 4 and 5). In the post-game interviews children were asked whether they felt that had learned from the game (post-test question 4), and then asked to select foods from the game they wanted to eat (post-test question 5). They were then asked if they could name three foods from the game that were healthy (post-test question 6). These responses were analyzed in relation to their selections within the game.

5.4. Overview of Game Design and Research Design

The above sections have provided an overview of the rationale behind this project, as well as the research questions that have been developed to address gaps in current knowledge about advergames. I have argued that there is significant evidence to suggest that advergames for health can influence children’s diet preferences and behaviours, and that advergames seeking to educate rather than just influence may lead to better health decisions based on nutritional knowledge rather than swaying children’s behaviours subconsciously. I described four research questions that I sought to answer through my own empirical research, which included the development of a customized game which generated data about. These questions, which concern nutritional literacy, the potential for learning as well as behaviour change, media literacy and brand influence, are investigated through the development of my own advergame, as well as the pre and post-game play interviews.

Because my research questions are investigated through exposure to the custom advergame built for this project, it is imperative to understand how and why the game was built. In this section, I begin by providing an overview of the game. After describing how it incorporates important design elements common to advergames, I discuss the rationale for including specific elements in the game, in relation to answering my research questions. I end my discussion of the game as an element of my research design, by describing the kinds of data which were collected in the game, and how those data were analyzed. I then turn to the more conventional elements of my research design: pre-game play and post-game play interviews, before moving on, in the next chapter, to present and discuss my findings. At the beginning of this chapter, I reviewed current health advergame literature in order to establish a rationale for my empirical research. I provided an overview of the studies that have predated this work on healthy advergames and argued ultimately that there were a number of shortcomings involved in previous research. I then established the research questions that arose from the current
gaps in knowledge. In this section, I describe the methods I employed in order to answer (or respond to) my research questions. The section begins with an overview of my game design, which includes a discussion of important aspects of gameplay I attempted to incorporate into my game design. Through a discussion of game design theory, I explain the rationale behind the build of the game, including aspects such as game mechanics and narrative as well as the pedagogical goals of the game and how I sought to encourage learning through game play. I then go on to describe specific elements of my game, and why I included each of these elements in the game. I provide justification for my choices of healthy and unhealthy food choices in section 5.5.1, and I use section 5.5.2 to discuss how the game was used as a means of data collection, and in section 5.5.3 explain how I worked with the data which game play by my study participants produced. Then, I go on to provide an overview of my pre-game play and post-game play interviews, which, along with data collected through game play of my participants, allowed me to respond to my questions.

5.5. Game Design Elements

While previous studies that have addressed the effects of advergames used games that already existed, or used comparative measures to assess the effects of games with healthy content vs. games with less healthy content, for my research purposes I built my own advergame. Because I also wanted to access children’s current attitudes towards food, their preferences and their nutritional literacy, I had to create a custom-built game that could also serve as a gamified survey. A custom game made it possible for me to choose exactly which foods and brands study participants would be exposed to, which in turn provided a means through which I was able to investigate whether or not the presence of recognizable brands would influence children’s selections. This was necessary in order to use the game as an instrument of both assessment and education. Assessment was based on which foods the children chose to select and avoid – which were later used in conjunction with the interview data to calculate their overall score for the study. Careful consideration was taken in designing a custom-built advergame that would create the most engaging gameplay experience. I drew on varied theories and research which shaped my game play design.

Casual games (which encompass advergames) are typically categorized by a number of key elements, which include fiction (positive and familiar settings), easy
usability, interruptability, difficulty and punishment, and excessive feedback (Juul, 2009). While the first two elements refer to a simple, familiar game narrative and easy to grasp game mechanics, the latter speak to the more unique characteristics that make casual games so enticing. Casual games are renowned for their interruptability – that is, their ability to be played in short bursts or longer sessions depending on the player’s lifestyle or mood (Juul, 2009). The power to pick up and put down a game without penalty gives the illusion that the game involves less of a time commitment, something which may be appealing to a novice gamer or someone with a shorter attention span, like a child. However, a simple game that demands less of an upfront time commitment does not mean that the game does not promote compulsion, or that it lacks replay-ability. On the contrary, while casual games lack the intensity of the marathon gaming session associated with traditional video games, Juul’s investigation into casual games illustrates an intense player dedication to mastering the challenges involved. For example, within Juul’s work he details a Jewel Quest 2 review by one user, named Susie Q. Susie defines herself as a devoted player of four years, and describes the game as “very addictive and healthy, because it makes you think and is really fun” (Juul, 2009, p. 40). This attitude illustrates that casual game users may know they play a game compulsively for long periods of time, yet they still consider the game to be entertaining and rewarding. Similarly, the success of Pong, one of the earliest arcade games, demonstrates how a game with simple rules and graphics can offer variability and replay-ability, even resulting in compulsive game play and massive popularity (Juul, 2005).

One aspect of casual games that makes them irresistibly satisfying and engaging is the use of feedback. Feedback, as well as what Juul (2009) has described as difficulty and punishment are closely related in the casual games space. Casual games offer excessive amounts of both positive and negative feedback – they punish a player’s mistakes and reward improvements in skill, something which enhances the pleasure of the game experience through the feeling of being skillful or clever (Juul, 2009). Feedback is offered in excess in digital casual games – after a players’ actions the game responds immediately, allowing players to almost instantly receive feedback about their choices within the game, whether that feedback is good or bad (McGonigal, 2012). Digital games constantly offer a way to assess ability and performance, providing a reassuring ongoing report of a player’s status. In purposeful, well-designed games, the
difficulty adjusts alongside the player’s performance. The difficulty of a game must increase as a player continues to build skills within the game, creating a balance between challenge and achievability to keep players at the limits of their ability (McGonigal, 2012). Juul (2009) states that if the game is too hard, players may experience frustration or anxiety. On the other hand, if the game is too easy, repetitive or trivial, the player will get bored. The concept of an optimal match between the skill of the individual playing the game and the challenge presented by the game is central to the concept of flow.

While games were not necessarily what Csíkszentmihályi (2008) had in mind when first developing the concept of flow, most digital games meet every explanation of flow inducing activities, including: a) clear, pre-known goals and set rules; b) action that can be adjusted based on skilllevel and capability; c) clear and consistent feedback; and d) visual and aural information that facilitates concentration while discouraging distraction (Sherry, 2004). Flow is a state that must be actively achieved by the player—it is not a state that can happen passively (Csikszentmihalyi, 2008). So, while games have been cited as an excellent facilitator of flow by Csikszentmihályi himself, a passive medium like television is far less likely to allow viewers to achieve the same state. Within a state of flow, continuing to play the game feels like the only satisfying option, much more so than losing or winning, given that ending the game would also end the flow experience (McGonigal, 2012). This is what makes casual games so compelling, fun to play and hard to quit. Game designers are able to optimize the human experience to provide a uniquely rewarding opportunity through games – one that immerses the user in a sense of productivity, and creates a momentary emotional high with each accomplishment (McGonigal, 2012). The importance and motivation of feedback and rewards in a successful game cannot be underestimated. Csikszentmihályi (2008) argues that it is the novel feeling of progression or accomplishment that characterizes enjoyment. This is something that even the simplest games seem to have incorporated, and even rough, game-like platforms seek to capitalize on.

The game built as part of the research described here was designed to encompass all of the elements of flow. First, mechanics of the game, which involved catching items as they fall from the sky while dodging obstacles, is a simple and familiar mechanism common in videogames, and was chosen for this reason. A game with a simple, familiar mechanism is less likely to be intimidating. The constant motion of the
avatar was meant to encourage extreme focus and constant engagement, which would promote flow. Many popular advergames involve the use of hand-eye coordination or reflexes (Moore, Rideout, Moore, & Rideout, 2016), which also influenced my choice of mechanics. The need to constantly be moving within the game was also meant to challenge the player and keep them working at the edge of their difficulty level, something that game theorists believe provides engagement and pleasure, as well as inducing flow. A familiar game framework was essential to the design of this game because players tend to perceive new games based on the games that they have played before. Giving players a game mechanism which they were already familiar with would help to increase confidence and give them an initial feeling of competence (Juul, 2009), which is also beneficial to inducing flow. Because this study involved working with children, it was critically important that the young players would not feel too frustrated or dejected with an unfamiliar game convention. Rules and goals were carefully explained both verbally and through game play instructions. And in order to encourage a lusory attitude, children were given the option to stop play at any time.

