

Testing the Mere Exposure Effect in Videogaming

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Testing the Mere Exposure Effect in Videogaming

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ABSTRACT

Due to proliferation of media and platforms it is becoming increasingly difficult for marketers to reach and engage consumers using traditional forms of mass media such as advertising. Marketers are turning to alternate forms of communication, such as brand placement in videogames as the games industry continues to grow. To date academic research appears inconclusive in terms of validating the use of videogames as a promotional tool. Moreover, there is a lack of empirical evidence concerning the effects on consumers and brands of marketing messages in the videogame environment.

This aim of this study was to investigate whether exposure to brand placement affects unknown brand likeability as a result of mere exposure for game players and game watchers in videogames. The study adopted a quasi-experiment between group design, with a Control, Watch Group and Play Group (300 participants in total) and a post exposure questionnaire. Results suggest some support a mere exposure effect which is that a frequently presented brand placement in a videogame can have a positive effect on players and watchers' brand attitudes, although they do not recall the brand.

This is the first empirical study to investigate brand placement and mere exposure effects in videogames. Theoretically, the study contributes to knowledge concerning brand placement processing in videogames and builds on the existing paradigms of MEE, low-involvement processing, implicit and explicit processing and brand attitude formation. For game developers and brand owners, the study has implications for marketing communications strategy, and graphic design elements for the placements, design of videogames and the most effective position for placements in a game.

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Chapter One

Introduction

1.1 Introduction

This chapter will outline the context for the study in terms of the UK media landscape and brand placement within the UK games market. Gaming platforms, game genres, UK gamer characteristics and e-Sports will be outlined. This will be followed by an explanation of the research problem, justification for the research, outline of the aim and objectives and outline of the thesis.

1.2 UK media landscape

In the UK, the media landscape has seen a number of changes in the last twenty years, such as media fragmentation, changing audience-viewing habits and growth of non-traditional marketing communications such as brand placement (Fill, 2013). This has resulted in significant changes to traditional communication and advertising models utilised by the media industry (Fill, 2013). Consequently, marketers and brand owners have been required to explore new ways to connect to their audiences and maintain visibility for their brands. This has raised the profile of non-traditional forms of marketing communications, such as brand placement, which is the central issue of this thesis.

These media changes have also been characterised by a growing significance of digital branding and advertising, and this is demonstrated by the rising investment associated with digital advertising and branding over recent years. By 2017, the UK digital advertising market was worth £11.55bn, which represented a 14% year-on-year increase, largely driven by the growth in smartphones (IAB, 2019).

According to the Advertising Association/WARC Expenditure Report, print newspaper advertising expenditure in the UK has more than halved since 2011. Full-year estimates based on the latest verified data show national print newspaper advertising spend has fallen 53.7% between 2011 and 2018 to £699m. This decline was larger at 59.5% to £585m for regional print news (Advertising Association/WARC, 2019).

Television advertising revenue for commercial broadcasters in the UK in 2018 was £11.3bn which represents a 4% decline in net advertising revenue (Ofcom, 2019). This decline was after a period of seven years of consecutive growth and according to Thinkbox (2019) is linked to, political and economic uncertainty, a weakened pound and inflationary pressure from some advertisers (Thinkbox, 2019). In addition, television advertising revenue is dependent on quality programming; this has been further impacted by television streaming services such as Netflix and Amazon Prime. These providers do not screen conventional advertisements in commercial breaks and they have fragmented TV audiences making these channels of advertising a less attractive proposition overall (Hammett, 2019).

The average weekly reach for television was 88.5% in 2018, down from 90.2% in 2017. According to Ofcom (2019) the average time spent watching conventional broadcast television continued to decline by an average of 3 hours 12 minutes per day compared to 3 hours 23 minutes per day in 2017 across all individuals aged four years or older (Ofcom, 2017). Ofcom (2019) research revealed there is widening gap between the viewing activities of the youngest and oldest audiences. The steepest decline in the average viewing of broadcast TV was among 16-25 years old adults who spent an average of 1 hour 25 minutes per day watching live television, 15 minutes less than in 2018. Adults aged 25-34 watched on average 2 hours 2 minutes which was 18 minutes less than in 2018.

In addition, it has emerged, media consumption habits differ according to age. The shift from watching television on a traditional television set, to watching it on multiple devices is directly correlated with age (Ofcom, 2017). Additionally, new research from Ofcom found that 66% of teens use YouTube to watch TV programmes/films compared to 38% of all adults in 2017 (Ofcom, 2017). This changing media landscape and associated consumption habits pose a number of challenges for brand owners who wish to promote their brands to the 18-24 year olds.

Against the backdrop of this rapidly changing media industry, industry commentators predict that brand placement will in the future form part of a progressively more sophisticated communication strategy for organisations. Indeed, David Charlesworth, Head of Sponsorship at Channel 4, has suggested that the UK brand placement market will reach £100m a year by 2025. As a yardstick,

he points to the US and Australia, where brand placement has grown to account for about 5% of the television advertising market spend (Sweeney, 2011).

In the videogame industry more realistic simulations such as *Gran Turismo* Polyphony Digital (2013) have resulted in increased development and marketing costs and this has been encouraging game developers in particular to look for additional sources of revenue including brand placement. This technique is also attractive to marketers who continually seek new places to present persuasive messages. Brand communication planners are increasingly inserting brand references into consumers' experiences of mediated entertainment e.g. *Second Life* (Linden Labs, 2003). However, in such instances it is generally seen as important that the brand does not appear as an overt promotion (Tiwsakul and Hackley, 2006). The purpose of mediated entertainment is to disguise the persuasive intent of the brand interaction and thus differs from paid for promotion which is designed to persuade the consumers into a commercial transaction (Tiwsakul and Hackley, 2006). Further, as digital games can now be played online, this provides advertisers with opportunities to dynamically place brands in games such as Mountain Dew in *Call of Duty* (Sledgehammer Games, 2014). These developments allow the brand owners to more accurately target gamers by demographics. As such, it is becoming increasingly important to understand how brands are processed in the context of videogames.

Initial research into videogame brand placement effectiveness adopted recall and recognition measures with no particular emphasis on the factors that affect recall (Nelson, 2002; Nelson and McLeod, 2005; Chaney et al., 2004; Grigorovici and Constantin, 2004). This is more relevant in the videogame context, where individuals are actively interacting with the content rather than passively watching. Moreover, these initial effectiveness measures have been found to be contradictory as discussed in chapter 3. Thus, this study aims to investigate whether exposure to brand placement affects unknown brand likeability as a result of mere exposure for game players and game watchers in videogames.

1.3 Product placement

Product placement is the integration of a product or brand into the narrative of a film, television series, song, game or novel. Placement may be a logo, brand name, product or packaging appearing on screen and it may also be incorporated into the narrative such as the use of Mini cars in *The Italian Job* (Collison, 1969). In the classic arrangement, stemming from the feature film model that began the practice, placement 'involves incorporating brands in the movies in return for money or for some promotional or other consideration' (Gupta and Gould, 1997 p. 7). Product placement is sometimes referred to as 'brand placement', 'branded entertainment' or 'product integration', and these terms are used interchangeably in academic and trade publications. Babin and Carder (1996) use brand placement to distinguish market-specific products from others in the category, arguing that since it is brands that are placed rather than specific products, then the term brand placement more accurately describes such activity. As both 'brand placement' and 'product placement' have gained currency in academic literature, the terms will be used interchangeably in this thesis (Balasubramanian et al., 2006).

Brand placement has evolved from the early days of placements in films. Brand placements offer a number of advantages in an increasingly fragmented media landscape, such as brand engagement, limited avoidance from viewers/gamers and contribution to production costs such as money paid by brand owners to production companies and videogame developers for the insertion of their brand into the film, television programme or videogame.

However, there are a number of limitations such as limited control of how brand is incorporated into the narrative and success of the videogame or film in question. A further limitation that is more specific to gaming is the fact that brand placements may disrupt the gameplay experience and cause irritability (Poels et al., 2013). However, the principal limitation is the lack of understanding of how the process of persuasion works for brand placements. Early research on brand placement effectiveness focused on films and television and only more recently on gaming.

Gaming is the running of specialized applications known as electronic games or video games, such as Call of Duty Sledgehammer Games (2014) and Fifa17 EA

Vancouver (2017), on game consoles like a Microsoft X-box, Sony PlayStation, personal computers or more recently smartphones. Gaming possesses some unique characteristics in comparison to films and television. For example, gaming elicits a high level of player interactivity such as controlling actions from the point of view of the characters on screen, thus leading to changes in media context and experience (Nelson et al., 2004).

In addition, gaming offers a multisensory experience that combines audio, visual and haptic senses. Placements in videogames are typically classified into adver gaming and in-game advertising (IGA). IGA refers to a brand being placed in a game for example a billboard, a car or a drink that a character may use and thus, the game and its intrinsic activities remain the focus. Adver gaming refers to designing a game around a specific brand to promote it, thus the brand takes centre stage in the game and the rules are structured around the advertising message e.g. America's Army, Turbo Spirit (United States Army, 2013).

Whilst gaming does possess some similarities to film and television research, it does have distinctiveness that contradicts the findings of the film and television research. These distinct features such as the games market, the different platforms, game genres, UK gamers and eSports will be summarised below.

1.4 Videogames market

The videogame and interactive entertainment industry is a growth industry and an important sector of the UK's creative industries. Videogames are more popular than ever before, played by people of all ages at home, online, and on smartphones. Games cover a range of genres and styles, including hardcore games, casual games, social games and Massive Multiplayer Online Games (MMOG). The global games market was worth \$108.9bn in game revenues by 2017, representing a 7.8% increase from the previous year (Newzoo, 2017). In the videogame market, the UK is estimated to be the sixth largest videogame market in terms of consumer revenues and worth £3.5bn with static consoles such as PS4 and Xbox One dominating (NewzooHq, 2017). With interest in new gaming technologies such as Virtual Reality (VR) and opportunities to engage new audiences in the light of next generation console devices, the gaming industry's prospects are buoyant.

1.5 Gaming platforms

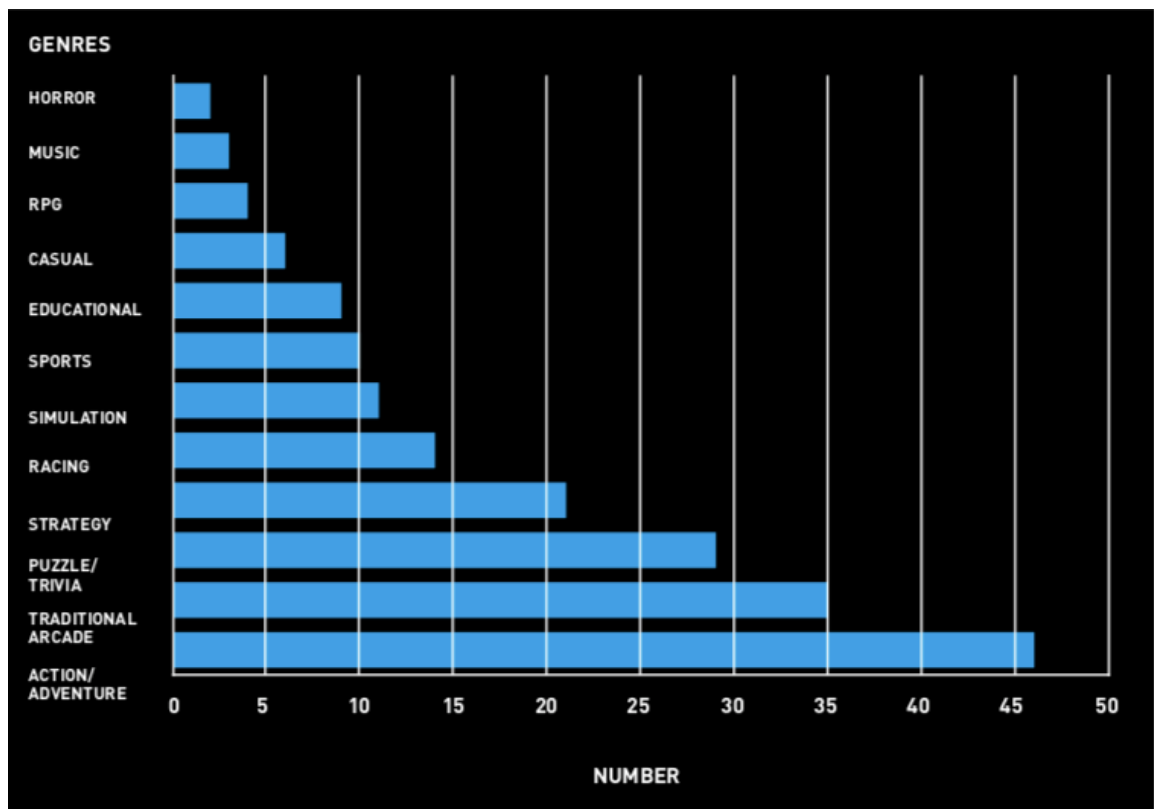
Traditionally the key distinction between gaming platforms i.e. the machines on which people play the games was personal computers (PCs) and consoles. PCs are rarely purchased exclusively for entertainment, whereas consoles such as Sony PlayStation, Microsoft Xbox and Nintendo are. Traditionally consoles have dominated the gaming industry as the most preferred device for gaming. Historically three major console manufacturers controlled the market, Sony who launched PlayStation in 1994, Microsoft who launched the Xbox in 2001 and Nintendo, which launched its first video game system in 1985. However, in recent year's smartphone platforms has made significant inroads and is now a popular alternative.

1.6 Game genres

Games are historically divided into action games, role-playing games, first person shooter games and sporting games. The game genre dictates the content and can range from accurate and realistic graphical depictions of the 'real world', such as racing games, to fantasy worlds and characters, which are common to role-play games.

Tiga (2016) analysis of the UK games industry game genre releases indicated that the action/adventure genre was the most popular for studios in 2015, making up 24.21 per cent of all UK games released. Close behind this was the traditional arcade games genre, with 18.42 per cent of the market. This was followed by puzzle/trivia titles with a 15.26 per cent market presence. A full overview is outlined in Figure 1.1.

Figure 1.1 UK games genre industry releases 2015



Source: Tiga (2016)

* Number equals number of videogames released by UK studios in 2015

1.7 UK gamers

GameTrack estimates that there are 20m people aged from 6-64 years old playing videogames in the UK. Of this 20m, 58% are male and 42% female and 26% of all gamers are 15-34 year old males. The average time spent by gamers playing each week is 8.8 hours, although this varies enormously from person to person. In terms of game formats, package games, for example *Grand Theft Auto* (Rockstar North, 2013), are played by 11.7m, downloadable app games by 10.4m, and interactive online games 10.7m. Mintel (2017) report on videogames revealed that static consoles are still the most popular device to play a game on and are used by 12.3 million gamers, closely followed by computers by 11.6m. A further 10.2m gamers play on smartphones, 8.4m on tablets, and 4.8m on handheld devices such as Nintendo Wii U and 3DS.

1.8 e-Sports

eSports take the form of organized, multiplayer video game competitions, particularly between professional players. The most common video game genres associated with eSports are real-time strategy (RTS), first-person shooter (FPS), fighting, and multiplayer online battle arenas (MOBA). Tournaments such as the *League of Legends* World Championship, The International, the Evolution Championship Series and the Intel Extreme Masters provide live broadcasts of the competition, and prize money to competitors.

Although organized online and offline competitions have long been a part of video game culture, these were largely between amateurs until the late 2000s, when participation by professional gamers and spectatorship in these events saw a large surge in popularity. Many game developers now actively design toward a professional eSport subculture.

eSports generated \$493m (£400m) in revenue in 2016, with a global audience of about 320 million people (BBC, 2017). By 2019, this had risen to \$1.1bn global revenue and a global audience of 454 million (Newzoo, 2019). eSports affords lucrative sponsorship opportunities to brand owners and sports organisations and could prove to be a significant way for marketing and advertising to connect with what has been a traditionally difficult to reach audience. As such, leading brands such as Coca-Cola, Budweiser, Red Bull and Doritos have all announced sponsorship deals in the eSports space in recent years (Intel, 2018). Due to this emerging, growing area of gaming, it is an important area to investigate in relation to the processing and effectiveness of brand placements; not least because e-Sports presents an additional context in which gamers view games and process brands.

1.9 Research problem

The changes in the UK media landscape and media consumption habits present a number of challenges for brand owners when targeting young people aged 18-24

who are key to numerous markets, such as fashion, technology, alcohol, and entertainment. Generation Z (individuals aged 7-22 year old) comprise 32 per cent of the global population and 40 per cent of consumers, and have an estimated direct global spending power of \$200 billion a year (Godwin, 2019). However, there is a perception that this age group is hard to reach and even more challenging to engage with traditional media and tactics such as advertising.

Consequently, brand owners are beginning to respond to the changes in the traditional communications environment such as the fragmentation of media, proliferation of media channels and increase of digital communication, all of which have resulted in the dispersal of the audience, and the disruption of long accepted segmentation, targeting and positioning models. Further, the traditional television advertising model is becoming an increasingly expensive option in terms of audience volumes reached, as a consequence of fragmentation and the decline of terrestrial TV audience due to on demand and streaming services. As a result, brand owners are beginning to investigate new channels to reach consumers such as brand placement.

Unlike traditional forms of advertising where products, brands or messages are presented in a distinct format such as a commercial break, brand placement embeds the message or brand within the entertainment vehicle itself and thus may be classified as branded entertainment (Hudson and Hudson, 2006). Hence, a brand may not appear to be an overt advertisement and thus persuasion knowledge may not be activated. For this reason, brand placement has the potential to support a more lucrative and effective marketing strategy.

Early studies were inconclusive in terms of the factors that contribute to recall and recognition of brands with Nelson (2002) asserting that individuals do seem to recall brands placed in videogames, but placements in the form of billboards have limited impact on individuals' recall and purchase intentions (Chaney et al., 2004). Moreover, other studies indicated a disassociation between brand awareness and brand evaluation (Poels et al., 2013; Grigorovici and Constantin, 2004) whilst others reported positive associations between recall and brand evaluation and choice (Hang and Auty, 2011; Mau et al., 2008). Lee and Faber (2007) suggest that the

more immersed and involved the game player is with a game, the lower the brand recall and recognition but the better their brand attitude. This suggests support for the Mere Exposure Effect (MEE) (Zajonc, 1968). However, it is an assumption yet to be empirically tested and the focus of this study, therefore, will be how brands are processed in videogames and the impact of this on gamer brand evaluations. Such an analysis could shed light on the potential role of the MEE in videogaming context.

Despite the plethora of studies in cognitive psychology, which have shown repeated unreinforced exposure to a previously unknown stimulus, leads to an increase in liking for that stimulus (Zajonc, 1968). There is an absence of research on MEE and brand placements in gaming. Unlike traditional mere exposure stimuli in cognitive psychology experiments, brand placements in videogames are not directly presented to viewers, instead they occur amongst a rich array of other stimuli that are part of a game's narrative.

At the most basic level brand placements are seen (visual) or mentioned (auditory) in a game's narrative, and this can be explained by affective classical conditioning or mere exposure (Baker, 1999). First, affective classical conditioning is the process of pairing an unconditioned response, such as response to a celebrity, with a conditioned response, for example a response to a brand. The theory in such instances is that the feelings associated with the celebrity are transferred to the brand (Steertz, 1987). Affective classical conditioning is normally associated with advertising, but it does have some merit in explaining how brand placements can work. However, one major drawback of affective conditioning is that the associated feeling can be both negative and positive. There is no guarantee that only the positive feeling will be transferred to the brand.

A second possibility is that mere exposure may explain how simple brand placements may work. MEE suggests the viewer will develop more favourable feelings towards a brand because of repeated exposure to it when there is an absence of other stimuli. Previous research suggests this can evoke an affective response (Zajonc, 1968; Bornstein, 1989). Hence, mere exposure only requires the consumer be repeatedly exposed to the brand name. It can also be argued that mere exposure may decrease the perceived risk associated with a brand, and

consumers may be more likely to select a brand with an exposure advantage leading to preference formation and brand choice (Baker, 1999). Mere exposure creates a sense of familiarity that subsequently biases subjective opinions of the brand, without any conscious recollection of the initial exposure.

The effects are more likely to influence decision-making processes in low involvement decision contexts. This is because repeated exposure to a brand placement under low levels of attention can create a sense of familiarity with the brand. Thus, the exposure can result in positive attitudes towards the brand and even preference for the brand as people tend to like familiar objects (Auty and Lewis, 2004; Law and Braun, 2000). Mere exposure effect is also facilitated by repetition (Zajonc, 1968; Bornstein, 1989), which suggests that with one-time-only placements of brands the mere exposure effect will be limited. There have been limited studies Matthes et al. (2007), Matthes et al. (2011) and Ruggieri and Boca (2013) that have explored brand placements and mere exposure but to date none in videogaming, which is a growing area of consumer interaction (Newzoo, 2017).

A third explanation could be psychological reactance theory (Brehm, 1988), which argues that individuals frequently act to counter the restrictions and pressures put on them by marketers. An individual feels that their freedom has been compromised by the brand placements, as if the viewer wants to watch the film they cannot skip through the brand placements and they act in ways to restore that compromised freedom (Brehm, 1988). This may be more profound in racing games when the gamer has to select a branded car prior to playing the game. These acts may include avoidance or aggression toward the source. Restrictions are particularly applicable in brand placements, which are integrated into films and videogames and where the audience cannot escape them if they want to watch the film or play/watch the game. This is particularly valid for individuals watching a videogame than for those playing it. Individuals watching a videogame are more passive, whereas individuals playing a videogame are more active and immersed as they control the game play and hence they may not notice the brand placements.

1.10 Justification for the research

Due to proliferation of media and platforms it is becoming increasingly difficult for marketers to reach and engage consumers using traditional forms of mass media such as advertising (Keller, 2009). Marketers are turning to alternate forms of communication, particularly in the videogame context as this area continues to grow. To date academic research appears inconclusive in terms of validating the use of videogames as a promotional tool. Moreover, there is a lack of empirical evidence concerning the effects on consumers and brands of marketing messages in the videogame environment.

The imperative of this study is to address these research gaps by building on the basic understanding exposure effects for brand placements in videogames. The aim of this study is to investigate whether exposure to brand placement affects unknown brand likeability as a result of mere exposure for game players and game watchers in videogames. The study seeks to verify theories of low involvement processing Heath (2001), Grimes (2008), MEE Zajonc (1968), implicit and explicit processing and brand attitude formation Petty et al. (1983), MacInnis, and Jaworski (1989) in relation to brand placement in videogames. The study will offer an explanation as to whether brand placements are processed in videogames and ascertain brand affects. The intention is to strengthen the theory in the area of brand processing and attitude formation by testing a series of hypotheses. Thus, this research will extend the development and application of consumer behaviour theory to computer-synthesized environments, namely videogames. Such theory verification is important for the overall enhancement of knowledge in branding and brand processing in realistic, complex environments. Research into the effects of brand placements in videogames is therefore warranted based on the growth in use of this communication method, the growth of the gaming industry and its economic contribution in the UK. It will also address the significant gap in the literature concerning the effects of brand placements in videogaming contexts. Consequently, there will be a clear contribution to the theoretical disciplines of consumer behaviour and marketing communications. Equally, the research within

this study also has a potential practical application for game developers and marketing practitioners.

1.11 Aim

The overarching aim of this thesis is to first, test the key research questions outlined below and second, to provide an extension of both the mere exposure psychological research and brand placement research. Ruggieri and Boca (2013) suggest that investigating the persuasive capacity of brand placement by locating it in a framework of the MEE can increase understanding of the processing of brand placements and the effects on brands. Thus, this study aims to investigate whether exposure to brand placement affects unknown brand likeability as a result of mere exposure for game players and game watchers in videogames. The following research questions have been developed.

R1 Repeated exposure to an unknown brand placement in a videogame leads to more positive brand affect (brand liking).

R2 Active and passive consumption modes differently affect brand liking following repeated exposure to an unknown brand placement in a videogame.

1.12 Outline of the thesis

This thesis is divided into 7 chapters. Chapter 1 lays the foundations for the research by introducing the research area and the central research aim and propositions. It justifies the research and outlines the limitations imposed on it.

Chapter 2 outlines definitions of brand placement, brief history of brand placement and how it has evolved. The chapter will review the key research that has been conducted into film and television brand placement in relation to how the exposure to placements affects brands and the formation of brand attitude.

Chapter 3 summarises the key research that has been conducted into brand placement and videogames, namely memory-based measures of brands in games, congruent versus incongruent placements, brand familiarity, formation of brand attitude and reverse product placement.

Chapter 4 comprises a review of the literature and provides an overview of some of the key theoretical models that have been developed to explain the persuasion process and impact on brand choice. Psychological theories such as the Mere Exposure Effect and Reactance theory will be examined as these concepts are central to the development of the conceptual framework for this thesis. From this review of the literature emerges a series of propositions that dictate the specific areas around which the primary data is gathered.

Chapter 5 justifies the predominantly positivist approach taken in this study presenting details of the research design. An evaluation of the different research methods available was examined with an emphasis on the quantitative approach in order to justify the selected approach. The development and design of the research instrument, the scales, measures and sampling procedures are justified in relation to the hypotheses stated. An explanation of the procedures followed for pilot testing the instrument and experimental design is provided. This is followed by an explanation of the data collection and overview of the research ethics. It concludes with a discussion of the methodological, managerial and research limitations of the research.

Chapter 6 presents the quantitative analysis of the data collected. The analysis techniques are justified, the data is explored, key assumptions are tested and the results of statistical analyses are presented.

Chapter 7 presents the discussion of the results in relation to MEE, Persuasion Knowledge and implicit and explicit processing effects.

Chapter 8 concludes the study and considers the study's original contribution to knowledge, before discussing the implications for theory, practice and the gaming industry. This chapter also recommends further research in the area of brand placements and videogames.

CHAPTER 2

LITERATURE REVIEW (i)

2.1 Introduction

This chapter will outline the development of brand placement, which is a device for incorporating a product or service into a film, television programme, videogame, book or other medium in return for financial payment or other promotional consideration. A brief history of brand placement will be discussed; the definitions outlined will illustrate the complexity of contemporary brand placement practice and how it has evolved. The chapter will review the key research that has been conducted into film and television brand placement in relation to how the exposure to placements affects brand evaluation and processing.

2.2 History of product placement

The first examples of brand placement pre date cinema with Bass beer appearing in Manet's 1882 *Un Bar aux Folies-Bergere* painting (Lehu, 2007). Brand placement has been common in Hollywood movies since the early 1920s with deals incorporating cigarettes, cola and cars. Hence, cinema understood the benefits of brand association from an early stage. Film placement began formally in the 1900s when studios risked paying copyright fees unless products were purchased, donated or loaned (Lancaster, 2005). By the 1930s, film studios created offices where scripts were sent to marketers with clearly defined opportunities for brand placement. For example, Buick had a ten-picture deal with Warner Brothers in the 1930s and US tobacco companies often paid film stars to endorse their brands (Hudson and Hudson, 2006). However, it was not until the 1940s that the importance of financial monetary exchange became a feature in the film industry but the practice was not widely publicised, as it was thought to impact on the creative integrity of the film. In the 1970s, product placement was reframed as a valuable revenue stream for filmmakers and specialist product placement agencies, whose role was to negotiate agreements between suppliers and filmmakers. These agreements could be to secure brand exposure, financial support, or to add realism to films by incorporating familiar brands into the productions. This was coupled with the diminishing role of the Hollywood movie studios and the emergence of independent producers and location-based film production in preference to studios. A seminal example of product placement was Reese's Pieces placed in *ET the Extra Terrestrial* (Spielberg, 1982), where two weeks after the release of the film sales of Reese's Pieces increased by 65% (Lehu, 2007). However, much of the evidence is

anecdotal and to date there has been no significant, generalizable research that indicating a causal link between product placement and sales.

A major development was the arrival of television in 1950s, which provided brand owners with another medium to promote their brands to a mass audience. Avery and Ferraro (2000) indicate there were up to fifteen brand appearances per half hour in primetime television programming at this time. The number of products seen during any given programme suggests that brand placements on television are ubiquitous. Although brand placement is well established in markets such as the US, where some estimates say it accounts for up to 5% of TV advertising spend, it has only been permitted in the UK since the spring of 2011 (Ofcom, 2016). In the USA primetime, television shows typically screen 22–24 episodes per full season, with numerous placements airing in episodes throughout. In its 2010–11 season, *American Idol* had 577 placements, *The Biggest Loser* had 533 placements, and *The Celebrity Apprentice* had 391 placements (Ives, 2011). In 2011, the European Commission updated the Television Without Frontiers Directive to allow brand placements in UK produced television programmes, thus opening the door for increases in brand placements in the UK television market (Ofcom, 2016).

In the UK, brand placement operates under relatively tight UK-specific restrictions in television and its very novelty means relevant research is scarce. Unsurprisingly, the practice has attracted only modest amounts of advertising spend from UK brands. The UK's first legal commercial television brand placement deal was in 2011 with a Nescafé Dolce Gusto coffee machine. This was placed on a kitchen shelf backdrop, to a mid-morning cookery strand on the ITV magazine show, *This Morning* (ITV Media, 2011).

A more recent development is the growth of brand placement in videogames, this can vary from a the appearance of a brand or logo as a billboard in a car racing game or on a hoarding in a football game such as the Electronic Arts football video game *Fifa* (EA Vancouver, 2017). Alternatively, a gamer may earn points by selecting between different brands. For example in a snowboarding game such as *SSX* (EA Canada, 2012), a gamer may select a jacket or a snowboard from a set of brands to 'buy' with points earned in previous games. Placements in videogames

are generally noticed and welcomed by gamers, as they add to the realism of the gaming environment for certain genres of videogames such as sports (Nelson, 2002). Brand placement and videogames will be discussed in more detail in Chapter 3.

The ever-increasing variety of environments for placements poses some important questions for consumer researchers, marketers and policymakers. A fundamental concern of consumer researchers is to understand how the exposure to brand placements affects brand evaluation and whether this has a positive or negative effect on the brand. Marketing practitioners need to understand the conditions under which placements are the most effective, in order to measure and justify the inclusion of placements as part of the marketing communications strategy. Policy makers need to ensure brand placement is ethical and does not contravene existing codes of practice in marketing communications.

2.3 Definitions of product placement

Since the introduction of brand placement strategies, the practice has evolved from simple visual appearances to more sophisticated plot integration approaches. Early definitions of product placement typically refer only to the given categories of the practice not the modality. D'Astous and Chartier (2000:31) define product placement as 'the inclusion of a product, brand name or the name of a firm in a movie or in a television programme for promotional purposes'. An alternative definition is 'product placement can be viewed as a hybrid message due to its "hidden but paid" nature' (Balasubramanian, 1994:31). According to Gupta and Gould (1997) product placement, involve incorporating brands in films in return for money, promotion or other considerations. Hence, the placement occurs in a non-promotional entertainment context and thus the meaning of the brand in the placement context may not be constructed in the same way as it might be in the context of an explicit paid-for advertisement. Although these early definitions are similar, the fact that the concept of exchange in either monetary or promotional terms is consistent, they only refer to film and television. Other forms of product placement, such as music, video games and books are omitted in this earlier work.

Later definitions acknowledged product placement might occur in a range of media such as videogames, books and songs. Tiwsakul et al. (2005:3) developed the understanding of the practice by arguing that 'it is promotion placed in a non-promotional entertainment context, where the promotional intent is not made explicit.' Consequently, the meaning of the brand in the placement context may not be construed in the same way as it might be in the context of an explicit advertisement. Thus, these later definitions introduce the concept of product placement as mediated entertainment. Hudson and Hudson (2006:492), define branded entertainment 'as the integration of advertising into entertainment content, whereby brands are embedded into storylines of a film, television programme or other entertainment medium. This involves co-creation and collaboration between entertainment, media and brands'. Hackley et al. (2008) concur with this interpretation of product placement as branded entertainment and suggest 'the aim is to integrate brands seamlessly into the feature as part of the plot or characterisation, thus enhancing the verisimilitude and dramatic force of the scene'. (Hackley et al., 2008:110). Thus, these later definitions recognise the importance of brands rather than products.

Brand placement differs from traditional advertising in that it does not interrupt the media experience and is not always paid for by the brand (Wasko et al., 1993). Hence, brand placements may not be perceived as commercial messages. However, they are considered as legitimate marketing communication tools designed to increase awareness, build brand equity and increase sales. For the advertiser, the benefits of brand placement can be increased awareness, positive brand attitude, sales and authenticity by adding realism (Karrh, 1998). In addition, because a brand placement is integrated it is more difficult to avoid than traditional advertising. However, to date these benefits lack rigorous empirical testing, which can be, generalised across brand placement mediums.

2.4 Brand placement recall and recognition in film and television

The most prevalent area of academic research to date in relation to brand placement has been the effects of the placement on viewers. The effects have generally been considered in terms of memory, evaluation of brands and purchase intention. The

following sections provides a brief overview of the previous research in relation to how effective or not placements are at altering memory, brand attitude and purchase intention in film and television.

Early studies focused on audiences' brand recall, recognition and attitudes to the actual practice of product/brand placement, which were generally favourable. (Karrh, 1998; d'Astous and Séguin, 1999; Gould et al., 2000). An aided recall test conducted by Steortz (1987) indicated a 32-38% recall of placements. From this research, Steortz (1987) concluded 20% audience awareness of the placement of a brand in a film is deemed an effective placement and over 30% is considered a highly successful placement. Both these measures are still used as industry standards (Lehu, 2007). This was supported by Vollmers and Mizerski (1994), where clips of visual film placements were shown to respondents and a control group where no visual placements were used. In this study, 95.8% of the respondents were able to recall a placement and 93% were able to recall the actual brand, thus supporting Steortz (1987). However, Babin and Carder (1996) criticised Steortz (1987) for lack of a control group and Vollmers, and Mizerski (1994), as their results were based on clips rather than full films and limited information processing occurred.

Tiwsakul et al. (2005) classified product placement strategies in television as implicit, integrated explicit and non-integrated explicit. In implicit product placement, a brand will play a passive, contextual role without any demonstration of the brand benefits. Integrated explicit product placement is where the brand plays an active role and thus the benefits are more clearly demonstrated. Non-integrated explicit placement is defined as formally expressed but not integrated within the contents of the television programme. Thus it could be a sponsor's name proceeding an advertisement break or at the end of a programme, for example *Coronation Street* (Coronation Street, 2006) and Cadburys. However, these three product placement categories are not mutually exclusive and in any given television programme there may be multiple types of product placement.

Tiwsakul et al. (2005) conducted a study into explicit, non-integrated product placement in British television programmes. The results were inconclusive in terms

of the direct sales impact of non-integrated product placement. Respondents did report favourable attitudes to the practice of product placement, but there were some concerns about ethics in terms of the subconscious subliminal effects and the use of inappropriate products such as alcohol and weapons. In addition, respondents did indicate a preference for product placement over traditional advertising. However, respondents displayed relatively low brand recall for all television programmes (soap operas and mini-series) for non-integrated explicit product placement.

The effectiveness of brand placement in films produced mixed results in relation to brand recall and weak or non-existent effects of placement on brand attitude. These early studies tend not to recognise the multidimensional nature of brand placement and characteristics such as prominence and plot connection, which may influence the effectiveness of brand placement.

Research into product placement developed into studying the characteristics of the placement itself, namely modality (Law and Braun, 2000; Russell, 2002), congruity with plot (Russell, 2002), type of programme (d'Astous and Séguin, 1999) and placement prominence were identified as some of the key determinants in successful placements. A summary of the key research into the multidimensional nature of brand placement in film and television is considered in the following section.

2.5 Placement prominence

Modality involves three distinct forms of product placement, presentation visual only, auditory only or combined audio-visual (Gupta and Lord, 1998; Karrh et al., 2003; Russell, 1998). According to Gupta and Lord (1998), placements in any of these three modes can be subtle or prominent. Prominence generally describes the extent to which a placement is central to the plot, size on screen, number of mentions and the greater these factors are the more prominent the placement will be and the less apparent these factors the more subtle the placement. Subtle visual placements may be small, have a low time exposure or be a background prop out of the main field of visual focus. Therefore, they are thus less likely to attract the viewers' attention. The degree of subtlety or prominence is more appropriately considered

on a continuum of extremely prominent to nearly subliminal. Gupta and Lord (1998) assert that a prominent placement by virtue of size and or position or centrality to the plot is more likely to attract the viewers' attention. In their two dimensional model x prominence model Gupta and Lord (1998) concluded that the explicit mention of a brand without visual reinforcement leads to better recall than a subtle visual placement which is not supported by a script mention. However, the addition of a complementary audio message did not significantly enhance the recall of a brand with an existing prominent visual display.

Although Law and Braun (2000) support Gupta and Lord (1998) findings, unfavorable results have been recorded concerning whether prominent placements aid recall awareness. Test environments may encourage audiences to process subtle placements more intensively than in normal environments where recall is strongly correlated to prominence of placements (Kaijansinkko, 2003). Baker (1999) measured a 50% recognition rate for a product that was not familiar to the test subjects. This implies product placements may be more effective for new product launches. Conversely, in a study about the relationship between brand usage and advertising tracking measurements Rice and Bennett (1998) concluded users of a brand are more likely to notice and like a relevant advertisement in comparison to non-users, who are less likely to be aware of and like the advertisement. This suggests an established brand will have a greater opportunity of achieving a higher recall score from a product placement, compared to a new brand. Therefore, it may be argued the research is inconclusive in terms of established versus new products.

Homer (2009) conducted two studies to understand the effects of repetition on subtle and prominent placements in television programmes and films for familiar brands. Repetition of prominent placements for familiar brands resulted in negative brand attitudes. For subtle placements, brand attitudes were relatively positive and moderate levels of repetition had little incremental impact. Homer (2009) proposed that increasing exposure from low to moderate levels gives an audience further time to process the message and thus the audience becomes more familiar with the stimulus. However, she suggested that repetition has an optimal level of effectiveness, after which point the audience may become irritated and

psychological reactance may result.

2.6 Placement plot connection

Plot connection is the degree to which a brand placement is integrated into the storyline of a film. Highly plot connected brands e.g. Fed Ex in the film *Cast Away* (Zemeckis, 2000), and the AOL brand in the film *You've got Mail* (Ephron, 1998) are strongly connected to the film narrative and are conspicuously featured throughout the film. Studies have shown a brand's connection to the plot significantly influences viewers' attention and attitudes towards the placed brand (d'Astous and Séguin, 1999). A greater fit between brand and plot connection is expected to enhance the attention to, and increase recognition of, a brand. According to Russell (2002) brands strongly connected to the plot, facilitate the narrative structure of films and television. McCarthy (2004) argued that a high degree of plot connection can alter the viewer's perception of the brand due to its integration with the filmic medium. In this way, the brand becomes related to the context of the story, which can result in more positive brand evaluations, especially when the brand is placed in a film that the viewers like.

Dens et al. (2012) conducted a field study to investigate the effect of brand prominence and plot connection on film audiences' recognition of brands and their attitude towards the brands. This was one of the first studies to consider the combination of both the cognitive and affective brand responses. Their results indicated brand recognition was highest when the brand was prominent and strongly plot connected, whereas brand attitude was most positive when strongly plot connected but less prominent. Their results also indicated brand recognition mediated the effect of plot connection but not prominence on brand attitude. Dens et al. (2012) research is also noteworthy as far as it considered the different types of brand placement for a full film rather than clips; however, the audience was female only and the films were Hollywood romantic comedies.

2.7 Modality

In her seminal model, tripartite typology of product placement Russell (1998) classified product placements and predicted the conditions under which a brand name included in a television show would be remembered, and whether attitudes towards it would be positively affected. Modality (visual, verbal or audio) and plot connection were identified as key variables, as they interact to influence memory and attitudes. Screen placement is a visual type of placement, which involves placing a brand in a scene. Script placement is an auditory or verbal type of placement. Plot placement refers to the combination of both visual and verbal.

Russell's (1998) study indicated modality of presentation (visual and auditory), and the degree of connection between a brand and plot, interacted to influence memory and attitude change. Memory improves when modality and plot connection are incongruent but persuasion is enhanced by congruency. Incongruous placements adversely affected brand attitudes because they seem out of place and were thus discounted. The subtlety of the connection between brand reference and plot is important to the understanding of brand attitude. Russell (1998) proposed that this was more likely to be activated for subtle placements than prominent placements. In her earlier study, Russell (1998) implied that only dual mode placements express some level of plot connection. However, in her later study, Russell (2002) clarified the independence of the modality and plot connection constructs by examining the varying effects of different combinations of modality and plot connection. Russell (2002) investigated whether the way a brand is placed within a television programme affects memory for the brands and attitudes towards those brands. Russell (2002) argued whilst brand recall improves when modality and plot connection are incongruent, persuasion is enhanced by congruency. This is consistent with the peripheral route of the Elaboration Likelihood Model (ELM) (Petty et al., 1983) discussed in section 4.3.