The game itself consisted of two levels (breakfast and snacks), though it did not actually increase in difficulty. Because the game was intended for single use play for the purposes of this study and it was going to be played by children who varied in age from 5 to 8 years old, and developmental capacity, the game was not designed to get any more difficult as game play went on. This was done to ensure the game was playable for all children in the sample. As Mallinckrodt and Mizerski (2007) note, this age range can mean considerably different abilities, making some measures and procedures more appropriate for some ages vs. others. However, to add an element of difficulty to the game and prevent the game from being simply a selection of healthy vs. unhealthy foods, a deliberate lag was added to the motion reaction of the arrow keys. This lag also encouraged children to stay focused on the task at hand because the game required their physical participation. This added challenge was meant to encourage the extreme focus necessary for flow. Additionally, in order to minimize the potential for boredom within the game, sessions were kept fairly short. While some studies (Harris et al., 2015; Pempek & Calvert, 2009) have used longer game play sessions (10-12 minutes) for research purposes, given the ages of the respondents in this study, and potential for boredom amongst the older children, game play sessions were kept to five minutes or less. This also reflected insights from pre-test research conducted by Mallinckrodt and
Mizerski (2007), who found that play that extended longer than five minutes on advergame websites tended to decrease in engagement, and motivated children to move to other areas of the websites.

The game was designed to offer extensive amounts of feedback, both positive and negative, as this is something that is said to enhance the pleasure of the gameplay experience and reward the player’s skill with a feeling of satisfaction (Juul, 2009). As instant feedback, positive or negative, is considered a key element of flow inducing games (McGonigal, 2012), I designed the game so that instant feedback was implemented as an important function. The use of negative feedback was meant to illustrate that while this was a game, there were some penalties or ramifications to choosing certain foods. This was to encourage children’s feeling that they were participating in something worthwhile, or something valuable, as this is also an important characteristic of flow. It also served as a pedagogical tool for heuristic learning. Folkvord et al. (2014) had used audio cues when incorrect action was taken in their game study, along with a visible timer to increase pressure for the player. However, given that I was working with younger children (Folkvord et al. studied children ages 7-10), my game design had to offer feedback without seeming overly critical or offending/upsetting the player. This was also essential to the learning heuristic of the game. For this reason, the game was designed without a visible score board and feedback was instead given only visually (see Figure 1, p. 85) and via audio response (an avatar smiles and a pop sound is heard for healthy foods; the avatar frowns and a chomp noise is emitted for unhealthy foods). Because many advergames incorporate the use of cheery music and animation (Moore et al., 2016), these elements were also included in the game.

The game built for this study used Scratch, a project of the Lifelong Kindergarten Group at the MIT Media Lab. Scratch was used because of its relative ease of use, as well as children’s possible familiarity with the platform. Some children in study may have encountered Scratch before, as it is recommended as a resource for teachers in British Columbia by the Ministry of Education to use in their classrooms when teaching children about coding (SET-BC, 2016). The game was played on a laptop computer using a trackpad and the keyboard. The narrative of the game was to help the protagonist catch healthy foods to fuel her up for a busy day, while avoiding unhealthy foods. The mechanics of the game involved the foods falling from the sky.
Figure 1. Positive feedback in Advergame

The player had to use the arrow keys to move left and right to catch or avoid foods. Children were asked to play through two stages of the game, a breakfast phase and a snacks phase. In order to move to the next phase or finish the game, the player needed to catch seven healthy foods from each round. The foods would continue to recirculate through the game until seven healthy foods had been caught, giving the player the opportunity to catch them again. Healthy food choices were accompanied by a visual and audio cue (avatar smiles and a pop sound is heard) while unhealthy food choices were accompanied by a frowning avatar and a chomp noise. Other than the audio and visual cues there were no penalties for choosing unhealthy foods. Table 5.2 shows a list of the healthy foods and unhealthy foods as they were categorized in the game. Images of the foods can be found in Appendix C.
5.5.1. Food Items Selection

Careful consideration went into choosing the healthy, and less healthy options featured in the game. Healthy foods, including fresh fruits and vegetables were chosen based on the Government of Canada’s Food Guide (2011). Similarly, the inclusion of the bagel, toast, yogurt, cheese and milk were also included on the basis of information included in this guide. The Government of Canada offers a guide called *Eating Well with Canada’s Food Guide*, which details the recommended number of food guide servings and provides examples of the foods that make up a healthy diet. Peanut butter and eggs were included as a meat alternative, as recommended by the guide. While Goldfish and granola bars were not recommended by any source, they were included as more moderate snack options compared to the more obviously HFSS foods. They also served to offer variety as I wanted to include some snacks that were packaged (Goldfish) or generally store bought (such as granola bars). Unhealthy snacks were chosen to include a mix of branded and unbranded options. The inclusion of sugary cereals was deliberate, as they are a category that invests heavily in advertising to children, both online and through traditional means (Harris, Schwartz, et al., 2012). The other unhealthy food options were chosen as foods that are generally considered to be HFSS foods, which cause the most concern in the current obesogenic climate.

\[\text{\textsuperscript{10}}\] The assertion that these are healthy foods has been challenged. This issue is discussed at greater length in section 6.4, which deals with the limitations of current research.
Table 5.2  Healthy Foods vs. Unhealthy Foods as Categorized in Research Game

<table>
<thead>
<tr>
<th>Healthy Foods</th>
<th>Unhealthy Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td>Breakfast</td>
</tr>
<tr>
<td>Apple</td>
<td>Carrot</td>
</tr>
<tr>
<td>Milk</td>
<td>Bagel</td>
</tr>
<tr>
<td>Orange</td>
<td>Cheese</td>
</tr>
<tr>
<td>Peanut Butter (branded)</td>
<td>Broccoli</td>
</tr>
<tr>
<td>Eggs</td>
<td>Watermelon</td>
</tr>
<tr>
<td>Yoghurt (branded)</td>
<td>Grapes</td>
</tr>
<tr>
<td>Granola Bar</td>
<td>Raisins</td>
</tr>
<tr>
<td>Banana</td>
<td>Goldfish (branded)</td>
</tr>
<tr>
<td>Toast</td>
<td></td>
</tr>
<tr>
<td>Froot Loops (unbranded)</td>
<td>Lays chips (branded)</td>
</tr>
<tr>
<td>Juice Box (branded)</td>
<td>Cookie</td>
</tr>
<tr>
<td>Lucky Charms (branded)</td>
<td>Kit Kat (branded)</td>
</tr>
<tr>
<td>Froot Loops (branded)</td>
<td>Fries (unbranded)</td>
</tr>
<tr>
<td>Doughnut</td>
<td>Ice Cream</td>
</tr>
<tr>
<td>Cupcake</td>
<td>Cheetos (branded)</td>
</tr>
<tr>
<td>Pop tarts (branded)</td>
<td>Coca-Cola (branded)</td>
</tr>
</tbody>
</table>

5.5.2. Gamified Data Collection

During the research session, children were asked to play through the custom built advergame. A laptop was used for game play, provided by the researcher. Children used the track pad and arrow keys to navigate through the instructions and gameplay. Instructions were provided verbally and in the digital environment. During the game, children were instructed to move about the environment as the avatar, catching the healthier foods while avoiding the less healthy options. Game play was recorded using screen capture software (Capto) which allowed for subsequent review and coding of the data at a later time. The game allowed me to capture exactly which foods children selected and avoided, including whether that food was branded or unbranded, healthy or unhealthy. Game play data was input into Dedoose for analysis against interview data.