The Russell (2002) model provides a helpful conceptualization of the engagement between brand placement exposure and consumer experience but relates to television shows and thus has limitations e.g. lack of interactivity in the context of other media

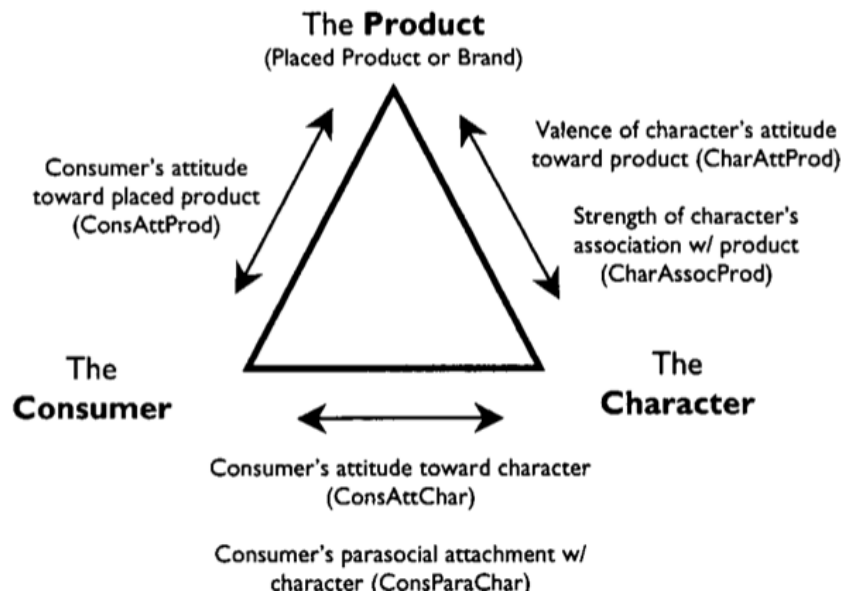
2.8 Brand related conative responses

Studies investigating purchase intention and brand placements are rare. As previous research tends to concentrate on cognitive responses such as recall and recognition as outlined above. One notable study is a qualitative study on the meaning of brand placement for filmgoers, where Reid (1999) observed the value of realism that real brands brought to the film. As Muzellec et al. (2012) suggests, the practice of product placement is about bringing the reality of products/brands into an abstract fictional or virtual world. Reid (1999) concurred with Nelson (2004) that 'brands serve as symbols, offering important lifestyle information and a reflection of intertwined nature of real and media life ' (Nelson et al., 2004:6).

In Reid (1999) four consumption-specific themes emerged; these themes related not only to brand placement exposure but also to the consumption related aspects of everyday life. Respondents agreed that brand placement functioned as a marketing activity, in relation to reinforcing consumer confidence, reducing dissonance and thus reinforcing purchase choice. However, there was recognition of the promotion intent of brand placement and the socialisation of consumption. The respondents 'judged brand props as tools that allow the reliving of past (nostalgia) events and the vicarious experience of living others' experiences' (Reid, 1999:81). Older filmgoers associated brand props with manipulative power and negative consequences for the audience. The younger participants associated brand placement with an invitation to cultural belonging and feelings of emotional security.

Russell and Stern (2006) investigated the triadic relationship between characters, consumers and products within sitcoms on television. From this study, they proposed the conceptual model, 'The balance model of sitcom product placement effects', see Figure 2.1.

Figure 2.1 The Balance Model of Sitcom Product Placement Effects



Source: (Russell and Stern, 2006)

In the Russell and Stern (2006) study famous TV sitcoms were the focus of the research and participants were asked about their attitude toward the sitcoms and to match the characters with products. Their study supported the predictions that consumers align their attitudes toward products with the characters' attitudes to products and that this process is driven by the consumers' attachment to the characters. This study was useful in establishing the importance of character association and endorsement have on brand choice, which has parallels in sports videogames where gamers may choose a famous sportsperson avatar. Moreover, this conceptual model is consistent with McCracken (1989) and his work on image transfer, products and celebrity.

2.9 Brand placements and memory

Empirical research on memory and brand placement has focused on viewers' memory for the brands placed within a film or television show. This research, to date, indicates a complex relationship between brand placement and memory for the brand. To date no single theory or model has been able to explain this complicated relationship.

Early research on the effect of brand placement on brand memory was rather mixed. Ong and Meri (1994) found no improvement in memory for some brand placements and remarkably sizeable improvements in memory for other brand placements. In particular, 77% of viewers recalled seeing Coca Cola while watching the film *Falling Down* (Schumacher, 1993), but only 18% recalled seeing Hamm's Beer in the same film.

One of the criticisms of the use of memory measures to study brand placement effectiveness, is that most of the studies utilised explicit measures such as recall and recognition. Explicit memory occurs when individuals consciously and intentionally try to recollect a specific previous event. Implicit memory involves unconscious recollection of a specific event. Brand placement effects may occur through both conscious and unconscious processing. Implicit memory is not driven by whether the information is semantically processed, unlike explicit memory; it can be argued implicit memory tests may reveal advertising effects that are related to incidental brand exposure (Yang and Roskos-Ewoldsen, 2007). Law and Braun (2000) used an implicit memory test to measure the effectiveness of brand placements on television. In their study, the participants were asked to imagine they were helping a friend buy items for a new apartment. The treatment group completed this activity after watching an episode of *Seinfeld* (Seinfeld, 1991) and the control group did not watch the episode. The treatment group chose more items that had appeared in the *Seinfeld* (Seinfeld, 1991) episode than the control group. This indicates that implicit memory provides a more perceptive test of brand placements than explicit memory. These results also suggest that brand placements prime the brand in the subconscious memory and thus may influence later judgements or behaviour related to a brand. This is further supported by Yang's (2004) research, which concluded brand placements in 15 different films increased participants' implicit memory.

However, this is countered by earlier research on the effectiveness of brand evaluations. This research suggests that brand placements have little or no effect on the evaluation of the brand or on purchase intentions (Babin and Carder, 1996; Karrh, 1998; Ong & Meri, 1994). This can be explained by the fact that if people

already have strong attitudes toward the brand, there is the implication they have a consolidated attitude stored in memory and thus their attitude is unlikely to change (Roskos-Ewoldsen and Fazio, 1997). In this case, the brand's placement may serve to reinforce an already existing attitude, but it is not going to result in a more positive evaluation of the brand or stronger intentions to purchase it. However, this does not explain how attitudes are formed for new brands.

2.10 Summary

The early focus on brand placement research was in film and television and tended to concentrate on cognitive measurement in terms of recall and recognition with mixed results.

In film and television, placement prominence has consistently been found to influence memory performance, with prominent brands resulting in better recall than subtle brand placements. A high degree of plot connection, in which the brand becomes related to the context of the story, generally results in more positive brand evaluations, especially when the brand is placed in a film that the viewers like. The more synergy between the brand and plot connection, the greater the recognition of a brand. Strongly plot connected brands facilitate the narrative structure of films and television.

A significant weakness of this type of research is that an emphasis on recall and recognition cannot fully explain the quality of consumer engagement with brand placement and so can only offer limited insights into its effectiveness. In the context of brand placements, very few studies actually test for the link between brand memory and attitude. Research by Law and Braun (2000) and Russell (2002) suggests that memory for placements may be independent of the evaluations of the brands that are placed. However, to date this has not been extensively empirically tested.

This suggests brand recall in itself has only limited value to the brand owner and herein lies the problem with much of the early research into brand placement. The fact previous research has largely examined cognitive responses highlights a gap

in the academic literature and thus suggests affective and conative responses should be explored, as this will provide more meaningful insights into consumer behaviour and have implications for marketers in terms of strategic branding communications.

Past research has indicated that recall measures may poorly predict persuasion and evaluation; a brand that is remembered is not necessarily a liked one. Conversely, Cowley and Barron (2008) and Law and Braun (2000) argue that brand placements may improve brand attitude without necessarily improving explicit memory. MEE and classical conditioning would explain the positive attitude shift for subtle, visual, weak plot connected brand placements in research Russell (2002), but this assumption has yet to be tested in videogames. This study intends to address this research gap by investigating whether exposure to brand placement affects unknown brand likeability as a result of mere exposure for game players and game watchers in videogames.

CHAPTER 3

LITERATURE REVIEW (ii)

3.1 Introduction

The placement of brand names in videogames can be traced back to the 1980s when Sega Games included Marlboro billboards in its racing games (Acar et al. 2007). By 2000, 50% of the top 25 video games featured branded products (Nelson, 2002). Furthermore, the expansion of the video and computer game industry has made advertisers aware of the potential of videogames as an advertising vehicle in the form of brand placement. Brand placement affords two distinct benefits: additional revenue for game developers and enhanced realism for game users. This was found to be particularly prevalent for sports games (Nelson, 2002; Nelson, 2004). This chapter outlines the key research that has been conducted into brand placement and videogames, namely memory based measures of brands, congruent versus incongruent placements, brand familiarity, brand attitude and reverse product placement.

3.2 Brand placement in videogames

The similarities between brand placements in television and films offer a solid foundation for research on brand placement in video games. In game advertising (IGA) shares many of the strengths of brand placement in film and television, primarily character association and meaning transfer to the brand the character is using/mentioning. In videogames, especially sports games, brand placements are aided by consumer identification with famous sports people such as Tiger Woods in the golf game *Cyber Tiger* (Nelson, 2002). Second, a brand placed in a film or television programme has a longer life span than an advertisement, which is typically a 30-second exposure, whilst gamers may play a game for forty hours or more until they have mastered it. Third, in gaming contexts there is likely to be increased involvement due to the active role of the game player and 'flow', which is the mental state in which the gamer is fully immersed in a feeling of energized focus, full involvement, and enjoyment in the process of playing the videogame (Novak et al. 2000).

The level of involvement may be different for experienced and non-experienced gamers and could be related to game genre. Experienced gamers may not require

all their mental processing capacity to play a game and thus, they can have mental capacity left to notice and process brand placements, consequently leading to improved brand memory (Chaney et al., 2004; Schneider and Cornwell, 2005). In addition, when the game demands full concentration, such as avoiding being shot in a first person shooter game, experience does not allow for effective processing of brand placements and there tends to be no positive effect on memory (Chaney et al., 2004). A final consideration is that in gaming contexts there is arguably more precise targeting of the consumer (i.e. the gamer) and a longer message shelf life than is seen in other media such as a 30-second advertisement or non-viral social media post (Hudson and Hudson, 2006; Nelson, 2002).

Glass (2007) proposed that videogames employ placement in three different ways, monopolisation, billboards and utilisation. Monopolisation occurs when the games are developed exclusively around one brand and this is referred to as 'advergaming'. Billboards function to add realism as they are by placed on roads, racing tracks or stadiums, as they would occur in natural settings. Billboards may be classified as IGA which is the focus of this study. Billboards in videogames can be static or dynamic, which means they can be digitally placed and can be easily changed. Raatikainen (2012) defines dynamic in-game advertising as advertising set for a predefined time frame, meaning that the billboards are changeable. This offers opportunities for advertisements to be targeted with more precision. This is similar to Facebook and YouTube advertisements, which attempt to match the advertisements with the viewers, based on their search and purchase history. Utilisation occurs when virtual worlds are customised and the gamer uses the brand in the virtual world such as *Second Life* (Linden Labs, 2003) and American Apparel.

Understanding the effect of brand placement in videogames on brand evaluation is a key objective of marketers. This is qualified by a number of different variables such as pre-existing brand attitude, the level of familiarity with the brand, whether the brand is real or fictitious, general attitudes towards placement in games and attitude toward the game played. In this research, any residual memory effects have been eliminated as unknown, fictitious brands were used in the quasi-experiments.

Although research concerning attitudes towards the practice of product placement in videogames has produced positive results, the literature concerning its effects is scant. Few empirical studies investigate the direct and combined impact of mere exposure, brand placements, brand attitudes and this research intends to address the gaps in the previous research.

3.3 Brand placement recall and recognition

As in film and television, memory based measures of brands in games are often used to determine cognition and advertising effectiveness (Nelson, 2005). The prevalent variables for brand related cognitive reactions to brand placement in video games are implicit and explicit brand recall and recognition. Explicit memory denotes a deliberate act of recollection of the source and the information encoded. It could be argued that explicit measures are a suitable measure of effectiveness if the goal of brand placement is to increase brand awareness and brand benefits (Shu-Hsun et al., 2011). Implicit memory reflects the non-intentional, non-conscious retrieval of previously acquired information, which is closer to actual consumer behaviour than explicit memory (Law and Braun, 2004).

From the various studies conducted, it is apparent that the level of recall and recognition is dependent on a variety of factors, such as game type, game genre and prominence of the embedded brand. Nelson (2002) in the first study into brand recall in videogames measured both short-term recall by posing free recall measures immediately after game play and after a five-month interval to control and measure different types of brands. Approximately 30% of placements within the racing game were recalled immediately after the game; long-term brand recall dropped to 10% in relation to the free recall email that was circulated to the participants five months after the initial experiments (Nelson, 2002).

In the second part of the study, Nelson (2002) used a racing game demo to measure short and long-term recall of localised versus national brands. Each of the local brands fared better overall than national brands, which could be explained by familiarity with national brands reducing attention and processing. The results were largely positive in observing favourable attitudes towards the practice of brand

placement and respondents reported that it enhanced realism and thus the game play experience. Moreover, product placement was not considered a deceptive practice. Nelson's work (2002) was seminal in investigating short-term and long-term brand recall in relation to videogames and thus established an important research area that has continued to develop. However, the sample was extremely small, the results inconclusive and would be difficult to generalise.

Chaney et al. (2004) tested unaided recall of brands placed on billboards within a multiplayer first person shooter game. The product category had higher recall than the actual brand itself suggesting visual images (of products) are more easily recalled than words (i.e. brand names). Their findings did not support purchase intention for the brands advertised in the billboard.

In a later study, Nelson et al. (2006) suggest more familiar brands can be more easily recalled than unfamiliar brands. The authors also found real brands are more easily recalled than fictitious brands. They concluded recognisable brands are accessible attitude objects and automatically attract attention and hence can be recalled more easily. This can also be explained by brand event relatedness and market prominence (Pham and Johar, 2001). A brand with a high market prominence can be more easily recalled after only limited exposure for the product category advertised (Schneider and Cornwell, 2005). Recall can also be explained in the context of memory and the fact that retention of familiar objects already existing in the memory network should be more easily recalled than the retention of unknown brands.

Yang et al. (2006) demonstrated the participant's implicit memory for brands was influenced by IGA for players of sports and racing games. Their study supported the contention that IGA did influence implicit memory, but they observed only a small effect of IGA on explicit memory for the brands. They further concluded measures of implicit memory might provide more sensitive tests of the influence of brand placements, than measures of explicit memory more commonly associated with recall and recognition.

Billboards have a higher recall Grigorovici and Constantin (2004) and unsurprisingly prominent placements are recalled more easily (Schneider and Cornwell, 2005). In a study conducted by Mau et al., (2008) Coca Cola appeared on a billboard (prominent position) in the game *Counter Strike* (Valve Corporation, 2012) and 71% of the players recalled the brand correctly. However, this high recall rate is unusual and could be partly explained by the fact Coca Cola is a global brand and the players would have a degree of brand familiarity and existing residual memory.

Chaney et al. (2018) considered the influence of size (small, large), order (primacy and recency) and absorption (low, high) on brand recall and recognition for well known brands in *Trackmania 2 Canyon* (Nadeo, 2011). Although some evidence supports a recency effect (the last placement is remembered better), the majority of literature supports the primacy effect, suggesting that the first brand placement will be recalled more than subsequent placements (Gupta and Gould, 2007; van Reijmersdal et al., 2009). Absorption is related to telepresence and this is discussed in section 3.4. The results for size concurred with Schneider and Cornwell (2005) and Mau et al. (2008) in that large size brand placements were recalled and recognised significantly more than small brand placements. But order and absorption had no effect on brand recall and recognition.

Ghosh (2016) investigated the motivation to win as opposed to not losing as a factor in determining players' implicit and explicit memory, game and brand attitude and emotions. The conceptual framework developed and tested revealed that IGA outcome and performance had a major impact on players' motivation, which affected memory and attitude. The results were useful as they contributed to the understanding that winning or losing in an IGA has the capability of altering the players' memory. The study was conducted with (n=396) postgraduate students in a southern Indian university and used established brands and results may differ in other contexts.

There have only been limited studies in relation to active and passive processing in videogames. The most noteworthy are Nelson et al. (2006) who found that game players recalled significantly fewer brands for both real and fictitious, than did watchers. Gangadharbatla (2007) concurred with Nelson et al. (2006) and

reported that 98% of watchers recalled at least one of the nine brands placed in the background, while only 46% of the game players recalled at least one brand. However, there were no differences in attitude and purchase intention as a result of brand exposure between players and watchers (Gangadharbatla, 2007; Gangadharbatla, 2016).

Molesworth (2006) asked respondents about their attitude towards brand placement in video games. Most were positive about brand placement because it increases realism and provides a revenue stream for developers, reinforcing previous research in relation to film and television (Reid, 1999; Nebenzahl and Secunda, 1993). Some respondents were negative when they thought brand placement was a managed attempt to persuade them and they saw it as having subliminal intent. This suggests a contradictory picture; gamers accept the potential benefits in terms of realism and revenue for developers of in-game marketing activities, but they are also cautious about the long-term interference of such activities in the gaming experience. Molesworth (2006) proposed that evaluations of brands encountered in games might be transferred to real products in a blurring of what is real and virtual. However, when recalled from memory these evaluations might not always be positive. As such, brands may form part of the evoked set that stimulates the imagination, as individuals may already be fantasising/aspiring about brand ownership in the real world. 'Players expect films and brands to carry representations of real brands and advertising to increase the level of realism and therefore make it easier to evoke the imagination... and may actually value placement that is a "natural" part of the media created world' (Molesworth, 2006: 357). For Dell Island in *Second Life* (Linden Labs, 2003), gamers can visit the factory, customise the computer, and purchase an actual Dell computer online.

Therefore, it would appear the research is inconclusive and supported by Law and Braun (2000) who argue, there is little direct relationship between advertising recall and consumer behaviour. Exposure influences both conscious memory process (explicit memory) and unconscious memory process (implicit memory) (Law and Braun, 2000; Yang et al., 2006). In the real world, there is usually a time lapse between placement exposure and purchase opportunity, which is likely to lead to a reduction in explicit memory. Implicit memory may influence consumer behaviour

through its effect on the brand placement even if the details of the original exposure are not remembered (Yang et al., 2006), supporting the argument for the MEE. Zajonc (1968) suggests recognition and preference are independent and MEE is strong when it occurs subliminally.

Vyvey et al. (2018) adopted a more sophisticated experimental design that tested the causal effects of cognitive load and enjoyment on brand recall in IGA. They adopted a between subjects experiment (N = 561) that demonstrated the impact of visual and auditory feedback on enjoyment and the effects on brand recall. The results indicated that higher enjoyment directs more resources towards gameplay and thus less to brand processing which can result in negative impacts on explicit recall. The results could be explained by the game stimulus used which required participants to catch good cherries and avoid bad ones to create cherry soda. Thus the game was interactive and other game genres may not have exerted as much pressure on cognitive load and thus allowing secondary processing.

3.4 Congruence

Balasubramanian et al. (2006) suggest congruence may follow the peripheral route to persuasion (Petty et al., 1983). Balasubramanian et al. (2006) imply in their theoretical model that congruent placements yield higher affective outcomes than incongruent placements. This concurs with IGA research in an experimental setting (Nelson et al., 2006; Yang et al., 2006), which reports that perceived fit between brand (namely, Coca-Cola) and game genre is positively related to brand attitudes and purchase intention. In addition, the Nelson et al. (2006) study demonstrates a sense of telepresence positively related to perceived persuasion for real and fictitious brands. Telepresence is a psychological construct and is generally accepted as the sensation of being in a created virtual environment, such as a videogame. Lombard and Ditton (1997) discuss presence as the influence on non-mediation. They argue the degree to which a medium can produce an environment that is accurate in its representations, leads to an experience that seems real. This concurs with previous research into videogames, where the inclusion of brands adds to the gaming experience and the sense of realism (Nelson et al., 2004; Molesworth, 2006; Verberckmoes et al., 2016).

In general, incongruent placements produce higher cognitive outcomes such as recall than congruent placements. Bhatnagar et al. (2004) suggest brand placements that do not fit with the game genre may be perceived as cynical marketing attempts rather than enhancing game realism or adding to the verisimilitude. Accordingly, out of context brand placements may result in negative brand evaluations. In a racing game Nelson et al. (2008) reported congruence between game and brand was negatively related to recall when brands were placed along the side of the racing track. Lee and Faber (2007) observed highly incongruent brands such as pet food in a racing game were significantly more likely to be recalled than moderately incongruent brands such as deodorant or congruent brands, for example petrol. These higher recall rates were attributed to inexperienced game players who were highly involved in the game.

However, Lewis and Porter (2010) who argue that moderately incongruent brand placements in *Anarchy Online* (Funcom, 2009), a massively multiplayer online role-playing game (MMORPG) did trigger higher awareness rates than extremely incongruent brand placements, which reduced the perceived sense of realism and created annoyance if not co-ordinated appropriately with the game environment, do not support this outcome.

In this sense, research to date indicates that brand and videogame genre have implications for cognitive and affective processes. For cognitive processes and IGA, incongruence has shown results that are more favourable. Whereas affect and persuasion, congruency in IGA, has indicated more positive brand effects.

3.5 Brand familiarity

The brand placement literature demonstrates that familiar brands are recognized in films (Brennan and Babin, 2004). In videogames, familiar brands are recalled more often than unfamiliar brands (Nelson, 2002; Nelson et al., 2006). Despite these findings Balasubramanian et al., (2006) with their theoretical model suggest unfamiliar brands may be more easily recalled. This can be explained by the notion

that unfamiliar or unexpected stimuli are incongruent with prior expectations and so attract attention and superior cognitive outcomes.

Mau (2008) reported brand attitudes suffered for the familiar brand Coca-Cola because of integration into the game *Counter Strike* (Valve Corporation, 2012). According to Mau (2008), brand attitudes were significantly lower after gameplay than before it. Conversely, brand attitudes for an unfamiliar brand Jolt Cola, which is a cola brand sold in selected German stores with an insignificant market share, were significantly higher after gameplay than before (Mau et al., 2008). Mackay et al., (2009a) study revealed after playing a racing game, players with initially negative brand attitudes reported more favourable brand attitudes. However, their research did not ascertain the impact of brand attitude for those gamers holding pre-existing favourable brand attitudes. Van Reijmersdal et al., (2010) study with 2,746 10-17 year old females indicated that non-brand users' brand attitude was more likely to be influenced by placements in the game *Go Supermodel* than existing brand users.

3.6 Brand related attitudinal responses

Hang and Auty (2011) argued that implicit learning effects could explain embedded brand persuasion as explicit learning effects such as brand recall in videogames affords a mixed picture. Positive effects on brand attitudes, beliefs and preferences were observed (van Reijmersdal et al., 2009). Videogames differ from traditional television advertising in that the embedded brands are typically exposed for longer and more frequently. Repeated exposure may influence perceptions of the brand through implicit and incidental learning (Ritterfield and Weber, 2006). Frequency of exposure has been shown to be an important measure in relation to measuring advertising effectiveness. However, in the majority of the studies into IGA, most of the participants were exposed to the brand once. However, this is not typical as gamers may spend several hours a week playing digital games and hence the exposure to brands is more frequent. Thus, repeated brand exposures may strengthen or diminish affective responses because of wear in and wear out effects (Berlyne, 1970).

Some, studies have also reported a positive relationship between attitude towards the game and attitude towards the embedded brand (Mau et al., 2008). Some studies have found that a sense of telepresence has both direct and indirect effects on persuasion. Nicovich (2010) reported that the level of telepresence in *Morrowwind* (Bethesda Game Studios, 2002), an online roleplaying game, had a positive effect on appraisals of in-game brand placement as well as for word of mouth auditory brand conversations from avatars in the game environment. In addition, the sense of telepresence mediated the relationship between players' involvement in the situation and their judgement of the brand.

Nelson et al. (2004) reported that attitudes towards the practice of brand placement in videogames correlated to positive attitudes towards advertising on self-reported perceived influences of perceived buying behaviour. Gould et al. (2000) who reported a positive relationship between attitudes towards advertising in general and attitudes towards brand placement support these findings.

It is fair to say, studies to date indicate a mixed picture with both positive and negative brand attitude responses recorded. In a study by Mau et al. (2008), unfamiliar brands evoked a more positive attitude than familiar brands, which worsened due to placement. Cauberghe and De Pelsmacker (2010) analysed placement prominence and game repetition on brand attitude. They observed subtle versus prominent placement did not influence brand attitude for the advergaming, however game repetition did adversely affect brand attitude. Waiguny *et al.* (2014) analysed how negative game content, such as violence, transfers to brand attitude. They found negative content results in less favourable game attitude and this manifests in more negative attitudes to unfamiliar brands.

However, both the above studies relate to advergaming and it is the intention of this research to explore in more depth the circumstances under which brand evaluations towards the placed brands in IGA are formed. It is clear from the literature that a large number of variables can affect effectiveness of brand placements. Moreover, to date the analysis of implicit memory effects towards brands in videogames is still atypical and this study intends to address this as stated in section 1.11.

Verberckmoes et al. (2016) conducted a study for IGA and fantasy games and their results reported that if IGA were congruent it would contribute to a sense of narrative realism. This sense of realism led to more positive attitude towards the IGA and the fictitious energy drink. Congruence and attitude were moderated by perceived IGA interactivity. Interactive IGA may provide the gamers with a more meaningful and brand related experience. As the scope of the current study is non-interactive IGA, interactive IGA could be an area for future research.

3.7 Brand placement and purchase intention

To date there has been limited research to assessing conative responses to brands in videogames. Initial studies have investigated brand intentions in advergames and the gamers have been children. In the Mallinckrodt and Mizerski (2007) study, a control and treatment group of children aged five to eight were exposed to the Froot Loops cereal brand. Children in the treatment group did not believe that Froot Loops were healthier than fruit; however, the older children did report a significantly higher brand preference for Froot Loops than other cereals and food. These points towards the effectiveness of brands in advergames, where the game is created to promote the brand.

There have been some attempts to consider actual behaviour, albeit in an experimental setting. In the Pempek and Calvert (2009) study children who played the healthier version of the advergame selected and ate significantly more healthy snacks than those who played the less healthy version. Dias and Agante (2011) and Hernandez and Chapa (2010) indicated children tend to choose according to what is being advertised in the advergame. These results in advergames are not surprising given the fact that an advergame is developed around one brand. Thus, the brand informs the narrative and will be exposed many times.

As is evident from the above discussion there is a lack of empirical testing of IGA beyond brand recall. To date there is no research that considers the relationship of the cognitive, affective and conative effects on brand placement. As stressed by Balasubramanian et al., (2006), it is important to consider all three effects to truly advance the research into brand placement in videogames.

3.8 Interactivity

Videogames differ from film and television because of their interactive nature. A number of studies have analysed the effects of interactivity on brand placement in videogames and have reported the positive impact of interactivity and presence. (Yang et al., 2006; Hang and Auty, 2011; Grigorovici and Constantin, 2004). Whilst other media do enable interaction, videogames are unique in the high and additional level of complexity that the different types of brand placements afford, such as billboards, selecting brands to progress through a game, and picking branded clothes for avatars.

Hang and Auty (2011) reported that placement recall was superior in interactive environments such as video games, as opposed to non-interactive environments, when they placed logos on the football shirts of the players. However, Nelson et al. (2006) reported that interactivity negatively affected recall. This is explained by the fact that the majority of mental processing capacity is dedicated to playing the game and is thus limited in processing the messages on in-game billboards. This was supported by Lee and Faber (2007) and Grigorovici and Constantin (2004). However these studies addressed in-game billboards and brand logos embedded in avatars clothing. Thus, the participants were not actually required to click on the avatar or billboard to progress in the videogame or receive brand information.

3.9 Virtual worlds and reverse product placement

Muzellec (2012b) recognised the importance of branding in fictional and virtual environments and this is particularly pertinent to this study as videogames can be classified as virtual worlds (Lee and Faber, 2007). Alternatively, film and television can be classified as fictional worlds.

To date, research into computer synthesised virtual worlds is quite limited and largely concerned with Second Life (*Linden Labs, 2003*). Gabisch (2011) study into brand experiences in the virtual world and the impact on purchase intentions in the real world. Arakji and Lang (2007) suggest several companies with a brand

presence in *Second Life* (Linden Labs, 2003) are attempting to create and increase brand awareness with the hope that these brand experiences will eventually influence real world purchase intentions and behaviours. Both these studies are limited in that they investigate *Second Life* (Linden Labs, 2003) and look at ‘real’ world brands thus omitting fictional brands. Furthermore, generalisation to other contexts may be quite difficult to predict as only *Second Life* (Linden Labs, 2003) was investigated.

In their call for a new stream of academic study on virtual brands, a new typology of brands was proposed (Muzellec et al., 2012a). The framework as illustrated in Figure 3.1 identifies four types of brands based on the origins of the brand and the world in which it exists. Quadrants A and C represent product/brand placement and include most brands as we currently experience them. Quadrant B represents proto brands-fictional and virtual brands in abstract worlds. Quadrant D represents fictional or virtual brands in the real world and are referred to as reverse product/brand placement (Muzellec et al., 2012b).

Figure 3.1 Typology of brands in real and virtual world

Virtual World / Real World	Real brands in computer-synthesized or fictional worlds (Product Placement) A	Virtual brands in computer-synthesized or fictional worlds (Proto-Brands) B
	Real brands in the real world (Most brands as we experience them) C	Virtual brands in the real worlds (Reverse Brand Placement) D
	Real Brands	Virtual Brands

Source: Muzellec et al. (2012)

Reverse brand placement is the practice of introducing a brand into a book (for example Bertie Botts Every Flavour Beans in the *Harry Potter* and the Philosopher’s Stone (Columbus, 2001) or a game (such as American Apparel launching a new line of jeans in *Second Life* (Linden Labs, 2003) before introducing it to the real-world marketplace. Thus, the placement exists before the actual brand exists emphasising

that, 'purely virtual brands include fictional or computer synthesized brands that exist solely in the imagination of the receiver (Muzellec et al., 2012b:817). Initially, fictional brands were used to minimize the reliance on corporate sponsorship and associated costs of using real brands, for example 'Big Kahuna Burgers' and 'Red Apple' cigarettes in films such as *Pulp Fiction* (Tarantino, 1994). Thus, fictional brands are imaginary and cannot be purchased or consumed.

Virtual computer synthesized brands have no reference in the real world but can be consumed in the computer synthesized environment in which they exist. For example, in the computer game *Grand Theft Auto* (Rockstar North, 2013) players can purchase virtual drinks such as eCola and Sprunk. Thus, the entire brand interaction and experience exists solely in the computer-synthesized world. Hence, virtual computer synthesised brands can still produce emotional attachments. These brands are defined as protobrands, which are brands, which have no tangible existence in the real physical world, but are still capture the imagination and emotional attachment for real consumers in the computer-synthesized environments in which they exist (Muzellec et al., 2012b).

In contrast to affective conditioning, mere exposure procedures only require the presentation of the brand name and thus no affect-evoking information. Further, mere exposure does not require a conscious recognition of having previously seen the stimuli. This is an important factor as it demonstrates the automatic nature of mere exposure is distinct from the deliberate inferences consumers make about the conscious familiarity created by advertising. This has implications for protobrands, as the gamer will not have an evoked set of recollections, which may influence their subsequent evaluation (Muzellec et al., 2012b).

There have been limited studies into the effects of fictitious versus real brands in videogames. In a study, measuring game players' recall of fictitious brands in a racing game, very low recall rates were reported (Chaney et al., 2004). This can be explained by the fact the game players are so engrossed in the actual game, thus limiting their capacity to process peripheral elements. Real brands are shown to have stronger effects on brand memory than fictitious brands (Mau et al., 2008; Nelson et al., 2006). Molesworth (2006) suggested interaction with the brand might

be so rich in imagery in the virtual game environment it has the same effect as the real product experience. To date, this assumption has yet to be empirically tested. Studies have also shown consumer interactions with products in virtual environments such as videogames, have the potential to increase brand knowledge, positive brand attitudes and purchase intentions. Based on previous findings in marketing and virtual reality literature, this suggests a virtual environment brand experience will result in positive brand evaluations and thus provide an indication of purchase intention.

3.10 Summary

This chapter has reviewed the key research conducted into brand placement and videogames, namely memory-based measures, congruent versus incongruent placements, brand familiarity, formation of brand attitude, interactivity and reverse product placement.

Overall, the results of studies concerning videogame brand placement have been inconclusive. The majority report only limited effects of brand placements in videogames on consumers. Some have demonstrated a positive relationship between product placement and brand awareness. Some suggest only limited effects of consumer response outcomes.

It is also true to say, much of this research has methodological limitations. A key weakness of almost all of these studies, for example, is that they are laboratory-based experiments, which are exploratory in nature and not undertaken in a realistic setting. The experimental setting may result in more attention given to the stimuli, which can result in higher recall and recognition as participants are devoting all their cognitive resources to the stimuli (van Reijmersdal et al., 2010). These studies have also tended to use small, non-random samples made up predominantly of men, even though women now represent a key gaming segment. Nelson's (2002) work, which is the most frequently cited in the literature, is exploratory in nature and possesses methodological limitations. The most significant concern the sample size. Further, the study suffers from selection bias, as subjects were not randomly selected nor assigned to experimental groups. The research therefore suffers from

a lack of internal validity. External validity was compromised in many of the studies conducted as only one game genre was investigated.

Brand placement is a promotional tool is used like other forms of promotion to influence consumers. Therefore, application of persuasion theory, implicit and explicit processing and MEE within this current study is therefore justified. This study aims to investigate whether exposure to brand placement affects unknown brand likeability as a result of mere exposure for game players and game watchers in videogames. Brand placement is an alternative communications strategy which, to date has not been fully developed conceptually in the literature. It has attracted some academic research, in terms of cognitive responses, but very limited research into the impact of affective responses to unknown brands and how exposure and evaluation contribute to the formation of attitude. The focus for this study will be to extend the understanding of consumer processing of brand placements in videogames and thus develop the theory of brand placement.

CHAPTER 4

LITERATURE REVIEW (iii)

4.1 Introduction

The underlying process by which brand placements can influence brand attitude depends on the type of placement, the attention paid to the placement and the persuasion intent, where the intention of the communication is to change the attitude/behaviour of the recipient such as in traditional advertising. More importantly, the recipient is aware of the reason for the communication and thus the intent is explicit. When the brand placement is subtle, such as a brand name mention or a logo appearing fleetingly on the screen, the viewer may not notice the brand placement, and thus the placement could influence a viewer's attitude as the placement creates processing fluency: a mere exposure effect (Cowley, 2012). 'Mere exposure research shows that exposures to a target renders the target more accessible in memory and this increased accessibility enhances the ease which consumers identify and recognise the target and this is known as processing fluency' (Lee and Labroo, 2004:151).

Alternatively, if the film, television programme or game creates a 'feel good' feeling towards the brand this may correspond to a positive brand attitude because of evaluative conditioning. Evaluative conditioning is an active cognitive process involving associations between the film, television programme or game and the brand. Alternatively, mere association of affective views (classical conditioning) because of a superficial association may form attitudes (Fill, 2013). For placements that are more prominent the viewer may accumulate knowledge and general inferences. These inferences may affect brand attitude, as they are dependent on how the brand is incorporated into the plot of the film, game or television programme. This processing of information may create new brand associations or reinforce existing associations, both, which have the potential to affect brand attitude (Cowley, 2012). However, very little is known about how individuals process brand placements, suggesting a need for more research in this area (Balasubramanian *et al.*, 2006).

Brand placement may be considered as a form of advertising, marketing communication or as Hudson and Hudson (2006) argue 'branded entertainment'. Nonetheless, there are some fundamental differences to traditional advertising;

primarily, the persuasive intent, which is less explicit for brand placements (Nelson and McLeod, 2005). Second, the processing of brand placements may vary from traditional advertising in the cognitive processes involved. Thus, this study aims to investigate whether exposure to brand placement affects unknown brand likeability as a result of mere exposure for game players and game watchers in videogames.

This chapter provides an overview of some of the key models that have been developed to explain the persuasion process and impact on brand choice. These are hierarchy of effects models, the Elaboration Likelihood Model (ELM) (Petty et al., 1981). The Integrative Attitude Formation Model MacInnis and Jaworski (1989), and the Knowledge Persuasion Model (PKM) (Friestad and Wright, 1994). Implicit and explicit processing will be discussed before discussion of the key concept of the Mere Exposure Effect (MEE) (Zajonc, 1968). This will be used to formulate the conceptual framework for this thesis.

4.2 Hierarchy of effects models

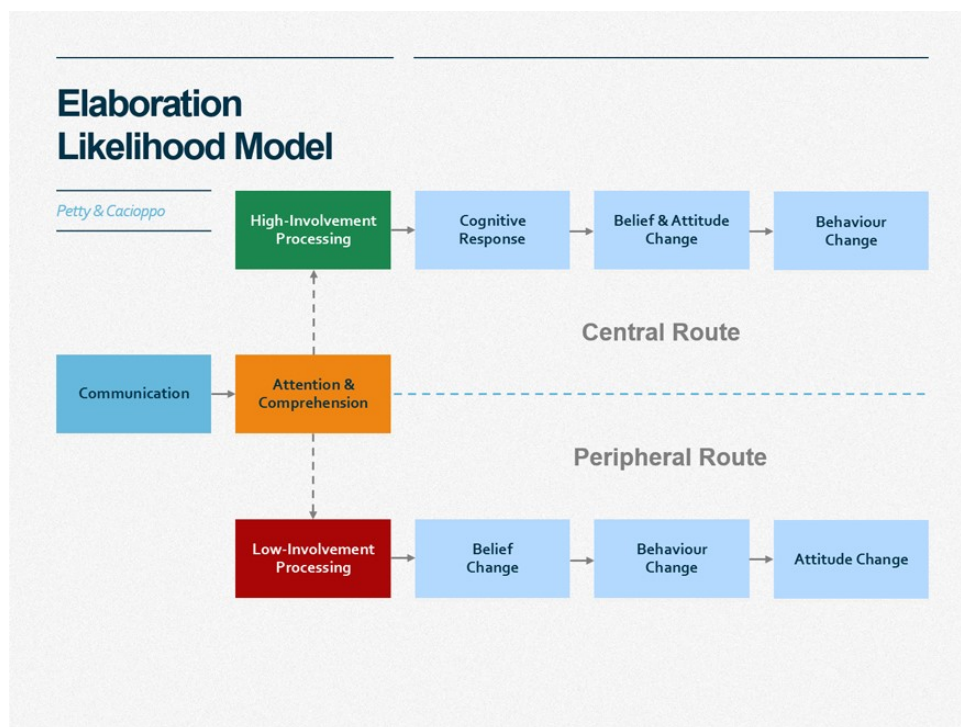
At the core of understanding how advertising messages influence purchase decisions are the hierarchy of effects models. There is a substantial body of literature that detailing how consumers process and use advertising messages to influence brand and product choices. The hierarchy of effects models range from awareness, interest, desire and action or AIDA (Strong, 1925) to purchase, conviction, preference, liking (Lavidge and Steiner, 1961). All the hierarchy of effects models relate to the attitudinal components of cognition (think) affective response (feel) and conation (do) as a means to explain how consumer's process messages from advertisements. The hierarchy of effects models, though creating a useful framework, have been criticised for assuming advertising works in a linear manner. As other factors, such as the relationship between the consumer and the brand may also influence the advertising process (Rice and Bennett, 1998). The main body of work surrounding hierarchy of effects models was undertaken in the 1960s and advertising has become more complex in terms of the proliferation of media channels and audience comprehension of advertising, all of which compound to create a very different marketing communications environment.

Indeed, it is increasingly possible that consumers may buy a product with little prior knowledge and thus they do not progress through all the stages of the models. This may occur as a result of online reviews by customers who have tried the product or endorsements from celebrities and influencers such as people and organizations who have expert knowledge and social influence in their respective field. Finally, the hierarchy of effects model implies attitude formation involves conscious and rational effort.