5.5.3. Approach to Analysis of Gamified Data

Data from the game was coded according to the recorded game play sessions. Each specific decision made in the game was coded in a spreadsheet as either correct (healthy food selected or unhealthy food avoided) or as an error (unhealthy food selected or healthy food avoided). During this time, I also developed a scoring system for gameplay. While the children would need to catch seven healthy foods during each round in order to finish the level (giving them a total of 14 healthy foods), they also made a number of errors, avoiding healthy foods and selecting unhealthy foods. I subtracted a point for each of these mistakes. These scores would added to scores from respondent
interviews. However, during the data cleaning process patterns began to emerge in the data – one of which being the consistent avoidance of a bagel. After speaking with children in debrief sessions, it was decided that the bagel should be removed from the data set and should be excluded when calculating scores. Similarly, a pattern emerged regarding the granola bar (which I had originally coded as healthy, but children were avoiding). However, follow up conversations with respondents found that children were activating their nutritional knowledge and avoiding the granola bar based on the presence of chocolate. The inclusion of Goldfish crackers represented yet another possible issue identified while cleaning – discussions with children found that they had differing views on whether or not Goldfish were healthy or unhealthy snacks. Because Goldfish represented one of the few branded, healthy (relative to the more obvious HFSS foods) snacks available, it was decided that it should not be removed from the data set.

5.6. Pre-Game Play and Post-Game Play Interviews

Pre and post-game play interviews allowed me to address my research questions, specifically questions around media literacy. While the interview questions did function somewhat like questionnaires for research questions R2 and R4, the questions around media literacy provided qualitative insights on whether children understand the nature of the games that they played online, whether they questioned persuasive games (educational or other) and shed light on what children consider to be online games. The interviews also allowed me to investigate questions R2 and R4 in combination with game play data. By comparing respondents’ game play data and interview responses, I was able to determine whether children recognized brands within the game and whether that affected the foods they selected (R2) as well as address whether children’s game play experiences and success within the game influenced their preferences in real life (R3).

One-on-one open ended interviews were chosen as a method of data collection in part because the participants in the study were children, many too young to read. While the previous studies (Dias & Agante, 2011; Harris, Schwartz, et al., 2012; Mallinckrodt & Mizerski, 2007; Pempek & Calvert, 2009) that I had reviewed used questionnaires rather than interviews, the age of my study participants meant that relying on them to read would be problematic. Previous research has found that mixed methods approaches can be a helpful strategy when conducting research with children, as they
have limited concentration spans (Lobe, Livingstone, Olafsson, & Simões, 2008). In addition, as this was a pilot study, I wanted to use open ended interviews to allow for the possibility of flexible conversations which included questions that could change or evolve through the course of my study. A semi-structured one-on-one interview format allowed me more time to connect with and build trust with the study participants, and to establish a more flexible, conversational style which allowed me to provoke thoughtful responses. Additionally, research has shown that the engagement level of the participants during the interview process is thought to aid in helping researchers understand participants’ perspectives (Gibson, 2012), which is particularly important when conducting research with children. Knowing the engagement level of the participants also could help me determine whether the children were paying attention or putting forth their best effort in answering my questions. Interviews were helpful in determining whether or not the children needed prompting or clarification with questions or visual aids, and enabled me to ease any anxiety or social desirability effect that might occur during game play. One on one interviews allowed more opportunities to reassure children that there were no right or wrong answers and ensured that I was able to obtain and maintain their continued assent. This structure also helped to break up the research session, both in terms of time and tasks. Additionally, the semi-structured nature of the interviews yielded some very interesting qualitative insights which informed my approach processing data after data were collected (discussed in greater detail in the next chapter where I present findings).

Research was undertaken using semi-structured interviews before and after study participants played the custom built advergame. Data were collected with one child at a time. The semi structured pre-game interviews gathered information about media literacy as well as the children’s current understanding of healthy and unhealthy foods. To gain insights about children’s media literacy, I asked the children if they played online games and what kind of games they play. I also inquired about whether or not the children knew where the games they played came from, and who put them online, as a way of gauging their media literacy. After this, I sought to learn about children’s level of nutritional literacy by asking the children if they could name three healthy foods (see Figure 3, p. 103) and three unhealthy foods. An example of the semi-structured interview questions can be found in Appendix B.
Post-game interviews assessed the child’s understanding of the intent of the game, what they learned from the game, what foods/brands they recognized from the game (brand knowledge or marketing literacy), and whether or not the game influenced their food preferences. The post-game interview questions also included an opportunity for children to choose the top three snacks that they would hypothetically like to eat from the game. Pictorial cues were utilized to help the child remember the foods that they had seen during the game. The photos of the foods used during the interview session were the same images used in the game.

5.6.1. Approach to Analysis of Pre and Post Game Play Interview Data

Interviews were audio recorded (except in the case of one participant who opted out of recording) and transcribed after the session. They were then imported into Dedoose to be coded and analyzed. While it hadn’t been my intention to quantitatively code responses, it was possible due to the responses and the form that they took. Protocol was designed with both questions that could be subject to quantitative analysis (Ex. Pre-test interview question 1. Do you like playing games online?) as well as questions that would be more appropriately analyzed qualitatively (Ex. Post-test interview question 1. What do you think you’re trying to do in the game? Why?). Most questions were designed to be administered like a questionnaire – however responses leant themselves to a quantitative analysis. Some interview questions were also scored. Children were asked during the pre-game interviews if they were able to able to name three healthy foods and three unhealthy foods. Successful answers were scored (one point was awarded for each correct healthy or unhealthy food) and compared to game play for consistency. These scores were also added to game play scores to determine children’s overall performance scores in the study. In order to confirm whether children were correctly identifying foods as healthy and unhealthy in the game (rather than just struggling with the functionality of the game), they were also asked in post game interviews to name three items from the game that they considered healthy. While children overwhelmingly named foods that were HFSS for their unhealthy top-of-mind choices and fruits or vegetables for their unhealthy choices, answers were also confirmed using Canada’s Food Guide.
5.7. Recruitment and Participants

Ethics clearance was secured prior to beginning recruitment for the study. Because the study was conducted with minors, extra care was taken to ensure their privacy and comfort, which was noted in the ethics application. Parents were well informed of any possible risks of the study, though the project was classified as of minimal risk to participants. Individuals (parents and children) were also informed of their right to decline specific modes of participation including being recorded during the interview or having game play recorded. Extra care was given to ensure that consent was treated as an ongoing process – that is both given and maintained throughout the research session and beyond (Einarsdóttir, 2007). To minimize social desirability effect during the game play and interviews, children were regularly reassured that there were no right or wrong answers.

5.8. Other Analytic Considerations

Game data was put into Dedoose, including the final, tallied scores of the respondents. Interviews, once they were transcribed, were also into Dedoose. Using this program, I was able to code interview data and compare it to the game play data. Scores from the gameplay data were combined with scores from the interviews (pre-game interview questions 4-5), which awarded each healthy food and unhealthy food that children were able to name top of mind one point. The combination of these scores led to children’s final performance scores in the study, as well as their final nutritional knowledge assessment.

5.9. Conclusion

This chapter has explained the rationale behind my chosen methodologies. Material about the relationship of advergaming to food preferences and choices offered a rationale for attempting to use advergames to have a positive impact on healthy food choices in young children. A review of limitations and unanswered questions in previous research yielded insights about why I pursued the questions I have in this thesis. An overview of how various aspects of my research questions were operationalized through my methodological choices then set the stage for a more in-depth discussion of game design (including food selections), as well as pre and post-game play interviews.
As the advergame used in this study was custom built, this chapter has also provided rationale for how the game was designed and what purpose it served. Game design was informed by previous studies as well as game theory, and research on the general characteristics of successful casual games. The concept of flow and creating a game that could induce flow with users was the most important influence in my game design. This is because engagement, as well as the opportunity to heuristically learn from game play were the most important elements of the study. Within this chapter, I have detailed why these particular methods were the best course of action to answer my research questions. After outlining the approach taken in developing the game as well as pre and post-game play interview guides, I described the data which resulted from use of each method, as well as the analytic approach applied to each data source. Through a discussion of the benefits of a mixed methods approach, I highlighted the planning and influences that went into designing the interviews. As detailed in this chapter, one-on-one semi-structured interviews were used instead of questionnaires or focus groups in order to form a better, stronger rapport with the children in the study, as well as to keep conversations flexible. In the next chapter, I present and discuss my findings.
Chapter 6. Findings: Analysis and Discussion

6.1. Introduction

The last chapter explained how and why I chose semi-structured interviews and a custom built advergame in order to conduct my research, and I provided an overview of the approaches I took in working with the data I collected. In this chapter, I present and discuss my research findings. I begin by outlining the strategies I used to recruit study participants, and provide an overview of consent procedures I followed. After providing an overview of the study participants, I go on to present and discuss my study findings, which are organized around three themes: (1) media and marketing literacy, 2) brand effects and preference formation and 3) nutritional literacy). These themes directly relate to my research questions, with media and marketing literacy discussions involving the investigation of R1, brand and preference formation encompassing R2 and nutritional literacy corresponding closely to questions R3 and R4. This chapter also highlights limitations of the work I have undertaken, and ultimately argues for the need for further research in the form of a full-scale research study, to address limitations and replicate results. The chapter concludes with suggestions for future research.