4.3 Elaboration Likelihood Model

Perhaps one of the most prominent models in the literature in terms of explaining the theory of attitude formation and attitude change is the elaboration likelihood model (ELM) (Petty et al., 1981). The ELM is presented in Figure 4.1.

Figure 4.1 Elaboration likelihood model



Source : Petty and Cacioppo (1980)

The ELM argues when a person encounters some form of communication, they can process this communication with varying degrees of thought (elaboration), ranging from a low (low elaboration) to high (high elaboration). The ELM Model assumes

that there are two responses to message exposure; a central and peripheral route to persuasion (Petty et al., 1983). The model is frequently used by advertising researchers when studying attitudinal change, which is assumed to be the process by which externally generated persuasion occurs. The persuasion process is determined by the consumer's level of involvement with the message, which is related to the cognitive effort a person uses to process that message. Conscious processing underlies the ELM model and thus the individual has some level of awareness they are processing stimuli as opposed to non-conscious processing where there is an absence of knowledge of processing the stimuli.

The central route is taken when there is higher involvement with the products or the message and thus elaboration likelihood is high and attitude change will be likely to be more persistent and predictive of behaviour (Petty et al., 1983). For the central route of attention, comprehension and persuasion aligns more closely with the Lavidge and Steiner (1961) model. They suggest as the consumer becomes more aware of the message, they find it interesting and relevant and are more likely to pay attention, process the messages presented and thus generate cognitive responses. The cognitive process may result in positive evaluations and purchase decisions as a result of high involvement. The peripheral route suggests little cognitive effort is expended and elaboration is low and thus the consumer relies on cues such as source credibility and heuristics which are mental shortcuts easing the cognitive load of decision making (Petty et al., 1983).

Source credibility, where the source of the communication has authority, conviction, trust or expertise is an important factor in the communication process and lack of source credibility may mean the message is discounted (Fill, 2013). With the peripheral route consumers have a low involvement with the message and thus are not motivated to cognate the arguments presented. By this reasoning, brand placements in videogames are digested on the peripheral route if the gamer has relatively low involvement with the brand placements and brand placement acts as a peripheral cue.

In the ELM model, involvement is associated with the motivation to process information, and prior knowledge/expertise is associated with the ability to process information. Petty et al. (1983) high and low involvement conditions were replicated and the number of conditions presented were varied. In the study, a product advertisement for a new disposable razor was used. The level of involvement was manipulated by telling one group (high involvement) of participants that the razor would soon be available in their area and they would be given a chance to receive a razor. In the second group (low involvement), the participants were advised that the razor would be market tested in distant city and they would receive toothpaste at the end on the experiment. The study also varied source and message characteristics by showing the high involvement group advertisements featuring popular athletes, whereas the low involvement participants advertisements featuring average citizens thus, showing some participants advertisements with strong arguments and others advertisements with weak arguments. This study observed that when the elaboration likelihood was low, featuring famous athletes in the advertisement would lead to more favourable product attitudes, regardless of the strength of the product attributes presented. Whereas when elaboration likelihood was high, only the argument strength would manipulate affected attitudes (Petty et al., 1983). Lee and Koo (2016) supported the argument that product involvement strengthens the effects of endorser–product congruence on consumer responses when the endorser’s expertise is well related with product to create source credibility. Bitner and Obermiller (1985) proposed that in the marketing context, the determinant of routes is more complex, involving variables of situation, person, and product categories.

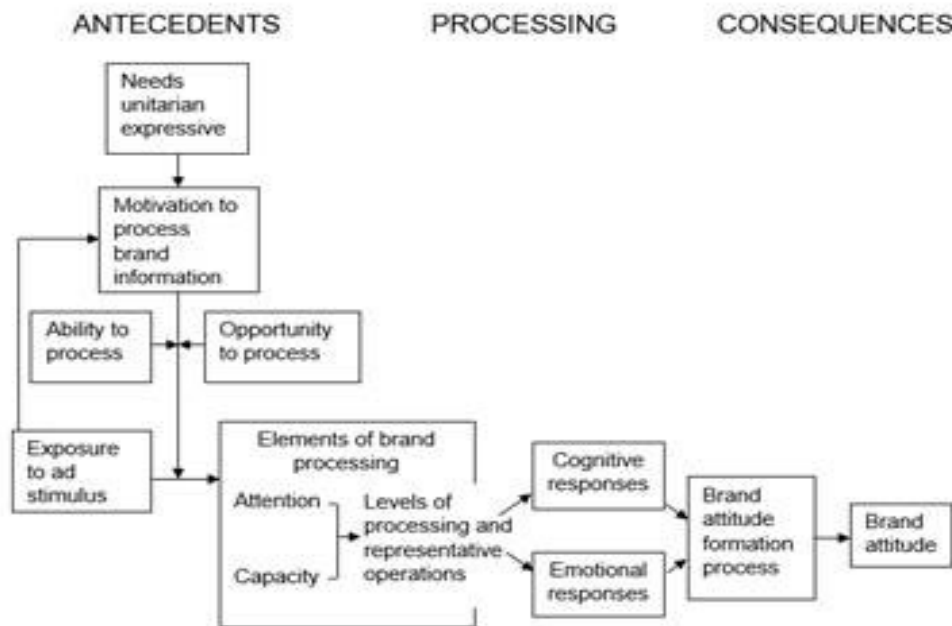
Despite its theoretical significance, doubts about the practical application of the ELM have been raised and weaknesses have become apparent. The lack of prediction, and the fact that the model was developed in the 1980s mass media environment, mean its application may be somewhat compromised in the digital communication landscape that now prevails (Kitchen et al., 2014).

Moreover, the ELM model does not explicitly acknowledge the potential of non-conscious processing, where individuals *process* perception, memory, learning, and language without being aware of it. Low involvement processing and peripheral processing assumes some degree on consciousness and thus the activation of explicit memory by the stimulus response. Unlike traditional advertising, where the brand message is the primary purpose of the message for the audience, with brand placement the audience will be engaged in the entertainment content and thus the brand placement may be the secondary message. In addition, a game player actively interacts with a game by modifying and controlling the course of events (Nicovich, 2005). Hence, because of an immersive and co-created consumption environment, it may be far more difficult for the gamers to remember the brands than in a film, game or television context (Chaney et al., 2004). Therefore, the ability to elaborate brand placement in films and television is considered low. However, in videogames there are a number of studies, which indicate brand placement, adds to the gaming experience by creating a more realistic environment in certain game genres such as sports (Homer, 2009; Molesworth, 2006). In these contexts, it is possible that gamers will be able to process the brand placements.

4.4 Integrative Attitude Formation Model

MacInnis and Jaworski (1989) Integrative Attitude Formation Model (IAFM) is based on the premise information processing is an important precursor to attitude change and persuasion. The IAFM is presented in Figure 4.2.

Figure 4.2 Integrative Attitude Formation Model



Source: MacInnis and Jaworski (1989)

This has been proven and argued in a multitude of studies over previous decades (Batra and Ray, 1986; Greenwald and Leavitt, 1984; Petty et al., 1983; Shapiro et al., 2002). Even in the context of brand placement, information processing and depth of processing have been recognised as important in predicting message effects (Balasubramanian et al., 2006). MacInnis and Jaworski's (1989) model demonstrates activated needs stimulate processing motivation, and it is this motivation, moderated by opportunity and ability, that plays an important role in information processing. In fact, it affects the direction of attention and processing capacity (Petty et al., 1983). This processing in turn influences the type of response generated from exposure to an advert stimulus, which can be either cognitive or emotional. These responses therefore determine the process of attitude formation and ultimately brand attitudes.

The MacInnis and Jaworski (1989) model highlights that information processing is the result of a complex relationship between several factors. Motivation has a determining influence on attitude formation, as it affects the direction of an

individual's attention and the intensity of their information processing (Petty et al., 1983). When motivation is strong, consumers are more likely to focus attention on brand-relevant advertising information and process it deeply (Mitchell, 1981). Consequently, cognitive and emotional responses will contribute to the formation of brand attitudes, which are suggested to be more stable and more confidently held than those formed when processing motivation is lower (Petty et al., 1983; Park and Mittal, 1985). However, the influence of motivation on the attitude formation process is not as simplistic as it may seem. This is because the antecedents of opportunity and ability moderate the impact of motivation on attention and processing capacity. Therefore, whether an individual attends to and processes a message depends on not only their motivation level, but also whether they have sufficient opportunity and ability (MacInnis and Jaworski, 1989). When all three conditions are high, attitude change is most likely.

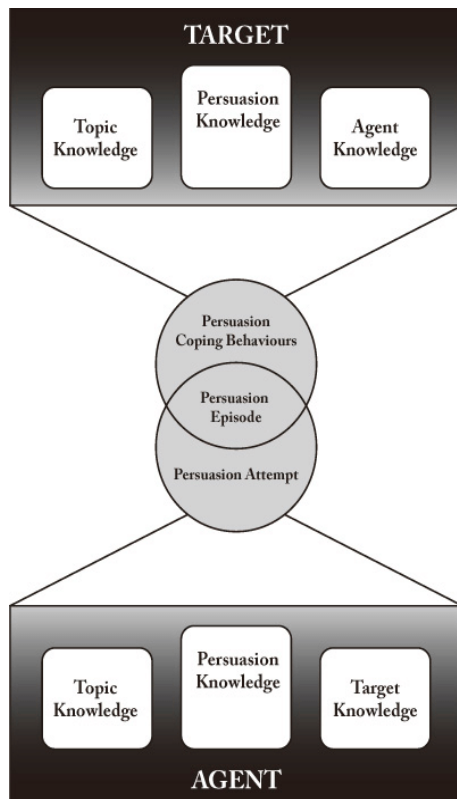
The IAFM MacInnis and Jaworski (1989) model provides a framework for understanding information processing by recognising the nature and elements of processing, and the moderating impact of an individual's characteristics on attitude development. It also incorporates the two attitude components of emotions and cognition in explaining attitude formation. The basic constructs depicted include needs, motivation, ability and opportunity according to the ELM. Additional constructs relate to information processing such as attention, capacity, and levels of processing; cognitive and emotional responses; attitude formation processes; and brand attitudes. The model provides a useful framework for considering brand placement in videogames and its ability to influence brand attitudes. The ELM Petty (1981) and the Integrative Attitude Formation Model MacInnis and Jaworski (1989) can both be treated as complementary, rather than competing theoretical perspectives, for enhancing understanding of placements in games.

4.5 Persuasion Knowledge Model

According to the persuasion knowledge model (PKM) Friestad and Wright (1994) consumers develop knowledge about how, why and when a message is intended to

persuade them. The PKM is outlined in Figure 4.3.

Figure 4.3 Persuasion knowledge model



Source Friestad and Wright (1994)

This knowledge helps consumers manage persuasive episodes. Friestad and Wright (1994) persuasion model examines how consumers perceive persuasion agents such as marketers and advertisers in terms of their goals and tactics, evaluation of the effectiveness or appropriateness of persuasion attempts, and self-reflections of an audience's ability to cope with these persuasion interventions. People learn about persuasion tactics from reference groups, their level of media literacy, direct experiences and commentary in the media (Friestad and Wright, 1994). Thus, persuasion knowledge is developmental and increases over time. In addition, persuasion knowledge will be different for each individual and the advertising tactics used.

The persuasion knowledge model implies consumers will process a message in a non-perceived persuasion setting differently than a setting where they believe persuasion intent or an advertising message is implicit (Ahluwalia et al., 2004). In these situations, the presence of an advert or sales agent is enough to activate persuasion knowledge. This may have implications for how the audience processes the sales message or advert. However, exposure to brand placements is different, as the stimulus is presented in a context that may be construed as entertainment and therefore consumers may not activate their persuasion knowledge. Accordingly, the key advantage of brand placement over traditional advertising can be ascribed to the hidden motive of persuasion (Bhatnager et al., 2004)

Persuasion knowledge is available for activation when the consumer believes a message is intended to persuade. When a tactic is perceived to have persuasive intent, the message will be affected by the change of meaning principle. This has implications for how consumers interpret both the actions of persuasive agents and the message.

In the context of brand placement, this may occur when a gamer notices that a placement is pulled from the background to the foreground, thus resulting in a change of meaning for the gamer as flow is suspended and persuasion knowledge activated. Campbell and Kirmani (2000) investigated the accessibility of an ulterior motive as an antecedent to the activation of persuasion knowledge, reporting when an ulterior motive is highly accessible, activation of persuasion knowledge is more likely. The activation of persuasion knowledge has also been shown to occur through exposure to an advertisement before seeing a prominent brand placement for the same brand. Cowley and Barron (2008) reported positive effects on attitude after exposure to a placement but this became damaging to brand attitude if the placement was preceded by an advertisement for the same brand. In these circumstances the advertisement activated persuasion knowledge, which in turn encouraged scepticism in the viewer.

Exposure to brand placements is different from traditional advertising as the stimulus is presented in a context that may be construed as entertainment. Therefore, consumers will not activate 'their marketplace related social intelligence,

however deeply developed... leaving their performance unguided by that domain specific knowledge' (Wright, 2002:680). As such, the key advantage of brand placement over traditional advertising can be ascribed to the hidden motive of persuasion (Bhatnager et al., 2004; Lang, 2000).

According to Friestad and Wright (1994), persuasion knowledge is relevant to how consumers may process brand placements. When a consumer recognises a communication as an attempt to persuade, they process it differently than when no such recognition is identified. Therefore, the hidden and secondary nature of brand placements may not activate the processes that typically put a consumer on guard, as in the case of advertising. Hence, the stealth nature of brand placements may be a critical factor in making the product integration effective. However, brand placements are not always stealth in nature and are sometimes obvious such as the launch of the BMW Z3 roadster in the James Bond film *Golden Eye* (Campbell, 1995).

Russell (1998) proposed the 'transformational' concept for expressing the power of product placement in the context of engagement with television shows and film stars. In this early study, she suggested subtle placements rather than prominent placements would be more effective in activating the association of brand and context. These initial findings support the PKM, which assumes consumers use their knowledge about the persuasive tactics and goals of marketers to help them process these communications. Thus as prominent placements have more obvious persuasive intent than subtle placements they may generate more negative brand attitudes (Campbell and Kirmani, 2000). Although the Campbell and Kirmani (2000) study relates to traditional advertising media, their insights can be applied to interactive persuasive environments. Thus, it can be asserted that subtle placements could be expected to lead to more positive brand attitudes than prominent placements. However, in the case of IGA, the knowledge the entertainment context presents a persuasion setting may not be prevalent amongst gamers. Unlike traditional broadcast advertising, where most people of cognitive ability understand its persuasion intent, IGA typically presents a non-commercial medium with the focus on entertainment. In addition, due to the interactivity, fun and escapism of the gaming environment the expectation is that the transfer mechanism

will be activated for both subtle and prominent placements.

There have been several studies investigating the presence of persuasion knowledge on the evaluation of brand placements and to date they have generated mixed conclusions. Wei et al. (2008) demonstrated that disclosure of explicit knowledge persuasion resulted in significantly more favourable brand attitudes towards high familiarity brands placed in a college radio programme. Conversely, Matthes et al. (2007) concluded frequent repetition of brand placements resulted in less favourable brand attitudes when persuasion knowledge was apparent. Cowley and Barron (2008) who asserted disclosure of the persuasive intent of brand placements lowered brand attitudes and preferences supported this. The variation in these results can be explained by differences in the mode of brand placement. The first, Wei et al. (2008) employed auditory techniques and two versions of a college radio station were used. One version mentioned a brand of macaroni and cheese that was familiar (Kraft Dinner), and the other mentioned a brand that was low in familiarity (Carriage Trade). The second Matthes et al. (2007) employed visual placements and a news report about new methods of cattle breeding with the farming machinery brand De Laval inserted was utilised. The third, Cowley and Barron (2008) used a combination of visual and auditory placements, where an episode of *Seinfeld* (Seinfeld, 1991) was viewed and prominent placements of Pantene shampoo (audio) and M&M sweets, which were both audio and visual. Subtle brands were visual, were on screen for less than 5 seconds, and were Ruffles potato chips and Diet Coke. In the third study participants viewed advertisements for the placed brands at the beginning of the experiment meaning they were reminded of the ulterior motive of the placement: persuasion by association.

Research by Chan et al. (2016) argued that the prominence of placed brands resulted in significantly more extensive levels of processing, which was negatively correlated with brand attitudes. Consequently, prominence acts as an external trigger, which activates persuasion knowledge, which may lead to the altering of responses (Friestad and Wright, 1994). Chan et al., (2016) study confirms the mediating role of depth of processing between prominence and brand attitudes, but not purchase intention. Prominent brand placements thus activate persuasion knowledge and as the audience realise the brand is placed for commercial reasons

they become more cynical which leads to negative attitudes and beliefs about the brand and the placement as asserted by Balasubramanian et al. (2006) and thus this affects negatively on purchase intent. Conversely, Matthes and Naderer (2016) found no evidence that placement disclosures can harm brand attitude in music videos, by activating persuasion knowledge. This could be because the brand placement is associated in with less commercial intent. The music artist may want to be associated with the brand. In the Matthes and Naderer (2016) study, the music video clip was *Telephone* (Lady Gaga, 2010) which featured Polaroid. Hence, participants may have had an existing attitude to Polaroid and persuasion knowledge may be less powerful in negatively affecting brand attitudes than unfamiliar brands where there is no existing attitude. Further, the placements did not disrupt the participants processing of the narrative, which could also have explained the results.

The dissociation between cognition and effect of brand placements found in the existing literature may thus be attributed to variations in cognitive processing among individuals. It may also be explained by the mere exposure effect Zajonc (1968), which argues that cognition and affect are independent and this assertion is robustly supported in the literature.

4.6 Limited Capacity Processing

Lang (2000) explains that information processing consists of three steps: encoding, storage and retrieval. In the encoding stage, the message must engage one or all of the five senses. Each of these senses is linked to memory in the brain via sensory receptors. Although the human brain has a virtually unlimited space existing for each of these specific sensory receptors, only a small percentage move from the sensory storage area to the short-term working memory. The messages that are retained in the short-term memory are selected by either controlled automatic or unintentional responses. Controlled selection occurs when an individual purposefully decides to notice an object, for example road signs when driving in a racing game. Automatic selection occurs when the information is pertinent to the individual such as an advertisement for a car if the individual is considering buying a new car or by, information that represents an unexpected occurrence in the environment, such as

a crash by a billboard in a racing game. The storage stage involves the transfer of information from short-term memory to long-term memory and this forms part of the associative memory network. The final stage, retrieval, is 'the process of searching the associative memory network for a specific piece of information and reactivating it in working memory' (Lang, 2000:50).

Lang's (2000) limited capacity model for mediated message processing operates under two key assumptions, first that individuals are active processors of information, and second that individuals' ability to process information is limited. Different situations may require different amounts of mental resources. Hence, whilst playing a racing videogame, the gamer is involved in the goal-directed task of driving the car to win the race or complete a fast lap time and this is the primary task. The secondary task is processing information that does not directly aid driving, such as viewing and processing billboard information. Therefore, it can be suggested that if demand for processing resources is high in the primary task, then secondary tasks such as viewing billboards in racing games may suffer from a lack of mental processing resources.

Lang (2000) suggests message processing may be impaired by the fact individuals may choose to selectively process and thus choose to allocate fewer resources to a message. He also suggests the message may require more resources than allocated by the individuals. Hence, this may explain the processing of billboards in a typical racing videogame. This may lead the gamer may choose to concentrate on playing the game and not process the billboards, or the billboards may require more resources than the gamer actually allocates due their placement being subtle rather than prominent. The limited capacity model therefore suggests that gamers actively playing a racing videogame are less likely to process billboards embedded within this environment. Conversely, brand recall post exposure would be expected to be more for individuals who watch the game instead, as they have more resources at their disposal to allocate to processing the billboards. Nevertheless, a range of external distractions, such as talking and boredom, may also compromise the ability of individuals watching to process placements. More importantly, brand evaluation and higher liking should be higher for players, because they are more involved in the racing game than watchers, all of which has implications for the mere exposure

effect. It has been theorised that for MEE to occur brand placements should be processed with a limited amount of attention (Fang et al., 2007; Grimes and Kitchen, 2007).

The traditional context of advertising and communication has undoubtedly changed with the fragmentation of communication channels. The ways media is consumed makes it even more important to understand the way in which advertising creates affective responses in the absence of high levels of attention. Leigh and Menon (1987) have researched advertising effects under high and low message involvement, with the majority concluding that stronger effects occurred in the high involvement condition. Conversely, a number of studies have found stronger effects in low involvement conditions such as background music Park and Young (1986), with pictorial messages generating more brand associations than verbal messages (Austin, 1997).

Heath's (2001) low involvement processing (LIP) theory suggests advertising is processed with great efficiency but in low involvement, conditions this process is passive and instinctive and thus advertising stimuli are processed as complete sets of sensory associations and transferred directly to implicit memory. These sensory associations define the brands in the consumers' minds and exert a powerful influence on brand choice, without ever being subject to active thought and analysis (Grimes, 2008). In order to address lack of attention Heath (2004) suggests communications should be designed to deliver strong emotive associations that can be processed under low attention, incidental conditions that are influential in decision making and not available in subsequent explicit recall. This incidental, automatic, implicit processing is mirrored in studies relating to mere exposure effects. Grimes (2008) suggests support for subconscious processing and other measures other than recall to assess the effectiveness of advertising. Although there is evidence of the relationship between LIP and mere exposure, the precise nature is unclear. Olson and Thjømøe (2003) however do suggest that the effects are the same. On the other hand, Grimes (2008) suggests that there are two routes to the creation of advertising effects under low attention conditions. He proposed an integrated model of advertising effects whereby mere exposure effects are driven by perceptual processes and low involvement processing by conceptual processes.

Thus supporting the perceptual fluency argument for how mere exposure operates.

4.7 Explicit memory processing

The amount of attention an individual devotes to a brand placement is important for the processing of the placement. Balasubramanian et al., (2006) referred to processing depth (high/low) as a continuum between implicit and explicit memory. Explicit processing occurs when conscious attention is paid to the information. This process creates a memory, which is linked to the learning situation, such that the placement and this memory can be intentionally retrieved later (Shapiro and Krishnan, 2001). As explicit processing is a conscious effort, attention and involvement are important during exposure. This attention can be hard to achieve and maintain for brand placements in films, videogames and television programmes, as the entertainment is the primary activity not the placement.

Russell (2002) found an increase in explicit memory recognition and a positive shift in brand attitudes after exposure to audio placements with high plot connection. In this instance, more elaborate processing resulted in better recall. However, for audio placements with low plot connection Russell (2002) found that brand attitude remained unchanged. She suggested that audio/low plot connection placements were incongruent with viewer expectations as audio placements were usually connected to the plot.

4.8 Implicit memory processing

Implicit processing enables individuals to acquire brand information passively and at low levels of attention. Retrieval from implicit memory occurs automatically, at a subconscious level, without reference to the learning situation (van Reijmersdal et al., 2010). This concurs with incidental exposure to advertising, such as when the individual does not purposefully process the advertising content and thus this relates to implicit processing. In the context of videogames, this could be when a banner advert appears in a sports videogame such as Electronic Arts *Fifa* EA Vancouver

(2017) and is not likely to be purposefully evaluated. Thus, without remembering seeing the placement, implicit effects can still occur. Research suggests that the process behind this effect is 'mere exposure' (Auty and Lewis, 2004; Grigorovici and Constantin, 2004). Repeated exposure to a brand placement under low levels of attention can create a sense of familiarity with the brand. The exposure can result in positive attitudes towards the brand and even preference for the brand, without memory of the placement (Auty and Lewis, 2004; Law and Braun, 2000). This sense of familiarity leads to a shift in positive attitudes towards the stimulus (Zajonc, 1968; Cowley and Barron, 2008). Avery and Ferraro (2000) compared brand placements in prime-time television programmes and film reruns on television. They found brand placements, which occurred in television programmes, had a greater impact due to repetition and higher brand exposure. Conversely, Yoo (2008) found that implicit processing occurred after a single exposure for an unfamiliar brand. Positive attitudes to brand placement can decrease after a high number of repetitions, but for this deterioration to occur the individual needs to be exposed to the stimulus in excess of 200 times (Zajonc, 1968).

Implicit memory effects are undoubtedly relevant to the study of brand placements as they are not the main concern of the audience; the film, videogame or television programme is the primary concern. This may vary due to the brand placement's connection to the plot and relevance to the narrative and characters. However, even when individuals are not aware of the presence of brand placements, the effects of implicit memory may still occur (van Reijmersdal et al., 2010; Russell, 2002; Balasubramanian et al., 2006).

4.9 Mere Exposure

It appears the literature is inconsistent in terms of the effects of brand recall on brand placements. As the research has evolved and earlier studies have been countered by examinations that are more complex. There is a suggestion a brand does not have to be recalled to have an impact on brand attitude. Studies by Law and Braun (2000) and Russell (2002) suggest that placement recall may be independent of placement evaluation. This is supported by cognitive psychology and the mere exposure effect (Zajonc, 1968; Zajonc, 1980). According to MEE, repeated

exposure to a stimulus can lead to a favourable evaluation even though the subject is not conscious of the exposure to the stimulus.

The underlying process by which brand placement may affect brand attitude differs depending if the consumer is mindful of the placement or not. Cognitive processes assume an individual consciously processes the information to which they are exposed. Non-cognitive processes assume individuals are consciously unaware of the stimuli to which they are being exposed. With subtle placements, where the brand logo or name appears in the background with a brief exposure on screen and is not noticed by the consumer, their brand attitude may be more favourable to the brand due to the exposure. The exposure increases subconscious learning, which creates processing fluency and results in a mere exposure effect (Zajonc, 1968).

However, to date there is scant research on the subconscious processing of brand placements as recall and recognition have been the most popular measured variables in the majority of the studies conducted (Nelson, 2002; Schneider and Cornwell, 2005; Nelson et al., 2006; Chaney et al., 2004; Lee and Faber, 2007; Grigorovici and Constantin, 2004). As the gaming industry continues to grow and become a viable communication channel for engaging audiences, it becomes increasingly important for game developers and brand owners to understand how brands are processed. This study proposes to address this omission in previous research. Ruggieri and Boca (2013) suggest investigating the persuasive capacity of brand placements, and locating this in the framework of MEE; can increase understanding of the processing of brand placements and the subsequent effect of this on brands. Thus the findings from this study may not only be relevant to practice, but could also broaden understanding of how IGA and brands are processed, thus contributing to theory in this area.

4.9.1 Definition of the Mere Exposure Effect

According to Zajonc (1980) non-conscious mere exposure is produced on the basis that emotional reactions precede cognitive reactions. Thus, affect judgments are simple and do not require the recognition of stimuli, only their evaluation. Conversely, cognitive processes are crucial to the analysis of stimulus components

and they make possible the differentiation and recognition of the stimulus itself. Recognition and preference are independent and help to explain why the mere exposure effect is strong when it occurs subliminally. Zajonc (1968) suggested simple, unreinforced exposure leads to increased liking for a stimulus; in short, familiarity leads to liking. If the process were merely cognitive, different individuals would exercise different evaluations to the same content, whereas Zajonc (2001) found when cognitive processes are reduced, emotional influences tend to dominate, producing more uniform reactions.

The MEE works best under low attention conditions and very short presentation times (Bornstein, 1989). In seminal experiments conducted by Moreland and Zajonc (1977), significant correlation was found between frequency and liking but not liking and recognition for the Japanese ideographs presented. The lack of recognition is a fundamental element in MEE research. Accordingly, researchers have asserted that exposure without awareness produced greater preference (Bornstein, 1989; Bornstein and D'Agostino, 1992; Zajonc, 1968).

Since the publication of the (Zajonc, 1968) monograph describing the mere exposure effect there have been more than 200 published experiments investigating the exposure–effect relationship (Bornstein, 1989). The exposure effect has proven to be a robust, reliable phenomenon, yielding strong results for a variety of stimuli for example polygons, drawings, photographs, nonsense words, and ideographs. It has also been captured using a variety of rating procedures - e.g., liking ratings, pleasantness ratings, and forced-choice preference judgments. Furthermore, researchers have used the paradigms and procedures from exposure effects research to investigate a wide variety of psychological phenomena. These have included advertising effects (Sawyer, 1973), social perceptions and behaviours (Saegert et al., 1973), stereotypes and prejudice (Ball and Cantor, 1974), environmental preferences (Herzog et al., 1976), aesthetic judgments (Berlyne, 1974), verbal learning (Zajonc et al., 1974), implicit memory (Holyoak and Gordon, 1983), and attitude formation (Grush, 1976).

In his meta-analysis Bornstein (1989) reported a number of key factors such as repetition, size of effect, type of stimulus, exposure time, order that produce maximum MEE and these will be now be explained.

Zajonc (1968) found a positive relationship between number of exposures and the average goodness rating for a series of nonsense words. This study was replicated using a similar procedure but different stimuli and Chinese ideographs were substituted for the nonsense words. The results were consistent with the findings of the first study; which rated goodness of meaning and was positively related to frequency of exposure (Zajonc, 1968). A third experiment investigated the extent to which typical exposure effects could be obtained with socially relevant stimuli. In this experiment, subjects were shown a series of faces (photographs of students taken from a college yearbook) at different exposure frequencies, after which they were asked to make liking ratings of each stimulus person on a seven-point scale. A significant, positive relationship between frequency of exposure (25 presentations was the ceiling in this study) and a mean liking rating of a stimulus was found. In this case, there is clear evidence that the MEE is facilitated by repetition (Zajonc, 1968).

In his meta-analysis, Bornstein (1989) identified stimulus frequency or exposure time as possible moderators. Russell (2002) and Janiszewski (1993) tested single placement exposures and as frequency of exposure has been identified as a fundamental moderator for MEE by Bornstein (1989), it can be assumed that the MEE is stronger when a brand is presented frequently. This study suggests, a key moderator for product placement MEE should be placement frequency.

Bornstein (1989) meta-analysis observed the size of exposure effect for the 208 independent experiments was .260 with a combined z of 20.80 ($p < .000001$) and a fail-safe N of 33,047. Hence, the exposure-effect relationship is robust and reliable. Moreover, the MEE has been obtained when the initial presentation is subliminal and interestingly the size of the MEE under these conditions is larger. Attributional effects of perceptual fluency can explain this. Perceptual fluency occurs when participants are aware of the initial presentation and engage in a correction process, in which they revise their preliminary feelings of fluency and then discount some of

the positive affect that they feel towards a particular stimulus. In contrast, the opposite occurs for initial suboptimal exposure conditions.

However, there is little direct evidence to support the claim that subliminal (below the consciousness threshold) MEE is larger than supraliminal versions (above the threshold of consciousness). The only empirical demonstration of a significant difference in the magnitude of subliminal and supraliminal MEE was by Bornstein and D'Agostino (1992), who reported stimuli presented for 5 msec, produced significantly larger MEEs than those presented for 500 msec.

Newall and Shanks (2007) implemented a more direct test of the correction process hypothesis by using stimuli presented at both supraliminal and subliminal levels. Participants were exposed to photographs of faces and polygons for optimal (400 ms and suboptimal 40 ms) durations, next forced liking and recognition decisions were administered for previously seen stimuli and unseen stimuli. Contrary to the attributional model of mere exposure, a significant MEE was found when recognition performance was at its highest. Moreover, liking and recognition were positively correlated across the three experiments conducted. Newall and Shanks (2007) findings are consistent with Fox and Burns (1993), who reported significant liking effects when the stimuli used were above the recognition threshold. Berry et al., (1991) findings also demonstrated an absence of subliminal effects. Thus, whilst the MEE is ubiquitous and has been widely tested, there is an emerging body of research that raises questions about unconscious influences on memory.

4.9.2 Stimulus variables and the mere exposure effect

Bornstein (1989:269) reported that a 'significant, positive, relationship between exposure frequency and reported affect has been obtained for every class of stimulus except abstract paintings, drawings and matrices'. Six of the nine studies comparing attitude change after simple versus complex stimuli found more positive affect ratings for complex stimuli. This has implications for the current study in that the participants will be exposed to the brand placements 3 times, which has been identified by Bornstein (1989) as the minimum exposure frequency to activate MEE. Additionally, videogames can be classified as complex stimuli as the placements

appear in a multi-dimensional environment such as a racing track or city such as Gran Turismo (Polyphony Digital, 2013) one of the research propositions (refer to section 1.11) is to test if MEE can be activated in complex, multi-dimensional videogame environments.

In previous mere exposure studies, stimuli have been presented between 10-50 times, with a mean ceiling of 20.95 (Bornstein, 1989). The evidence therefore suggests that a relatively small number of exposures delivers optimum results (Zajonc et al., 1974; Zajonc, 1972; Stang and O'Connell, 1974). Only three studies assessed the relationship between a large number of stimulus exposures and reported affect. The findings suggest participants' affect ratings in some instances continue to rise, but they also suggest exposure duration and type of judgment were mediating factors in determining the strength of the exposure affect relationship.

Hamid (1973) study participants viewed a series of irregular polygons presented at varying exposure durations, ranging from 1 to 25 seconds. He observed liking ratings increased through exposure durations of 5 seconds, reached a plateau, and then began to decline at high exposure frequencies with longer exposure durations of typically 15 to 25 seconds. Bornstein (1989) concluded there were weaker exposure effects with lengthening stimulus exposure. Harrison and Crandall (1972), Kail and Freeman (1973), Matlin (1970) and Stang and O'Connell (1974) examined exposure frequencies in either heterogeneous or homogenous exposure sequence conditions. These studies yielded mixed results in terms of the presentation sequence on the exposure effect with heterogeneous presentations produced moderate exposure effects and homogenous presentations produced no exposure effect (Bornstein, 1989).

The results of studies using subliminal stimuli indicated that stimulus recognition is not a prerequisite for the production of mere exposure effects. Moreover, unrecognised stimuli produced a more significant effect (Bornstein, 1989). This has important implications for this study as the multi-dimensional, complex videogame environment and nature of game play may indeed mean that cognition of placements is low or non-existent. However, implicit memory rather than explicit memory and processing may result in more positive evaluations of brand placement.

4.10 Models of the mere exposure effect

Four major frameworks have been used to explain the MEE, Zajonc's (1980) affective model, two factor model and processing fluency. These will now be outlined in Sections 4.10.1 to 4.10.3.

4.10.1 Affective model

Primacy of affect is supported by findings that support the primary role of affect over cognition in the decision making process. Zajonc (1980) argues the affective response (preference for a stimulus) and cognitive responses (recognition of the stimulus) are independent. Thus, affective response can occur in the complete absence of stimulus recognition. This presents affective response as automatic, unconscious and not reliant on high levels of elaboration (Zajonc, 1980).

4.10.2 Two Factor Model

The original two-factor model Berlyne (1970) proposed that evaluation patterns associated with repeated exposure result from the combined effects of habituation and satiation. Repeated exposures result in a linear increase in positive affect because of greater familiarity and reduced uncertainty (stimulus habituation) this supports Zajonc (1968) explanation. However, a second, independent process that operates concurrently with habituation: stimulus satiation has also been suggested. Stimulus satiation results in boredom after repeated exposures and results in an inverted U-shape distribution of liking (Berlyne, 1974). The original two-factor model focused on conscious and deliberate processing of stimuli. However, Bornstein (1989) proposed that stimulus habituation and satiation could apply to both conscious and unconsciously processed stimuli.

4.10.3 Perceptual fluency

Currently, the most widely accepted explanation for the MEE assumes frequency of exposure increases perceptual fluency. Perceptual fluency refers to the ease and effort of processing, subsequent to increased exposure to a stimulus (Fang et al.,

2007; Lee and Labroo, 2004; Grimes and Kitchen, 2007; Reber et al., 2004). The theory of perceptual fluency suggests that repeated exposure to a stimulus results in a representation of that stimulus in memory (Bornstein and D'Agostino, 1992). When the stimulus is encountered, again this stored representation will make it easier to encode and process this stimulus. The perceptual fluency automatically engenders a positive affective response that is psychologically detectable and is transferred to the evaluative judgments of the stimuli. This infers that mere exposure to a brand creates a sense of familiarity and subsequently biases subjective opinions of the brand, without any conscious recollection of the initial exposure (Janiszewski, 1993).

Furthermore, Grimes and Kitchen (2007) suggest, as the brand exposure is accessible in conscious memory, consumers will 'misattribute' the feeling of preference and will be unable to negate this 'illusion' (Bornstein, 1989). Perceptual fluency involves the processing of physical features such as modality (visual versus auditory) and shape (Jacoby and Dallas, 1981). Some researchers have suggested that familiarity with the stimuli plays an important role in preference judgments. Familiarity is influenced by 'affective residue', which is created by advertising, packaging and prior usage experiences. In the case of brand placement, the positive evaluation is transferred to the brand or logo. The perceptual fluency associated with mere exposure is greater for less familiar stimuli, thus less familiar brands may benefit more from subtle placements compared to familiar brands (Lee and Labroo, 2004). In addition to perceptual fluency, there is evidence that conceptual fluency may affect judgements about stimuli (Whittlesea, 1993). Conceptual fluency reflects the ease with which a stimulus comes to an individual's mind and relates to the processing of meaning representation of the stimuli (Shapiro et al., 1997).

Winkielman and Cacioppo's (2001) hedonistic fluency model assumes fluent processing creates positive affective responses towards easily processed stimuli. According to the hedonistic fluency model, mild and positive affective responses occur as a result of familiar stimuli, usually meaning a harmless situation. Successful recognition creates good feelings and coherent interpretation leads to positive moods (Winkielman and Cacioppo, 2001).

Lee (2002) suggests that perceptual and conceptual fluency are independent with differing antecedent and consequences. Non-conscious elaboration at the time of exposure may benefit conceptual fluency but not perceptual fluency. In addition, perceptual fluency is modality sensitive and will be strongest when the physical features of the brand are identical at both encoding and retrieval. By contrast, conceptual fluency is frequently observed following modality changes between modality and test. Lee (2002) also suggests that perceptual fluency is more evident in tasks requiring stimulus-based choice, whereas conceptual fluency is more evident in tasks relying upon memory-based choice.

However, brand logos differ from the stimulus devices commonly used in experiments to measure the MEE. Typical stimuli were often novel or simple stimuli such as abstract paintings and line drawings. These types of stimuli may have discouraged research participants from engaging in more meaningful processing. Thus, the processing fluency that resulted from prior exposures is more indicative of how easily participants can perceptually identify and process the stimuli (i.e. perceptual fluency), rather than how readily the stimulus comes to mind and its meaning (i.e. conceptual fluency) (Lee and Labroo, 2004). Brand logos are symbolic representations that invoke variety of associations, connotations and experiences for each individual. Thus, the processing of brand placements is likely to be based on more than just the perceptual features of the product or logo and is therefore more complex. Brand placement may thus incorporate a conceptual fluency component in which the implicit effects are primed by pre-existing knowledge and experiences.

For relatively well-known brands, the process is different. This is due to the pre-existing network of associations in memory formed over frequent previous exposures to the brand, which activate a subset of the associations that are consistent with the emotion elicited, by the television programme, film or videogame, which can shift attitude more in a positive direction. For lesser-known brands, seeing the brand with a well-liked character results in a new mental representation, which would be positively valenced. One explanation for this is the mere exposure effect which suggests affect judgments are simple and do not require the recognition of

stimuli only their evaluation. In general, mere exposure theory suggests that attitudes can change without cognition.

4.11 Structural Mere Exposure

Some studies, however suggest the MEE is robust to changes in context between exposure and test. These studies manipulate components of the stimuli themselves, following exposure to the stimuli and the effect is known as the structural mere exposure effect (SMEE) (Zizak and Reber, 2004; Gordon and Holyoak, 1983). The structural mere exposure effect occurs when preference acquired through exposure generalises to stimuli with a similar structure (de Zilva et al., 2013).

Gordon and Holyoak (1983) conducted one of the first studies that combined MEE and implicit learning paradigms. They examined the relationship between implicit learning and exposure to ascertain if they contributed to the understanding of the exposure effect itself. The importance of their study recognised the existence of the application of prior knowledge before making a liking rating. The study was replicated and supported by Manza et al. (1998). Hence, the liking rating provides an indirect measure of knowledge that satisfies the criteria for an indicator of implicit processing (Newell and Bright, 2001).