6.2. Participants

Recruitment was conducted primarily online, though flyers promoting the study were also placed in several libraries and community centres across the lower mainland. Interested parents were encouraged to reach out via email or phone to be considered for the study (see Table 6.1). Procedures were explained to parents upon initial contact and again at the beginning of the session before they signed the consent forms. The consent form plainly outlined the project and study procedure. Verbal assent was obtained from the child participants, who were regularly informed that their participation was voluntary and that they could withdraw at any time. Because the research objectives of this study could only be achieved if participants were able to make independent decisions and take part in active game play, children that were not able to complete the tasks involved in the study due to developmental/learning disorders were excluded.
Table 6.1   Means of Recruitment

<table>
<thead>
<tr>
<th></th>
<th>Contacted</th>
<th>Participated in Study</th>
<th>Successfully Recruited From Platform (%)</th>
<th>Proportion of Respondents Recruited from Platform (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook</td>
<td>9</td>
<td>8</td>
<td>89%</td>
<td>47%</td>
</tr>
<tr>
<td>Craigslist</td>
<td>8</td>
<td>5</td>
<td>63%</td>
<td>29%</td>
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<td>Flyers</td>
<td>6</td>
<td>4</td>
<td>67%</td>
<td>24%</td>
</tr>
<tr>
<td>Total</td>
<td>23</td>
<td>17</td>
<td>74%</td>
<td>100%</td>
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</tbody>
</table>

Research sessions took place in numerous publically assessable areas in Vancouver, Burnaby and Coquitlam, including community centres and libraries. In total, 17 children between the ages of 5-8 participated in the study. Children were recruited from across the B.C. lower mainland and research sessions took place between April 17 and May 30, 2017. See Table 6.2 for the gender distribution of the respondents. The average age of respondents was 6.65. Children who participated were rewarded with an incentive of $10 with the agreement of a parent.

Table 6.2   Participant Demographics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>Respondents</th>
<th>Respondents (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
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<td>10</td>
<td>59%</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>7</td>
<td>41%</td>
</tr>
<tr>
<td>Age</td>
<td>5</td>
<td>2</td>
<td>12%</td>
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<td>6</td>
<td>5</td>
<td>29%</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>7</td>
<td>41%</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>3</td>
<td>18%</td>
</tr>
</tbody>
</table>

6.3. Findings

Below I present an analysis of the data that was collected from the interviews and game play sessions. In keeping with the four broad research questions of this study, findings have been split into three comprehensive themes: 1) media and marketing literacy (research question 1) 2) brand effects and preference formation (research question 2), and 3) nutritional literacy (research questions 2 and 3) Findings below are presented in relation to these three themes.
6.3.1. Media and Marketing Literacy

The media literacy component of this study sought to investigate whether or not children understand the intent behind advergames or learning games. Media and marketing literacy was determined through an examination of children’s understanding of media sources and intention during the pre-game interview and again following game play. To investigate this, I first considered children’s game play practices. I asked children if they played games online, what kind of games they liked to play and if they knew where these games came from. Responses from these interview questions, suggest that most children may have difficulty understanding what an online game is, as well as the purpose behind it. While the majority (n=16, 94%) acknowledged that they play online games, there was notable confusion around what constitutes an online game. For example, 29% of the children (n=5) did not believe games on an iPad, tablet or phone to be online games, where as I defined online games as games that needed internet access (either to download, update, or actively play). This is an important finding, as online games offer unique opportunities to interact with children and gather information about their users. While children may have been warned by parents or guardians about commercial websites (which may also feature advertising breaks or warnings in their games), children may be less aware of advertising content when an advergame is removed from the online space and presented as an app, downloaded game or standalone game. This is important, as children who do not grasp that the games they play could have been taken from the online context may not be as critical of their content. This is also relevant as many online websites are increasingly encouraging children to download advergames so they can be played even when not on commercial websites (Dahl et al., 2009). When asked if they played online games the children responded they did not – however, when asked if they played games on an iPad, tablet or phone, they confirmed that they did. This finding suggests that the children in my study may not understand how to classify the media that they interact with or may not properly conceptualize the online environment. This speaks to a general lack of media literacy, indicating that these children lack knowledge about where online games come from and how they are accessed. This lack of media literacy demonstrates that children may not think critically about where the media they consume comes from (whether they are educational sites or commercial), or what the intent behind it may be. This may suggest that they do not activate whatever defenses they may already have when
playing online games, as they do not question who created them or why. Given their ages, this was not surprising.

The next concept that I investigated was whether or not children were aware of advergaming as a promotional environment. Surprisingly, while previous studies have found advergames to be tremendously popular (Alvy & Calvert, 2008; Lee et al., 2009; Moore, 2006), only 25% (n=4) in my study mentioned playing branded games. Of those children who mentioned advergames, only one mentioned a game specifically relating to a food company (McDonald’s). While advergames have been said to be tremendously popular with children (Moore, 2006), children in this study seemed to have an extremely limited exposure to food advergames or a lack of awareness of the brands that are represented in their games. When questioned about who created or sponsored their games, 65% (n=11) of the children indicated that they did not know where their games came from. Three of these children were boys, while eight were girls. Age did not have an impact on whether or not the children knew where their games came from. Roughly one-third of the children (n=6, 35%) claimed to find their games themselves with no help from their parents through a range of strategies such as going to websites of toys they like, following up on advertisements for digital games in magazines, or looking them up on Google. Age did not seem to influence these answers, though almost all children who claimed to find their own games were boys (n=5, 83% of six children who reported finding games on their own). None of the children gave any notion that they understood the commercial intent of the games they play, including the children who played branded games. This evidence suggests that children aged 5-8 do not have a strong understanding of who creates the media they consume, particularly when it comes to online games.

Similarly, when asked about the custom advergame for health designed for this study, the respondents were unable to recognize the educational intent of the game. There was no clear evidence that the participants understood the intention was to be an educational game. None of the children could identify the educational purpose behind the game, despite demonstrating that they understood the rules and could complete the goal of the game. Instead, when questioned about the purpose behind the game, rather than recognizing the pedagogical aim, most restated the rules or goals such as, “Collect healthy food for the girl so she can be healthier” (Respondent 12, female, age 7), or “To avoid all the yummy junk food” (Respondent 16, female, age 8). I interpreted these
responses as not understanding the intent behind the game. When asked about the intent of the game, only 12% (n=2) were able to recognize that the game had lessons that could translate into real life. One of the children remarked “[The game] …it helps you, or the girl [in the game] eat healthy stuff” (Respondent 2, male, age 6). While another said, “If it was real life it would be even more important. You’re trying to get the person healthier by eating healthy stuff” (Respondent 5, male, age 6). While this is an exploratory measure of children’s understanding of educational intent, it is consistent with An and Stern’s (2011) findings from their studies about advergames, which illustrated that young children are unlikely to question the purpose or intent behind the games they play, regardless of whether that intent is educational or commercial. There were no significant differences in how children of different ages or sexes perceived the intent of the game. In fact, the two children who related the game to real life were both 6, below the average age of participants in the study.

### 6.3.2. Brand Effects and Persuasion

An exploratory research question of this project was to investigate the impact of branding and its relationship to preference formation within the game play environment. While showing children photos of the foods that had been featured within the game post game play, I asked if they recognized any of the brands or packages. During the interview portion of the study, while only a minority (n=4, 24%) of the children said that they knew what a brand was, almost all (n=16, 94%) of the children could recognize multiple brands within the game. While there were 12 branded options in the game (eight unhealthy options and four healthy options), most children avoided them during gameplay, choosing an average of only three branded items. While marketing appears to have affected children’s brand awareness, as they were able to name and recognize brands, it did not subvert the goal of the game – branding and brand recognition did not impact children’s ability to discriminate between healthy and unhealthy foods. However, it should be noted that the most popular unhealthy food selected during game-play was a branded food. Lays potato chips were chosen by 35% of the children (n=6), followed by fries, which were chosen by 18% (n=3). It should be noted that the fries were in a red and yellow package similar to McDonald’s but not actually branded as such.

While children avoided most of the unhealthy foods regardless of brand, healthy foods that were packaged (though not necessarily branded) seemed to cause some
confusion amongst the children, who showed less confidence in these foods compared to the whole foods options (fruits and vegetables). In terms of the healthy foods in the game (which included apple, orange, milk, peanut butter, eggs, yoghurt, granola bar, banana, toast, bagel, cheese, broccoli, watermelon, grapes, raisins and Goldfish), children made considerably more mistakes in the game when it came to packaged or branded healthy foods. Kraft Peanut Butter was the most commonly avoided healthy food, with 85% (n=14) opting to avoid it, followed by Goldfish crackers (n=9, 62%),

Yoplait yogurt (n=8, 47%), and milk – which was packaged but not branded (n=7, 41%). This represents almost all the healthy branded foods in the game, (Sun-Maid raisins were the other branded healthy food, which were selected by 77% of the children (n=13). See Figure 2 (p. 100) for a more detailed description of the packaged foods selected and avoided. However, raisins were still chosen less often than almost any of the unpackaged or whole healthy foods that were seen by participants.

There may be several reasons for confusion about the branded, healthy foods contained in the game. Views of what constitutes nutritious foods and healthy foods are both tempered by influences such as norms and standards, as well as advertising. Although branded peanut butter was included as a healthy food here in keeping with its inclusion in the Canada Food Guide (2011), of all the foods categorized as healthy foods in the game, it has the highest fat content per portion as well as a high calorie count per portion, which would leave many adults questioning its inclusion on a list of healthy foods. Additionally, as peanut allergies can be fatal and norms and standards until quite recently advocated avoidance of nut products for young children (Rangaraj et al., 2004), it is possible that many children in the study population have had little exposure to peanut butter. Avoidance of other healthy foods—such as milk—are a bit more perplexing, but may reflect west coast trends toward lactose free diets (which would also influence views of yogurt consumption). Given that ideas about nutrition and what constitutes healthy foods vary, it is not surprising, that the granola bars were avoided, particularly because they did contain chocolate. While the unbranded and unpackaged granola bar was avoided by 77% (n=13), children who were questioned about this choice confirmed that this course of action was based on the visible presence of

11 Goldfish crackers were seen by 14 of the children. As they were the last item in the food selection cycle of the game, they were not seen by children who completed the round quickly.
chocolate in the bar – therefore children were properly activating their nutritional knowledge when making this choice.

Notwithstanding the comments above concerning avoidance of peanut butter and milk products, these findings may suggest that children associate packaged foods with unhealthy choices, regardless of the contents of that package. The group’s avoidance of milk may provide further evidence that it is the presence of packaging, rather than branding or brand recognition that may impact children’s ability to properly discriminate healthy food from unhealthy food. Given the small number of study participants as well as socially variable views of what constitutes healthy foods, these findings should be treated as experimental, and ideally will be followed up in a future study designed to assess the impact of packaging- both branded and unbranded- on food choices.

As the most commonly avoided healthy foods in the games were all packaged or branded foods, in my study population there is no evidence that the presence of brands influences young children’s food preferences in a positive way. As healthy packaged foods were avoided more than other healthy foods, this indicates that children tend to perceive packages and brands as being less healthy than whole foods. In terms of real life choices (as evidenced in the interviews), there was little evidence of a preference for branded snacks or breakfast items. When asked what foods from the game children would like to eat in real life, a minority (n= 5, 29%) listed at least one branded snack within their top three choices. Sixty percent (n=3) of the children who selected a branded option (n=5) within their top three snack choices chose unhealthy branded options. There was no visible relationship between those who selected branded items during the game and those who picked branded foods as snacks they would like to eat in the post-game interview. Although previous studies have suggested there is a relationship between advergame game play and food preferences, this may not hold true for very young children, and findings from this pilot study suggest that this area too warrants further investigation amongst this age group in the context of making healthy food choices.

While the limited number of children who participated prohibited the use of cross-tabulations (which make it possible to assess the level of significance of findings), there are overlaps between children who demonstrated brand knowledge in interviews and those who performed well in terms of nutritional knowledge. The children (n=4, 24%)
who answered “yes” when asked if they knew what a brand was were amongst the top performers in the study, with scores of (16, 19, 18 and 18) vs. the average score of 12.7.

Figure 2. Healthy Packaged Foods Avoided vs. Selected

*Note.* This figure illustrates the packaged foods in the game, plotting those that were selected against those that were avoided. Data here is representative of the first time the children encountered that food.

Those who said that they knew what a brand is tended to perform better than average. They made fewer mistakes in their selections overall. However, it should also be noted that these were some of the oldest children within the study, all either seven or eight years old. Their understanding of brands did not stop them from selecting brands during game play. Out of 12 possible branded items (four branded healthy and eight branded unhealthy), all children (n=4, 24%) selected two healthy brands each – with one child additionally selecting one unhealthy brand, and they avoided unhealthy foods more frequently than the average participant. In contrast, children who indicated they did not know what a brand were more likely to avoid packages. While all children who indicated that they knew what a brand was (n=4, 24%) selected milk as healthy, children who did not know what a brand was showed more varied reactions to the appearance of milk in the game: with 46% (n=6) selected milk and 54% (n=7) avoided it. While it is not possible to draw any conclusions from such a small sample-size, the findings here may indicate that packaging, rather than specific brands, seem to affect children’s perception or nutritional assumptions at least up until they develop an understanding of brands. These findings
may suggest that there could be a relationship between brand knowledge and nutritional knowledge, which warrants further investigation. However, in the event that a relationship does exist, it may also be a reflection of socio-economic factors, such as educational level of parents. Or, it may also be that children who indicated they know what a brand is may be more physically adept at game playing or simply more knowledgeable about healthy food choices as a function of age. In a future, larger study, whether or not there is a relationship between brand knowledge and nutritional knowledge should be further explored, with particular reference to other factors which may also explain this phenomenon.

6.3.3. Nutritional Literacy and Learning Potential

Children’s existing nutritional knowledge was assessed both through their ability to name three healthy foods and three unhealthy foods off the top of their mind during the pre-test interview, and through their selection of foods off the top of their head during the post-test interview. Foods children named during the pre-game play interview and during game play as healthy foods were categorized using Canada’s Food Guide. Children were assessed by score (for a detailed description of how gameplay scores were calculated refer to section 5.8). Each child had a possible nutritional knowledge score of 20, though it was possible to receive a negative score. No child scored 100% – the average was 12.7 points. The lowest score was -7 and the highest score 19. While children on average were able to avoid unhealthy foods with ease, they often lost points by avoiding healthy foods as well. This, combined with children’s general avoidance of packaged foods, suggests that children ages 5-8 may have only a very baseline idea of what foods are nutritious. When discussing nutrition, while participants generally understood that it was important to eat well and avoid foods that are bad for you, very few of them could say why. Reasons such as “so you can be happy” (Respondent 15, female, age 7), or “because if you’re not healthy you won’t have a good life” (Respondent 11, male, age 8) were prevalent, with a few children admitting that they did not know. However, two children (n=2, 12%) did name specific risks associated with a poor diet, with one answering that eating well was important “Because if you don’t eat healthy food and you only eat junk food you can get very sick – like diabetes” (Respondent 17, male, age 7), and “So then you don’t get cavities” (Respondent 5, male, age 6). These findings demonstrate that while children may be able to discriminate
between healthy and unhealthy foods on a superficial level, they may not understand the actual health benefits of a healthy diet and ramifications of an unhealthy diet. However, these findings do suggest that it is possible to use a health based advergame to assess children's current nutritional knowledge.