Gordan and Hollyoak (1983) and Zizak and Reber (2004) participants were asked to memorise a series of consonant strings (stimuli) generated by a finite state grammar, which specifies permissible combinations of the letters (components) in the strings. In a test phase, participants were presented with exposed strings, novel strings generated from the grammar, and novel strings that were not permissible within the grammar. Participants preferred both exposed strings and novel grammatical stings to novel non-grammatical stings. What was interesting about this result was not simply that the mere exposure effect generalised to an implicit learning situation, but that differential affect emerged for novel, structurally coherent displays which had never been seen before, a kind of structural mere exposure effect (Zizak and Reber, 2004). The structural mere exposure effect occurs when preference acquired through exposure generalises to stimuli with a similar structure (de Zilva et al., 2013). Put otherwise, 'The structural mere exposure effect

demonstrates that exposed stimuli can be altered quite profoundly, but as long as they contain familiar components, participants will still prefer those stimuli to novel stimuli' (de Zilva et al., 2013:1347).

Newall and Bright (2001) conducted three experiments to test the relationship between the structural MEE and implicit learning process in an artificial grammar task. There was evidence of the structural MEE in all three experiments, but this was removed when test conditions were manipulated. In all three experiments, grammatical rule judgements remained intact even with the manipulations, which suggests explicit recall. In these instances, the SMEE can be explained in terms of an attribution of processing fluency.

In further studies, Newall and Bright (2003) conducted two experiments to test Bornstein (1994) claim subliminal mere exposure effects might generalise to structurally related stimuli. Experiment 1 demonstrated brief, masked exposure to grammatical strings impaired recognition but failed to produce a mere exposure effect on novel structurally related strings seen at test. Experiment 2 replicated the procedure, but used the same structurally related strings at test and training. The results suggest that the structural relationship between training and test items prevents the mere exposure effect when participants are unaware of the exposure status of stimuli, and therefore suggests no evidence for the existence of implicit learning.

4.12 Eliminating the mere exposure effect

Whilst the mere exposure effect is highly robust and over 200 experiments investigating this effect have been conducted, there is still no consensus as to the underlying mechanism that produces the effect. However, there is an emerging area of research that examines the limits of the MEE.

Numerous variables have been suggested that may remove or reverse the MEE. Berlyne (1974) suggested liking is an inverted U shape function of exposure, but the more dominant pattern of results suggests that initial exposure and extended

exposure increase liking (Bornstein, 1989). A second modulating factor was stimulus valence. Dijksterhuis and Smith (2002) tested subliminal exposure to extreme stimuli (extremely negative or positive words) and observed compared with extreme words that had not been presented, these words were later perceived to be less extreme. This effect was observed for both an explicit evaluation task and an implicit evaluation task. Grush (1976) however, reported the opposite effect and thus a rather contradictory picture emerges in relation to stimulus valence.

A feature of most mere exposure studies is the similarity of the context in which the stimuli are exposed and later tested. It is well documented that similarity between the exposure and test contexts has a powerful effect on recall (de Zilva et al., 2013). Poor memory may result from a variety of features to the change in the context, for example, location and background colour of the stimulus. Thus, stimuli exposed in one context are better recalled in the same context than a different context (de Zilva et al., 2013). Consequently, it seems reasonable to suggest that manipulations of this context could have similar affects to those of memory, such that, 'if changes in context between exposure and test reduce memory, they might also reduce liking' (de Zilva et al., 2013 p. 1346). de Zilva et al. (2013) examined the extent to which increased liking of exposed stimuli was dependent on experiencing the stimuli in the same context in exposure and in test in order to activate MEE. The participants were repeatedly exposed to pairs of cues (nonsense words) and target stimuli (faces and shapes), and were asked to rate the pleasantness of the target stimuli in the test phase. The MEE was observed, as familiar target stimuli were preferred to novel ones. However, if the cue-target pairings were rearranged the preference for familiar targets was disrupted. de Zilva *et al.* (2013) suggested the context of exposure and test moderated the MEE. Liking of the stimuli due to exposure is specific to the context of exposure and does not apply to new or familiar but different contexts.

4.13 Mere exposure and advertising

Although applications of mere exposure are limited in advertising studies, Baker (1999), there is some support (Janiszewski, 1993). In an early study, nonsense syllables were differentially exposed to subjects and subsequently identified with boxes containing nylon stockings. Exposure frequency significantly influenced

brand preference and brand choice (Becknell *et al.*, 1963). Janiszewski (1993) demonstrated that the mere presentation of a brand in a print advertisement had a positive impact on the attitude towards the brand, even though the viewers did not recall the exposure to the brand.

Baker (1999) compared brand familiarity, perceived brand superiority for a competitive set of brands and the motivation to deliberate at the time of brand choice to test mere exposure. This was contrasted with affective conditioning and brand choice decisions. Affective conditioning is seen as a special case of learning. In affective conditioning, an advertisement's visual or audio content generates positive feelings, for example, an advertisement for fabric conditioner may be displayed alongside fresh cut flowers. Therefore, in affective conditioning subjects require sufficient attention to facilitate associative learning, but that subjects are not required to be aware of the leaning or the persuasive intent (Allen and Janiszewski, 1989; Holyoak *et al.*, 1989; Shimp *et al.*, 1991). Hence, subjects may be aware of outstanding graphic design, or that an advert is humorous, but may be unaware that these execution elements are influencing their perception and behaviour towards the brand (Baker, 1999). The results indicated advertising employing mere exposure and affective conditioning was unsuccessful for known, well-established brands. However, it was successful against unknown brands if the leading competitors' brands did not have superior performance characteristics and the motivation to deliberate about brand choice was therefore low. The findings were important as they indicated strong support for the mere exposure effect and suggested that advertisers should maximise the prominence of the brand name and package in advertisements.

Lee and Labroo (2004) examined the effect of conceptual fluency on attitudes. They showed that exposures to seemingly unrelated adverts might affect consumer judgement as a function of the compatibility of the goals the adverts activated. In their research, consumers were exposed to a series of two adverts (a prime and a target advert) with either compatible or conflicting goals. If the goal of the target advert and the prime advert were compatible, the target advert produced evaluations with more favourable and was more likely to increase behavioural intentions towards the advertised products than when the goals are mismatched.

Their results suggested a positive valence of fluent processing underlies these processing fluency effects.

Fang et al. (2007) examined two competing explanations for the mere exposure effect, one the cognition based perceptual fluency/misattribution (PF/M) and two the affect based hedonic fluency model (HFM) under incidental exposure conditions. The findings ruled out the cognition based PF/M and suggested the spontaneous affective reaction resulting from perceptual fluency is a crucial link between fluency and evaluation. Their studies provide strong support for spontaneous affect influencing evaluative judgements.

Tom et al. (2007) demonstrated the importance of non-conscious processes on consumer choice behaviour. The MEE was tested against the endowment effect, which suggests that a consumer perceives an object as being more valuable if he/she possesses that object. Although the MEE and endowment effect did not produce an interaction, it did produce independent effects. The endowment effect increased object evaluation but not object preference. The MEE increased object preference but not object evaluation. In the experiments, the subliminal exposure produced a stronger MEE than supraliminal exposure and no exposure. One explanation of this effect is that subliminal exposure reflected the stronger effect of non-conscious processing (Bornstein and D'Agostino, 1992).

A study by Bluher and Pahl (2007) demonstrated the MEE on consumer behaviour. A group of German citizens were asked to participate in a study about town monuments. They were shown photographs of eleven landmark buildings and asked to name them. In one of the experimental conditions, advertising boards displaying sweet brand logos of either Zitro or Pfeffi were shown. In the control group, participants were shown the photographs but no advertisements. After naming the buildings, the participants were offered a choice between two bags of sweets (Zitro or Pfeffi) as a thank you. Participants in the exposed treatment group showed a clear preference for the sweets that had been advertised on five of the 11 landmark photographs, thus indicating a link between mere exposure and brand choice. Thus, research into the MEE and advertising indicates support for the effect in an advertising context and behaviour in terms of brand choice (Baker, 1999; Bluher

and Pahl, 2007). Other studies, rather than studying the MEE have attempted to explain how the MEE is processed, but no conclusive conclusions appear to have been reached in this area.

4.14 Mere exposure effect research and brand placement

Whilst the research into brand placement and the MEE is scant, there have been four studies conducted. First, Matthes et al. (2007) investigated the influence of placement exposure, viewers' involvement and persuasion knowledge on attitudes towards the brand and brand recall in a factual-based television programme. Their results indicated a MEE in terms of a frequently placed brand and positive brand evaluation in the absence of brand recall. However, the MEE was only present when there was high involvement with the programme and low persuasion knowledge. Conversely, when programme involvement was low and persuasion knowledge high, frequent brand placements led to a deterioration of brand attitudes.

Second Matthes et al. (2011) investigated individual differences in field dependence-independence for the perception of product placements. Matthes et al. (2011) 'asserted that individual differences in the cognitive trait of field dependence-independence (FDI) were an integral factor in the process of placement perception' (Matthes et al., 2011:86). When consumers see a film, television programme or videogame with brand placements, they differ in their ability to detect those placements. This is because field-independent (FI) individuals are better able to separate a stimulus from its embedding context than are field-dependent (FD) individuals as argued by (Witkin and Goodenough, 1981). Therefore, FI individuals are better able to recognize a placement (Matthes et al., 2011). The likelihood that product placements will be detected increases with the ability of an individual to extract information from a complex field. This is important because many studies seem to indicate that the hidden nature of product placements makes them hard to recognize; therefore, no effect on brand recall might often be observed (Russell, 2003; Russell, 1998). Their results demonstrate that field-independent individuals show a higher placement recall than field-dependent individuals, and that field-dependent individuals like the embedded brand more than field-independent individuals do. The results indicate the importance of individual difference variables

for product placement research.

Third, Matthes et al. (2012) considered subtle placements and the MEE, building on the previous studies of Law and Braun (2000) and Russell (2002). Their study used a rap video and had five experimental conditions: a control (no placements), two moderate frequency (15 placements), and two high (30 placements) frequency. The 266 participants were exposed to one of the conditions. Their findings were consistent with Grigorovici and Constantin (2004) and indicated that in a high involvement condition, the MEE is strong for subtle placements, but has no effect in the low involvement condition. Prominent placements were more recalled and recognised than subtle ones in both moderate and high conditions.

Fourth, Ruggieri and Boca (2013) tested the MEE in two widely distributed films in which several brands appeared. Their results indicated that in the high involvement condition one exposure was sufficient to produce a positive attitude towards the brand. Moreover, their findings were consistent with the fundamental construct; namely, the MEE does not depend on the awareness of having been exposed to the stimuli. Their findings were consistent with Auty and Lewis (2004) and Law and Braun (2000), who demonstrated brand placement effects on brand choice, were unrelated to memory. Thus, the limited processing occurs with a single brand placement exposure is enough to produce a feeling of familiarity, but is later mistaken as preference for the stimulus (Janiszewski, 1993; Zajonc, 1980).

To date these four studies into brand placement indicate support for the MEE in television, when the viewer displays high involvement with the programme, persuasion knowledge is low and exposures to the placement are frequent (Matthes et al., 2007). The Ruggieri and Boca (2013) study demonstrated that in a high involvement context (watching a film) one exposure was sufficient to activate the MEE and positive brand evaluation. Matthes et al. (2011) investigated individual differences in field dependence-independence for the perception of product placements and found support for this concept. Matthes et al. (2012) observed MEE is strong for music videos for subtle placements in high involvement conditions but has no effect in the low involvement conditions. Additionally Matthes et al. (2012) observed prominent placements were more recalled and recognised than subtle

ones in both moderate and high conditions.

In summary, the previous research has considered product placement in film and television and there is support for the MEE when the viewer is highly involved. Video games require game players to interact using a console or other device such as a smartphone and usually there is an objective task element to playing a game. It is this interactive element of gaming that makes it a more active medium than television or film. Thus in videogames involvement may be considered to be higher. This is because game players are expected to process both game-related information and background, 'noise' such as billboards and attention is divided (Yang et al., 2006). However, the previous studies have been inconclusive in terms of the number of exposures required to activate the MEE. In traditional MEE, psychology experiments exposures varied from 1 to 25 exposures Hamid (1973) with 3 being the recommended minimum Bornstein (1989). Ruggieri and Boca (2013) did observe the MEE for a single exposure in film. The idea of a single exposure being effective is contentious, but most researches agree that repeated exposures do indeed affect attitudes and sometimes purchase intentions.

4.15 Psychological Reactance Theory

Conversely, Psychological Reactance Theory (PRT) suggests if an individual's free behaviour in the present or future is eliminated or threatened, the motivational state of psychological reactance will be activated (Brehm, 1988). Reactance is an unpleasant motivational arousal that occurs when people experience a threat to or loss of their free behaviours. It serves as a motivator to restore one's freedom and these reactions can be in the form of behavioural responses, avoidance, or aggression towards the source. Since Brehm's (1966) first publication on reactance the phenomenon has attracted attention in basic as well as applied research, covering subject areas such as health, marketing, politics, and education. As this research is concerned with brand placement, and thus persuasion, the focus of the following discussion will relate to that specific area.

There have been numerous studies applying PRT to marketing and thus persuasive

messages. In a study on convincing members of a fitness club to participate in special exercises, people who had been given a forceful message such as “you have to do it” compared to a non-forceful message such as “consider it” experienced more threat, which, in turn, elicited more reactance (i.e. negative cognitions and anger) (Quick and Considine, 2008). Put otherwise, when attempts are made to persuade people using a forceful message, it motivates people to present arguments against the persuasive attempt (counter arguing). This is a cognitive-reflective process leading to negative attitudes toward the message and results in lower behavioural intention to follow the aim of the message. Additionally, how threatening controlling messages are perceived to be, depends on the level of social agency.

As PRT suggests, if individuals frequently act to counter the restrictions put on them by marketers, it has particular relevance to brand placement as the placements are forced on the audience as in the case of gamers when they play a videogame. This is unlike traditional television adverts, which can be more easily avoided. Thus, in the context of videogames the player or watcher is in a situation where they cannot avoid the brand placements that are embedded in the videogame or turn them off. Reactance effects may be more apparent for watchers who are more passive, such as in eSports, than for active players who may not notice the brand placements.

Many brand placements are subtle and remain in the background of a film, videogame or television programme. The audience is exposed to these placements, which can provide realism and enhance the entertainment experience. When a placement is more prominent, and therefore noticed and recognised, the audience can become annoyed and reject it. This phenomenon is referred to as the ‘boomerang effect’ (Clee and Wicklund, 1980). These negative attitudes caused by a feeling of losing a freedom can result in the complete opposite effect of what the placement was intended to accomplish. A negative reaction to the film, television programme and videogame as well as the brand featured in the placement may be the result.

4.16 Summary

This chapter provided an overview of some of the key theoretical models developed to explain the persuasion process and impact on brand choice. The hierarchy of effects, Elaboration Likelihood Model (ELM) Petty et al. (1981), Integrative Attitude Formation Model MacInnis and Jaworski (1989), Knowledge Persuasion Model (PKM) Friestad and Wright (1994), and implicit and explicit processing were all discussed in the context of brand placement. The key findings are that due to the immersive nature of videogames, it may be far more difficult for gamers to remember brands, and therefore the ability to elaborate brand placement is considered low. Moreover, the ELM model does not explicitly acknowledge the potential of non-conscious processing. The Integrative Attitude Formation model provides a useful framework for considering brand placement in videogames, but again does not acknowledge non-conscious processing. Prominent brand placements activate persuasion knowledge and as the audience realise that the brand is placed for commercial reasons they become more cynical. This can lead to negative attitudes and beliefs about the brand and the placement (Balasubramanian et al., 2006).

The amount of attention an individual devotes to a brand placement is important for its processing. Balasubramanian et al (2006) referred to processing depth (high/low) as a continuum between implicit and explicit memory. This chapter has outlined the effects of implicit memory effects and explicit memory effects on brand placement. The effects of both types of memory on brand placement were explained and the implications for this study.

The dissociation between cognition and affect for brand placements found in the existing literature may be attributed to variations in cognitive processing among individuals. It may also be explained by the mere exposure effect theory (Zajonc, 1968), which argues cognition and affect are independent; an assertion robustly supported in the literature. In his meta-analysis (Bornstein, 1989) reported that a number of key factors - such as repetition, size of effect, type of stimulus, exposure time and order result in maximum MEE, and these were explained. The research into MEE and advertising explained there was support for the MEE in an advertising context and consumer behaviour in terms of brand choice. Finally, the four studies

so far conducted into MEE and brand placement indicate support for MEE in television, film and music videos when the viewer is highly involved.

Conversely, psychological reactance theory could explain placement processing (Brehm, 1988). Psychological reactance is whereby an individual's free behaviour is eliminated or threatened. For example, if a brand placement appearing in a videogame, which the gamer thinks is intrusive, incongruent or an obvious marketing attempt may motivate psychological reactance. Thus, the gamer will choose to not process the brand placement and consequently the persuasion intent of the brand placement will be avoided. Therefore, psychological reactance theory could explain why, in some instances, brand placements are ineffective.

4.17 Conceptual framework

Brand knowledge consists of brand awareness and brand image, which both directly affect brand attitude. More positive brand attitudes will positively affect purchase intention (Fill, 2013). Brand owners are beginning to respond to the changes in the traditional communications environment such as the fragmentation of media, proliferation of media channels and increase of digital communication by investigating new channels to reach consumers such as brand placement.

By placing brand placements in videogames, marketers expect to influence, cognitive, affective and conative outcomes such as brand recall, brand recognition, brand attitude or purchase attention (Balasubramanian et al., 2006). Early studies were inconclusive in terms of the factors that contribute to recall and recognition of brands with Nelson (2002) asserting that individuals do seem to recall brands placed in videogames, but placements in the form of billboards have limited impact on individuals' recall and purchase intentions (Chaney et al., 2004). Some studies indicated a disassociation between brand awareness and brand evaluation (Poels et al., 2013; Grigorovici and Constantin, 2004) whilst others reported positive associations between recall and brand evaluation and choice (Hang and Auty, 2011; Mau et al., 2008). Lee and Faber (2007) suggest that the more immersed and involved the game player is with a game, the lower the brand recall and recognition but the better their brand attitude. This suggests support for the Mere Exposure

Effect (MEE) (Zajonc, 1968).

Understanding gamer and watcher responses to brand placements in videogames is a complicated process and therefore this study incorporates a number of key theoretical concepts to underpin the research. Although the MEE is widely tested, to date there is limited research into its effects in brand placement, as discussed in Section 4.14. MEE suggests a gamer will develop more favourable feelings towards a brand because of repeated exposure when there is an absence of other stimuli. Previous research suggests this can evoke an affective response (Zajonc, 1968; Bornstein, 1989). Hence, mere exposure only requires the consumer be repeatedly exposed to the brand name. It can also be argued that mere exposure may decrease the perceived risk associated with a brand, and consumers may be more likely to select a brand with an exposure advantage leading to preference formation and brand choice (Baker, 1999). Thus, mere exposure was deemed valid and would facilitate understanding of the processing of brand placements as the gaming environment may fit the conditions under which the MEE may be observed.

The first research question in this study (R1) is to investigate if repeated exposure to an unknown brand placement in a videogame leads to more positive brand affect (brand liking).

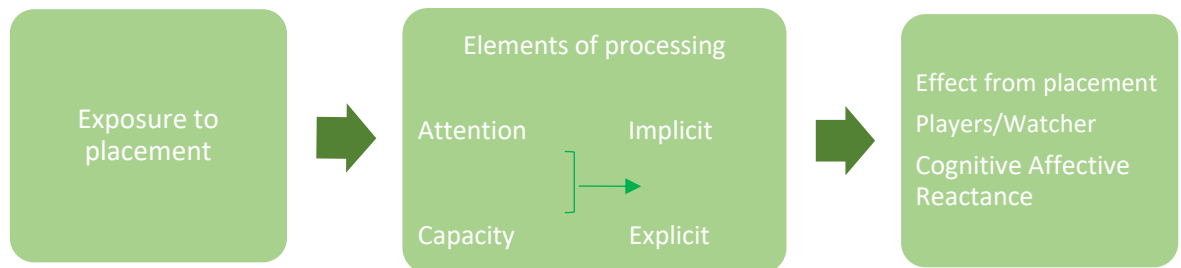
The conceptual framework also recognises the amount of attention an individual devotes to a brand placement is important for the processing of the placement. Balasubramanian et al (2006) referred to processing depth (high/low) as a continuum between implicit and explicit memory. Explicit processing occurs when conscious attention is paid to the information. As explicit processing is a conscious effort, attention and involvement are important during exposure. This attention can be hard to achieve and maintain for brand placements in films, videogames and television programmes, as the entertainment is the primary activity not the placement and thus the effects may be limited. Implicit memory effects, non-conscious processing are undoubtedly relevant to the study of brand placements, as playing the game is a primary activity and processing the brand placements a secondary activity.