While I had hoped for more heuristic learning opportunities through the course of play – particularly through trial and error, children’s strategies subverted many of the learning opportunities in the game. There were very few possibilities to determine whether or not feedback given in the game changed the way the children played, largely because they avoided the exploration aspect of the game in favour of avoiding any foods they suspected to be unhealthy, opting instead for mostly raw vegetables or fruits. This is not surprising, as when asked to name healthy foods, all children listed some form of vegetables or fruit amongst their top-of-mind choices (see Figure 3, p. 103). This was also reflected in their game play – the most commonly chosen healthy food for breakfast food was an apple (n=17, 100%) followed by a banana (n=16, 94%), while the most popular snack foods were carrots (n=16, 94%), broccoli (n=15, 88%) and grapes (n=15, 88%). Most children preferred to wait for foods that they knew were healthy rather than take a chance by selecting a food that they were unsure about. There was no conclusive evidence to suggest that children responded to the negative feedback they received when choosing unhealthy foods.¹²

Interestingly, while most children were able to select healthy foods consistently throughout the game, during the post-game interview when given the hypothetical choice to eat any three foods from the game, 41% (n=7) of the children still chose at least one unhealthy food, with a minority (n=4, 24%) of the children choosing entirely unhealthy options. Of the children that chose entirely unhealthy foods to eat in the post-test interview (n=4, 24% of the sample), half performed well below average on the game, with scores of 9 and 11 respectively, while the other half performed higher than average at 15 and 16 points (see Figure 4, p. 104). While over half (n=10, 59%) of the children selected only healthy snacks in the post-game interview and 47% (n=8) said they that believed they had learned from the game, nearly half (n=3, 38% of those who said they

¹² The sample from this project did not yield enough instances to properly investigate whether children adjusted their gameplay behavior based on the negative feedback they received when selecting unhealthy foods.
had learned from the game) still showed a preference for unhealthy snacks in the post-game interview.

![Figure 3. Healthy Foods Named Top-of-Mind](chart.png)

**Note.** Chart includes first three foods children named as healthy foods. Additional foods (after 3 had been named) were excluded. In cases where children were unable to name three foods (n=2, 12%), all options they could name are included.

This finding confirms Agante and Dias’ (2011) results, which illustrated that the presence of nutritional knowledge in young children does not guarantee an intention to follow a healthy diet, or a preference for healthier foods. This contrasts what has been found in studies with adults, with systemic reviews showing a significant, positive, though weak relationship between nutrition knowledge and diet (Spronk, Kullen, Burdon, & O’Connor, 2014).
6.4. Limitations and Insights for Further Research

As a pilot study, this preliminary research has identified some research design challenges which can be addressed in a subsequent iteration of the study. First, a stronger rationale for which food group foods are allocated to might allow for less ambiguous food selections. Foods in the game should have likely been allocated to groups based on actual nutritional information as opposed to Canada’s Food Guide although even this approach is subject to interpretive differences. Foods that may have been considered more ambiguous such as peanut butter (in spite of its inclusion in the Canada Food Guide), granola bars or Goldfish should not have been included. Additionally, foods that cannot be classified as healthy or unhealthy without considering differences in brands, nutritional makeup or flavouring (such as yogurt or peanut butter) could be excluded in the interest of creating more clear cut findings. Interviews with parents might help researchers to determine to what extent children’s food preference patterns follow that of parents, or are influenced by other factors such as advertising and brand preferences, home food habits (such as gluten or lactose avoidance) or social norms (e.g., nut avoidance). Pre-testing the game with parents and children would likely also help remove the ambiguity from some of the images used (e.g., a bagel that was mistaken for a donut by some).
Because this study used hypothetical food choices as opposed to actual food choices, it may be less useful in assessing children’s actual food preferences. Food choices were expressed only verbally or using the pictorial cues, as opposed to having children select snacks in real life. Neither a child’s pre-game eating habits nor intake, that is, the amount of each food that would be consumed post game-play, were taken into consideration. Further research needs to be undertaken to validate that children will act on the choices which they indicate verbally, a phenomenon which is complicated by the fact that at the age of children studied, food choices are typically mediated by a parent. Additionally, food preference choices were made directly following game play – limiting my understanding of how game based learning may affect children after significant time has passed, or repeated exposure to game play (as might occur in real life) have occurred. In particular, future studies should look at the long-term and medium-term effects of advergames and games for health.

6.4.1. Game Design Limitations

The game was designed without any actual input from children. As a result, I experienced some unexpected confusion with certain products, such as the bagel, which 82% (n=14) of the children avoided. I learned – afterwards during interviews and debriefing – that many children had thought it was a doughnut. The choice of foods or choice of food depictions could have been improved by incorporating children’s feedback into the game development. Additionally, working with nutritionists, educators or even psychologists could have improved the design of the game to ensure it was the most appropriate method for nutritional education, and to ensure a more nuanced assignment of foods to healthy and unhealthy categories.

6.4.2. Methodological Limitations

This study was conducted with a relatively small number of children, which means my findings are exploratory only. The small number of participants also were likely not a representative random sample. The sample was limited to Vancouver and the surrounding area. This limitation is significant, as the Vancouver School Board has put substantial resources into nutritional literacy, and the children involved in the study may for this reason have more education in terms of nutrition than the average 5-8 year old. Additionally, the children involved in my research were brought by parents who had
voluntarily contacted me regarding the study, knowing it would involve nutrition and games. This may have resulted in a sample that skewed towards parents who were attuned to their children’s nutritional knowledge or households with higher nutritional literacy. Because parents who responded to the ad were aware that it would involve game play, this may also have meant the sample had more favourable attitudes and experiences with digital games than the general population. For all of these reasons, I cannot say with any measure of certainty that my findings are significant, and they certainly are not generalizable.

While caution was taken to avoid social desirability effects, children’s choices may have been influenced by the presence of their parents. Parents sometimes interjected to encourage their children during interviews (e.g. prompting children with situational clues or referencing situations at home where certain foods may have been consumed) which was helpful in some cases, but may have influenced results. Future studies could potentially be conducted without the presence of parents. In addition, because the study was undertaken with younger children, game play was reduced to a restricted period. As a result, most players only engaged with the game for two minutes at a time on average. The short exposure time may have affected children’s ability to achieve a state of flow, which may influence how they felt about the game or how they learned through gameplay. Additionally, the single game play session may have made it difficult to create any significant changes in behavior or preferences. Scholars have noted the difficulties in influencing food preferences in a single interaction due to intrinsic factors, such as predispositions to certain tastes or flavours which affect food preferences the most (Contento, 2008 as cited in Dias). Future studies should consider these factors and potentially develop games/studies with longer engagement periods and multiple game play sessions that would more robust evaluation of some of the variables I have attempted to explore here.

Throughout the data collection process, it became clear that other insights could be gleaned from the qualitative data. Questions arose about why the children selected certain foods and avoided others, which added new layers of understanding to the study and allowed me to clean the data by removing variables such as the bagel that seemed to be misunderstood by the majority of the participants as a donut. As the value of qualitative data, it also became clear that additional qualitative data collection might have been an asset. For example, interviews with parents about existing food habits
(e.g. whether or not peanuts had been avoided as a potential allergen, and whether or not they perceived peanut butter as healthy or unhealthy) would have been an asset. In the future, it could be useful to collect more qualitative data through less structured interviews in order to gain a broader understanding of children’s opinions and motivations, both in terms of the game and their real-world behaviors and attitudes.

Some of the most interesting results from the study, such as children’s avoidance of packaged foods, either healthy or unhealthy, should be further explored in future studies. A particularly interesting finding was that many children avoided milk – a healthy but packaged item. As this was an unexpected result, there were no foods other than milk that were packaged, unbranded and healthy to compare this to. Whether or not children form their perceptions of healthy vs unhealthy foods, based on packaging, although it fell outside the scope of questions addressed here, is something that warrants further exploration. Due to the small size of this study it is not possible to draw conclusions regarding packaging and nutritional understanding, however, findings point to a possible relationship between the two that should be further explored in a full-scale future research project.

It was difficult to gauge media literacy and children’s understanding of the intent behind games (either educational or marketing). There may have been more insightful ways to gauge whether children really understood the nature of the games they play. Further questions around the games the children play (either to the parents or children) or even exposure to marketing based advergames could have better gauged whether children recognize advertising when they see it integrated into a game. Whether the children could recognize the custom-built game as educational is not indicative of whether they would understand the persuasive marketing intent behind an advergame. Future studies should disambiguate education and advertising when examining children’s media literacy.

6.5. Conclusion

While my pilot study resulted in interesting findings regarding the potential of games to both assess children’s nutritional knowledge and impact their food preferences, my sample size was too small to yield definitive results. Nonetheless, in keeping with my aim of undertaking a pilot study to explore the efficacy of my research
design on a small scale prior to conducting a full-scale study, I have gained numerous insights about both game design and study design, which I hope will inform future efforts to explore the research questions addressed here and future efforts to implement similar studies. While games must have rules and a way to win in order to be considered games (Juul, 2005; McGonigal, 2012; Suits, 1978), games that promote learning through play must find a way to encourage exploration if children are to learn through trial and error. Future studies undertaken in an effort to explore whether or not advergames can be used to improve nutritional knowledge should incorporate these insights in game design, and incorporate findings from other studies concerning the limitations of single game play sessions in influencing change in research designs.

When studying the online branded environment and the influence of advergames, special attention should be taken to research children’s brand knowledge and whether or not packages (whether branded or unbranded) change children’s perceptions of healthy and unhealthy foods. As my findings, along with other studies about nutritional literacy have illustrated that children’s understanding of healthy vs unhealthy foods may not affect their preferences and actions when it comes to making food choices in real life (Dias & Agante, 2011; Naeneni et al., 2014), there may be a need for other means of education or action when it comes to helping children make healthy lifestyle choices.

This study has demonstrated the use of games as an inexpensive, customizable assessment tool for parents or teachers. But perhaps most importantly, these results suggest that children, despite their appearance at being nutritionally knowledgeable or media literate, may not always make healthy lifestyle choices, or be able to assess the intent of the media that they are consuming. In the wake of a growing childhood obesity crisis and the threat to children’s health, advergames and games for health require further research to fully explore how children process information learned from games and whether that affects their real-world behaviors.
Chapter 7. Conclusion

7.1. Chapter Summary

Throughout this thesis, I have argued for the need for further investigation into advergames for health as a possible strategy to fight fun food culture and reduce childhood obesity. In Chapter 2 I detailed the rise of fun food culture, explaining how and why children have come to be targets of the food industry and how marketers have sought to capitalize on the youth audience. This historical perspective explained how children’s food marketers have come to intertwine notions of fun, food and entertainment in order to engage children.

In Chapter 3, I explained how the fun food culture has given rise to advergames and argue that persuasive games hold tremendous potential to influence children’s behaviours and preferences through well designed procedural rhetoric. Additionally, I detailed how persuasive games are already being used by the children’s food industry in the form of advergames and why advergames represent a unique advertising opportunity for marketers to engage with children like never before.

Chapter 4 explored media literacy programs and regulation as responses to the obesity epidemic and the issue of food marketing aimed at children. Within this chapter, I detailed the regulatory and media literacy efforts that have been undertaken to combat the influence of food advertising to children. I also considered the multiple challenges involved in creating regulatory or cognitive defenses against advergames. Through a discussion of the limitations involved with regulation and media literacy programs, I argued for the need for new, more effective strategies to combat fun food culture and advergames in particular. Taken together, Part 1 provided an overview of the issue, as well as the context from which this study emerged.

In Part II, I argued for the use of games for health as an additional intervention to the fun food culture. I also suggested that it that may be possible to assess nutritional knowledge and promote healthier lifestyle choices through advergames. I then provided details about how I designed a study to explore the viability of using games to assess nutritional knowledge, and serve a means of education about healthy food choices.
In Chapter 5, I presented the literature review and previous studies that led towards the formation of this research project and the questions that I sought to address. This chapter sought to situate my research amongst the small body of research that has been conducted on the potential of advergames to promote healthy foods. Within this chapter, I introduced my research design and research questions, detailing the data collection strategy, how it was operationalized and how the data was analyzed.

Chapter 6 then explained the research process as well as the findings and analysis of my work. This chapter also discussed the limitations of my research design and suggestions for future research, should the study ever be replicated on a larger scale.

This study, while conducted on a pilot level, has illustrated the need for further research on advergames for health as a form of intervention. While the empirical evidence from this study may not conclusively illustrate the potential of advergames to influence children’s food preferences in real life, it does make a strong case for further research and the replication of this study on a larger scale. With a number of interesting and unexpected suggestions (such as children thinking of packaged foods as inherently unhealthy) that cannot be fully investigated through such a small base size, this study has provided evidence for the need for further research on how children think about foods and how games can serve as a tool for learning, assessment and behavior change.

7.2. Relevance of study and contributions

A key contribution from the study is the notion that proven nutritional literacy may not result in children making healthier food choices. While this also speaks to how games can be used as nutritional assessment devices, it further suggests that education may not be the key to encouraging children to make healthier lifestyle choices. The majority of the children involved in the study were able to demonstrate that they understood the difference between healthy and unhealthy foods, however, as previous studies on educational games have shown, it is possible for players to be successful in games by following the procedural rules without being persuaded by the game’s rhetoric (Smith & Just, 2009). As children could subvert the heuristic learning opportunities of the game, the persuasive messages of the game may have also been less effective than
they would have been with a different design strategy, such as more of an exploratory procedure. The results from the study add to the relatively small body of work concerned with advergames and advergames for health and will hopefully assist future researchers and game designers in creating better, more impactful games to aid in children’s wellness. The findings from my study do indicate the potential for using advergames to improve health among young children, however, findings also suggest there is a need to use them strategically in conjunction with other forms of intervention such as media literacy, rather than as an overarching response to children’s fun food culture or the larger problem of childhood obesity.

7.3. Summary and concluding remarks

Childhood obesity is a very complex, and at times, sensitive issue. As notions of fun and food have become embedded in western culture, it will take numerous strategic strategies to help children and parents think differently about the foods they eat and the media they consume. This thesis makes the argument for advergames for health as one of several possible responses, however, I caution against the idea that persuasive games can simply manipulate children into making long term behaviour changes. Persuasive games do have potential to motivate learning and improve education. Furthermore, previous studies undertaken show that persuasive games have the power to influence behaviour through procedural rhetoric. But are persuasive games the revolutionary tool that will lead children to make healthier lifestyle decisions? While the literature has shown that advergames are able to affect children on some subconscious level, are those the kinds of communications that we should be aiming for? Rather than attempting to influence children subconsciously, I propose that games for health be used to educate and assess – a tactic that will hopefully be used in tandem with others, such as media literacy and parental intervention. It is my hope that at the most basic level, games for health can be used as a tool for parents and teachers to help them understand children’s preferences and best inform healthy eating plans moving forward.
References


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Heart & Stroke Foundation. (2017). *The kids are not alright. How the food and beverage industry is marketing our children and youth to death*. Ottawa, Canada.


SET-BC. (2016). Coding in the Classroom.


The Standing Senate Committee on Social Affairs Science and Technology Senate. (2016). *Obesity in Canada: A Whole-of-Society Approach for a Healthier Canada.* Ottawa, ON.


Appendix A.

Examples of Advergames

**Kellogg’s Froot Loops Run-A-Wave**

http://www.frootloops.com/games/run-a-wave

Collect as many Froot Loops Bloopers as possible before being over taken by a wave.

![Image of Froot Loops Run-A-Wave game](image)

**Kellogg’s Birthday Blow-Out**

https://www.clubkelloggs.ca/games/birthday-blowout/

Prevent party guests from blowing out birthday candles by feeding them Froot Loops

![Image of Froot Loops Birthday Blow-Out game](image)
General Mills’ Cinnamon Toast Crunch *Milk River Run*
http://crazysquares.ca/games.html

The prerogative of the player is to stay ahead of the “giant crazy square” chasing them, while avoiding obstacles and doing tricks.

General Mill’s Lucky Charms *Shooting Stardom*
http://www.luckycharmsfun.com/

The goal is to use the shoot star charm to fly away from crows and keep Lucky (the spokescharacter) safe.
Appendix B.

Semi-Structured Interview Questions

Interview questions prior to game play

1. Do you like playing games online? (if yes, proceed to question 2, if no skip to question 4)

2. What games do you like to play online? (If brand oriented move to question 3)

3. Why do you think these games are online? Who made them?

4. Can you name three healthy foods?

5. How about three unhealthy foods?

Interview questions following game play

1. What do you think you trying to do in the game? Why?

2. Do you know what a brand is?

3. Did you recognize any of the brands/packages in the game? Which ones?

4. Do you feel like you learned anything from the game?

5. Can you name three foods from the game that you’d like to eat?

6. Can you name three foods from the game that were healthy?
## Appendix C.

### Healthy and Unhealthy Foods Featured in Custom Built Advergame

**Healthy breakfast foods:**

<table>
<thead>
<tr>
<th>Apple</th>
<th>Milk</th>
<th>Orange</th>
<th>Peanut Butter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard-boiled Egg</td>
<td>Yoplait</td>
<td>Granola Bar</td>
<td>Banana</td>
</tr>
<tr>
<td>Toast</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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### Healthy snack foods:

<table>
<thead>
<tr>
<th><img src="carrots.png" alt="Carrots" /></th>
<th><img src="bagel.png" alt="Bagel" /></th>
<th><img src="cheese.png" alt="Cheese" /></th>
<th><img src="broccoli.png" alt="Broccoli" /></th>
</tr>
</thead>
</table>

### Unhealthy breakfast foods:

<table>
<thead>
<tr>
<th><img src="cereal.png" alt="Cereal" /></th>
<th><img src="orange.png" alt="Orange Juice" /></th>
<th><img src="frootloops.png" alt="Froot Loops" /></th>
<th><img src="luckycharm.png" alt="Lucky Charms" /></th>
</tr>
</thead>
</table>

| ![Donut](donut.png) | ![Cupcake](cupcake.png) | ![Pop-Tarts](poptarts.png) | |
Unhealthy snack foods:

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Lay's" /></td>
<td><img src="image" alt="Cookie" /></td>
<td><img src="image" alt="KitKat" /></td>
<td><img src="image" alt="French Fries" /></td>
</tr>
<tr>
<td><img src="image" alt="Ice Cream" /></td>
<td><img src="image" alt="Cheeto's" /></td>
<td><img src="image" alt="Coca-Cola" /></td>
<td></td>
</tr>
</tbody>
</table>
Appendix D.

Recruitment Material

Sample verbal script following initial contact from parent/guardian

Hello XXX,

My name is Courtney Chu, and I’m following up on your request for information about my research. Thank you for your interest in my study. I’m currently a graduate student at Simon Fraser University working on my Master’s thesis investigating children’s games, nutrition and education. I would like to invite your child to take part in my research study. During this study, we will be examining the learning potential of games to educate and impact how children perceive certain foods, drinks and brands.

If your child takes part in this study they will be asked to play through a custom-made game that will help us assess which foods and beverages they see as healthy or unhealthy. To gauge the potential of the game to impact their nutritional knowledge, they will be asked a series of brief interview questions before and after the game play. The study should take no more than 30 minutes of your time. The knowledge gained through your child’s participation will help us understand how children learn about nutrition and whether educational games impact children’s choices and tastes. This game will also offer the opportunity for your child to learn about the nutritional value of some familiar foods and beverages.

As a university-based researcher, I abide by Tri-Council guidelines for the ethical conduct of research, and if you are considering having your child participate in this study, I will provide you with a consent form that explains the study and research process in greater detail.

You and your child’s confidentiality will be protected and you are under no obligation to participate. You or your child may withdraw from the study at any time – your child’s continued assent will be necessary for them to be included in the study. If it is something you are comfortable with, your child will also be offered a $10 incentive for their participation.
Sample email response following initial contact

Hello XXX,

Thank you for reaching out about my study. I’m happy to provide you with more information about the project. My name is Courtney Chu, and I am currently a Master’s student at Simon Fraser University’s School of Communication. The research study, which is titled, *The Issues at Play: Examining the learning Potential in Advergames and Nutritional Games for Children*, is a part of my thesis, and investigates children’s games, nutrition and education.

During this study we will be examining the learning potential of games to educate and impact how children perceive certain foods, drinks and brands. If your child takes part in this study they will be asked to play through a custom-made game that will help us assess which foods and beverages they see as healthy or unhealthy. To gauge the potential of the game to impact their nutritional knowledge, they will be asked a series of brief interview questions before and after the game play. The study should take no more than 30 minutes of your time. The knowledge gained through your child’s participation will help us understand how children learn about nutrition and whether these educational games or games made by food marketers impact children’s choices and tastes. This game will also offer the opportunity for your child to learn about the nutritional value of some familiar foods and beverages.

The information I record will not have your name or identity tied to it, and it will be viewed only by myself or my research supervisor. Data will be locked up in our research facilities.

You and your child’s confidentiality will be protected and you are under no obligation to participate. You or your child may withdraw from the study at any time – your child’s continued assent will be necessary for them to be included in the study. If it is something you are comfortable with, your child will also be offered a $10 incentive for their participation.

I have included a copy of the consent form for additional study details. You are under no obligation to sign the form. If you have questions or concerns after reading through the consent form, please do not hesitate to contact me.
Sincerely,

Courtney Chu
M.A. Candidate
School of Communication, Simon Fraser University
Verbal Child Assent Script

Hi xxx,

My name is Courtney and I’m a student at SFU. I’m trying to learn about healthy foods and games. I want to ask you to help me, but first I want to tell you a little bit about how you would do that.

Your parents/guardian let me know that you like games – I have new game that we thought you might like to try. It’s a game that you play on the computer and it’s about healthy foods and unhealthy foods. During the game you try to use the keyboard to catch healthy foods as they fall from the sky. We’ll be recording the screen of the computer to find out what foods you decide are healthy or unhealthy. I’ll ask you a few questions before and after the game about foods and games and record your answers, but no one will know what you chose during the game or what you said in your answers since I won’t be using your name when I tell people about my study.

Your parent/guardian says it’s okay for you to play my game and be in my study – but if you don’t want to, you don’t have to. Whatever you decide won’t make anyone upset, and if you want to be in the study now but don’t want to later, that’s okay. You can stop playing the game at any time. If there’s anything that you don’t understand please tell me so that I can explain it to you.

Do you understand what I said to you about my study? Do you have any questions for me?

If you think of a question later on you can have your parents/guardian call me or send me an email and I’ll let you know the answer.

Would you like to be in my study and play the game?
Children Ages 5-8 Needed for Research Study

The Issues at Play: Examining the learning Potential in Advergames and Nutritional Games for Children

SFU Master’s Student seeking children ages 5-8 to participate in a study on educational games and nutrition.

Does your child enjoy playing digital games and learning new things? This research project will involve asking children to play through a custom built digital game about healthy vs. unhealthy foods. Game play is expected to take no more than 30 minutes of your time.

Note: Due to the nature of this study children that are not able to independently answer interview questions and take part in game play will be excluded from this study. This includes children who are unable to complete the tasks involved in the study due to developmental/learning disorders.
Appendix E.

Debriefing Script

Hi xxx,

Thank you for taking part in the study and playing our game. You did a great job and I appreciate you taking the time to play. Do you have any questions about what happened during the game? Was there anything that you liked or didn’t like about it?

That’s all you need to do for the study, but remember, if you decide you don’t want to be a part of the study later on, you can tell your parents/guardian to let me know. And if you have any questions after you leave here today you can ask your parents/guardian to call or email me.

Thank you again for all your help!