The ELM Petty and Cacioppo (1980), IAFM MacInnis and Jaworski (1989), Balasubramanian et al. (2006) models provided useful frameworks for considering brand placements in videogames and their ability to influence brand attitudes. The MacInnis and Jaworski (1989) IAFM develops Petty and Cacioppo (1980) ELM and suggests relevant constructs relating to processing such as attention and capacity, attitude formation and brand attitude. Balasubramanian et al (2006) in particular suggests a range of outcomes resulting from placement effects, namely cognition, affect and conation. In the conceptual framework for this study, this model was used to determine the potential effects of placements. The Balasubramanian et al. (2006) model is a theoretical framework that is based on prior research but not fully empirically tested and thus it is relevant to test aspects of this model.

However Balasubramanian et al. (2006) model does not acknowledge the potential that there may not be effects from brand placement. Reactance theory (Brehm, 1988) suggests that individuals frequently act to counter the restrictions and pressures put on them by marketers. Restrictions are particularly applicable in brand placements which are integrated into films and videogames and where the audience cannot escape them if they want to watch the film or play/watch the game. This is particularly valid for individuals watching a videogame than for those playing it. Individuals watching a videogame are more passive, whereas individuals playing a videogame are more active and immersed as they control the game play and hence, they may not notice the brand placements.

The second research proposition (R2) is that active and passive consumption modes may differently affect brand liking following repeated exposure to an unknown brand placement in a videogame.

Figure 4.4 Conceptual framework



4.18 Hypothesis Development

As outlined above, the first research proposition in this study (R1) is, that repeated exposure to an unknown brand placement in a videogame leads to more positive brand affect (brand liking). This relates directly to the research discussed above, most notably Proposition 14a in Balasubramanian et al. (2006:122).

“Unconscious processing of placements (e.g., visual-only or screen placements that appear in the background) relates to implicit memory, and enhances affective and conative outcomes”

Affective responses are automatic, unconscious and not reliant on high levels of elaboration (Zajonc, 1980). In MEE psychology experiments exposures varied from 1 to 25 exposures Hamid (1973) with 3 being a recommended minimum Bornstein (1989), inferring repeated exposure is required.

This leads to the following research hypothesis:

H1 The repeated exposure to an unknown brand placement in videogames can lead to an increase in liking for the brand, when gamers do not remember that they were exposed to the placement (mere exposure effect).

The second research proposition (R2) outlined above is that active and passive consumption modes may differently affect brand liking following repeated exposure to an unknown brand placement in a videogame.

Reactance theory (Brehm, 1988) suggests that individuals who are more conscious of brand placement may react negatively to it, reversing any positive affect. This has also been referred to as a 'boomerang effect' (Clee and Wicklund, 1980). Arguably in the context of product placement in videogames, individuals playing the game are less likely to be conscious of brand placement than those passively watching, due to the need to focus attention on controlling game play. For this reason, individuals watching may be more susceptible to reactance and have lower positive affect.

This leads to the second research hypothesis:

H2 Brand liking will be different between the play and watch groups, and lower for individuals watching the videogame than for individuals playing the game due to low involvement.

As the research gaps have been explained and hypothesis developed, the next chapter will consider the methodology.

CHAPTER 5

METHODOLOGY

5.1 Introduction

This chapter provides an overview of the research methodology and design utilised to investigate the research questions and hypotheses outlined section 1.11. It outlines the purpose of the research and the research paradigm adopted, before presenting details of the research design. Many researchers acknowledge the importance of recognising and understanding philosophical issues in terms of the researcher's ontological and epistemological assumptions to underpin a study (Crotty, 1998; Easterby-Smith et al., 2015; Bryman and Bell, 2007). A research position helps clarify research design, which involves considering the kind of evidence required and how to gather and interpret it, and thus this chapter will explain the research design.

An evaluation of the different research methods available was examined with an emphasis on a quantitative approach. In the following chapter, further detail is provided on this, focusing on the development and design of the research instrument, research measures, and sampling. An explanation of the procedures followed for pilot testing the instrument and experimental design is provided. This is followed by an explanation of the data collection and analysis. The chapter concludes with an overview of research ethics and the limitations of the research.

5.2 Research philosophies

5.2.1 Positivism

Epistemological issues concern the question of what is, or should be accepted, as knowledge in a discipline. An underpinning central question is whether the social world can and should be studied according to the same principles and procedures as the natural sciences. Central to such philosophical debates are different approaches to the observation, measurement, and understanding of reality (Neuman, 2014). It is useful to consider philosophical approaches as a continuum with a hard positivist deductive paradigm at one end and a phenomenological /interpretivist and inductive paradigm at the other (Easterby-Smith et al., 2015).

An understanding of different philosophical approaches enables the researcher to justify their research design and thus ensure that the relevant information is collected to meet the stated research objectives (Easterby-Smith et al., 2015). Positivism is the oldest philosophical approach and was first articulated by the eighteenth century enlightenment author David Hulme (1711- 1776). However, the French philosopher August Comte (1798-1857) encapsulated this viewpoint. A hard positivist ontology asserts that objective reality exists, and epistemologically this can be achieved with predictable degrees of certainty using more orientated scientific methods such as experiments or quasi-experiments.

In adopting a positivist ontology, the assumption is that there are true answers about the nature of the world. This is applicable to the research focus of this study. For example, previous studies into brand attitude have discovered a relationship between brand attitude, brand loyalty and profit Aaker (2010), and brand image has been identified as an important determinant of a buyer's behaviour (Burmam *et al.*, 2009). The purpose of the current study is to ascertain whether this is replicated in the context of videogames, refer to Section 1.11. The ontological view of positivism is objectivist, and propositions are meaningful only if they can be empirically verified (Bryman and Bell, 2015). Thus, in a positivist ontology, the researcher develops hypotheses to prove or disprove phenomena, and this can be achieved by implementing experimental and/or quasi-experimental methods. (Easterby-Smith et al., 2015).

The purpose of positivist research design is to focus on research that provides accurate reflections of reality. It distinguishes between internal and external validity. Internal validity requires elimination of plausible alternative explanations for any differences observed between groups. External validity is about generalizability of the results and thus it is important that the researcher demonstrate that the results are not simply a product of the selection of individuals or organisations (Easterby-Smith et al., 2015). External validity is a key determinant in adopting a more positivist approach in this research, as previous research has tended to focus on one game or genre with relatively small samples (Nelson, 2002; Nicovich, 2005; Yang et al., 2006; Mackay et al., 2009a; Grigorovici and Constantin, 2004). However it is important to recognize that the context and history of the research may change, thus

rendering it difficult to generalise in future research - this should be factored in to subsequent studies (VanderStoep and Johnston, 2009).

5.2.2 Post positivism

The approach in the middle of the continuum exists as a milder form of positivism, referred to as post positivism. This infers that objective reality exists but epistemologically this presents problematic and ultimately uncertain findings. Such a perspective aligns with more interpretivist/phenomenological paradigms (Kapoulas and Mitic, 2012). Post positivism challenges the traditional notion of the absolute truth of knowledge and acknowledges the difficulties of certain claims of knowledge when studying human behaviour. Post positivism is underpinned by a deterministic philosophy in which causes probably determine effects or outcomes (Hanson and Grimmer, 2007). Thus, in post positivism research design the causes that influence outcomes are commonly examined in experiments. This approach can be viewed as somewhat reductionist, in that a small set of discreet ideas are being tested. Nevertheless, in the context of this study an experimental approach is considered appropriate, as the purpose of the work is to examine exposure effects on brand placements in videogames at the level of interrelationships between very specific variables.

In order to determine outcomes in experimental/quasi-experimental research, hypotheses are necessarily developed. Hypotheses are predictions that the researcher makes about the expected relationships amongst those variables identified as relevant. Testing of hypotheses employs statistical procedures in which the researcher makes inferences about the population from a study sample (Creswell, 2013). Hypotheses can be null, where there is no relationship, alternative or directional where the researcher makes a prediction about the expected outcome, and non-directional where the researcher makes a prediction but the exact form of difference is not stated.

With its emphasis on testable propositions, the research philosophy that was adopted corresponds to the positivist paradigm. Previous brand placement studies have generally identified key factors that may influence brand placement for brands

in videogames and tested elements of cognitive attitude constructs, namely recall and recognition (Grigorovici and Constantin, 2004; Nelson, 2002; Chaney et al., 2004; Schneider and Cornwell, 2005). However, research gaps still exist in relation to conative and affective attitude constructs.

There are two basic tenets of positivism that the current study conforms to. First, unified science or logical positivism; namely that all meaningful statements are either analytic or conclusively verifiable or at least confirmable by observation and experiment. Second, the concept of objectivism; i.e. the separation of subject and knowledge. In this research, this was achieved by quasi-experiments and the use of a self-completion questionnaire, which maintained the independence of the researcher, whilst conforming to the positivist stance.

This research will lean towards a more scientific approach in investigating visual processing of IGA computer synthesized worlds, namely videogames. Thus, a more positivist ontology is being adopted which involves testing assumptions in relation to the existing knowledge, specifically in relation to persuasion and brand processing. Thus, concepts such as reliability, validity and statistical significance are used in hard positivist research with the purpose of describing some part of reality with certainty (Hanson and Grimmer, 2007). In this research, answering the research questions will demand a scientific, objective, quantitative research approach that is consistent with a more positivist paradigm.

In review of brand placement literature, van Reijmersdal *et al.* (2010) noted that 75% of brand placement studies were empirical: 80% of these studies were quantitative, and more than two thirds were experiments. The experimental designs were conducted in both real-life settings Gupta and Lord (1998), Dens et al. (2012) and Homer (2009) and in laboratories (Mackay et al., 2009b; Cowley and Barron, 2008; D'Astous and Chartier, 2000).

Thus, the present research adopts the prevailing research paradigms and methodological approach within the body of brand placement research. This study aims to investigate whether exposure to brand placement affects unknown brand likeability as a result of mere exposure for game players and game watchers in

videogames. This research will strengthen the theory in this area of brand processing and attitude formation by testing the hypotheses/research questions. Such theory verification is important for the overall growth of a body of knowledge (Deshpande, 1983).

5.2.3 Phenomenology

Phenomenology forms the other end of the research philosophy continuum and has a relativist ontology, which contends that each person has his or her own reality. This approach was developed as a reaction against positivism, which was deemed not applicable to the study of social life. Some authors Carson (2001) prefer to use the term interpretivism rather than phenomenology, as it suggests a broader philosophical perspective and prevents confusion with the methodology of phenomenology. The German philosopher Edmund Husserl who developed the work of Francis Bacon in the early 1600s, which resulted in inductive reasoning, founded interpretivism. Epistemologically objectivity is rejected in favour of an individual understanding of particular viewpoints. This, however, suggests that knowledge in any field is provisional and contested, and thus the purpose of constructionist research is to provide a good understanding of an individual viewpoint that may provide insights for other researchers (Easterby-Smith et al., 2015). Thus, positivists' approach to social sciences has an emphasis on describing human behaviour, while interpretivists' emphasise the understanding of human behaviour and what is happening in a given context.

Constructionist paradigms take an inductive approach and are thus concerned with developing theory rather than testing it (Saunders et al., 2007). Researchers using inductive approaches do not deploy hypotheses or expectations before collecting data, and theory emerges from the data collected (Saunders et al., 2007). Usually a small sample of subjects will be selected for inductive research (Saunders et al., 2007). Thus, compared to the deductive approach, an inductive approach can identify a wider range of themes in the discussion; nevertheless, a small research sample size restrains the research validity (Malhotra and Birks, 2007). It is argued by Vander Stoep and Johnston (2009) that with interpretivist approaches it is difficult to achieve phenomenological validity. In addition, the text and analysis is

idiosyncratic to the researcher, culture and the specific situation, meaning true replication is impossible. Thus, for the reasons outlined above, interpretivist approaches do not fulfil the research requirements of the current study and therefore were not implemented.

5.3 Quantitative and qualitative methods

5.3.1 Qualitative methods

In spite of the diversity of research methods that may be described as qualitative, they all tend to be underpinned by a common basis of understanding, which is that the research method used has to enable the researcher to understand the complete and entire phenomenon. Experimental methods isolate and measure variables with a narrow definition, and understanding is obtained through control and prediction. By contrast, inductive reasoning, begins from particular observations that lead to the identification of a general pattern from the cases that have been identified; this then informs the development of concepts/theories (Bryman and Bell, 2015). Data is collected in its naturally occurring state, as the purpose is to discover and understand phenomena in their natural context.

Bryman and Bell (2007) assert that most of the literature suggests that the research problem should determine choice of research methods and thus the choice of research methods should be a technical rather than epistemological issue. There are a number of qualitative techniques that could have been utilized in this research. Specifically, focus groups were considered as they allow general topics to be explored and can develop an understanding of why people feel the way they do. Thus, focus groups present the opportunity to study the ways in which individuals collectively make sense of a phenomenon and construct meanings (Bryman and Bell, 2007). However, focus groups can also result in uneven participation if certain participants dominate or intimidate the other participants (Carson, 2001). In addition, the moderator may unintentionally bias the results by sending signals in relation to favourable or unfavourable responses.

As some aspects of this research relate to discussing brand attitude, in depth semi-structured interviews were also considered as a means of data collection (Saunders et al., 2007). In particular, in depth semi-structured interviews allow complex and probing questions to be asked in relation to topics like consumer behaviour, as they are both interactive and reflexive. By using semi-structured interviews, the data can be more comparable than that obtained from purely unstructured interviews. Thematic coding analysis can also be more effectively applied (Easterby-Smith et al., 2015).

Overall, the key advantage of qualitative techniques is their ability to ascertain the reasons behind consumer behaviour. However, these methods are concerned with understanding rather than measurement, and this renders them virtually impossible to generalize to wider society, as the samples used are typically not representative of a given population (Chisnall, 2005). Qualitative techniques are subject to the idiosyncrasies and skills of the individual researcher and thus the internal validity is not as robust as in experiments. Qualitative methods were therefore rejected, as they did not conform to the research paradigm being adopted in this study.

It has been suggested that researchers can be more confident when triangulation or the use of multiple methods is applied to research (Bryman and Bell, 2007). This technique was not employed in this study, mainly because there was no need to use exploratory research to develop the instrument as the majority of the scales have been used and validated on numerous occasions. Thus, for reasons outlined above, interpretivist approaches do not fulfil the requirements of the research and therefore were not implemented on this occasion. However, this is not to say that using qualitative techniques to probe and better understand the results of the quantitative study has not been ruled out for post-doctoral research.

5.3.2 Quantitative methods-experiments

In contrast to qualitative methods, quantitative techniques involve ascertaining the significance of relative proportions in order to identify what is more or less important, and to attempt to understand the ways in which these various constructs are

interrelated and structured (Jankowicz, 2000). Previous research into videogames has used a variety of methodological approaches, with quantitative methods such as experiments being the most overriding, as outlined by (van Reijmersdal et al., 2010).

In traditional experimental design, subjects are assigned randomly to either the experimental group where conditions are manipulated or the control group where they are not. Responses of the groups are then measured and any differences are attributed to the treatment, since the researcher controls for the effect of extraneous variables.

Experiments are most common in natural science and medical research and here they are utilised in the purest form. In the social sciences, they are utilised but termed quasi-experiments. The main advantages are clarity, and thus alternative explanations should be eliminated and there should be replicability of experiments due to their rigorous design. In addition, quasi-experiments afford the researcher scientific rigour, the ability to control internal and external validity, and the ability to isolate the experimental variable, which allows for causality. The disadvantages are related to practical and ethical issues. When conducting business research that involves organisations and employees it is rarely possible to achieve the randomisation that is characteristic of true experiments (Easterby-Smith et al., 2015). Thus, quasi-experimental methods have been developed to remove the problem of random assignment. A key feature of quasi-experimental designs is the use of multiple measures over time in order to reduce the effects of control and experimental groups not being fully matched (Shadish et al., 2001).

When individuals in an experimental study are not allocated randomly, but by some other criteria, this can result in the validity of results being compromised (Easterby-Smith et al., 2015). Getting experimental samples to achieve this level of robustness in the social sciences can be challenging, as random allocation is not always easy or straightforward. Nevertheless, the advantages of experiments are scientific rigour, the ability to control internal and external validity, and the ability to isolate the experimental variable, which allows causality to be inferred (Creswell, 2013).

Quasi-experimental research is the technique most closely aligned with the principles of scientific research, and the most common method used for inferring causal relationships. This is because only experiments satisfy the three conditions required for causality: timing (the researcher can manipulate timing to ensure the cause occurs before the effect); association (the researcher can ensure two variables occur together in a patterned way); and the absence of alternative explanations (the researcher can eliminate other causal factors (Gorad, 2013). However, experimental designs do not take into account any pre-existing conditions, or recognise that influences outside the experiment may influence results. Thus, the researcher needs to control for those factors that might affect the experimental results; this is quite difficult to achieve. Random allocation of stimuli does go some way to overcoming this limitation, and this was employed in the current study. One of the outside influences identified in the research undertaken was residual brand memory, and in order to eliminate this a racing game that was not commercially available was specifically designed. In addition, fictitious brand names were used for in-game advertising so that the participants would have no knowledge of the brand and hence no pre-existing attitude. Disadvantages notwithstanding, as long as the shortcomings of the quasi-experimental design are recognized, these studies can be a very powerful tool, especially in situations where 'true' lab-based experiments are not possible. Using true experiments for in game advertising has been criticized, as it does not replicate the real-world context of videogames. Indeed, the main criticism of experiments, particularly laboratory experiments, is their artificial nature (Shadish et al., 2001).

The research adopted a between-groups (Lazar *et al.*, 2010) experimental design where the treatment is the conditions the researcher wishes to investigate between different groups of participants. This contrasts with a within-groups experimental design, where the same group of participants are tested with multiple conditions. In this study, the treatment was exposure and non-exposure to brand logos. The units are the objects to which the researcher applies the treatments, and in this study, they are the participants whom were randomly assigned to the treatment conditions. The between-groups design compares the results of different experimental conditions for only one condition of brand logo exposure. The main advantage of the between-group design over the within-group design is the absence of a learning

effect. This is relevant in the current study in comparing exposed and non-exposed brand logos, because it could be argued that placements that were not noticed during the first exposure could be noticed during the second, thus affecting the results. A further advantage of a between-groups design is avoiding fatigue and less time involved (Lazar et al., 2010).

5.4 Surveys

Survey research tends to use cross-sectional designs with large samples, which enable multiple factors to be measured and potential underlying relationships to be examined (Easterby-Smith et al., 2015). There are three main types of surveys: factual, exploratory and inferential (Easterby-Smith et al., 2015). Inferential surveys predominate in the academic disciplines of strategy, marketing and organizational psychology (Easterby-Smith et al., 2015). Inferential surveys aim to establish relationships between variables and concepts. The researcher formulates the dependent variables and predictor/independent variables in the context of the research that they are conducting.

Survey data can be collected through self-completion or face-to-face surveys, and these can be conducted via through various channels (e.g. by phone, online, by post, on the street). For this study, an online survey was selected as it was relatively quick and easy to administer, and respondents tend to find it simple to use (McDaniel and Gates, 2007). Internet surveys can also be customised more easily than postal self-completion surveys and can be more interactive with intuitive completion. It is possible to build in error checking of answers to ensure consistency of responses and thus validity. Finally, data can be directly downloaded into an analysis programme such as SPSS (Easterby-Smith et al., 2015)

5.5 Sampling

A sample is a subset of the population, selected for the research, which is based on a probability or a non-probability approach (Bryman and Bell, 2015). Probability sampling affords a number of benefits namely; less margin for error and statistical accuracy, but this is dependent on the validity of the sample selected and response

rate. Simple random sampling is a probability sampling technique where each element in the population is given a known and equal chance of selection for participation in a study (Malhotra et al., 2005). It offers the advantage of being able to project the sample results to the target population, although caution must be exercised since simple random sampling may or may not result in a representative sample as this depends on the validity of the sample selected and the response rate (Malhotra et al., 2005). Probability sampling can be costly and time consuming and in some instances, the population data may not be readily accessible.

Non-probability sampling methods were considered and the main pros and cons of each method are outlined in Table 5.1.

Table 5.1 Non-probability sampling methods advantages and disadvantages

Sample Type	Representative Sample	Relative costs	Control over sample contents
Quota	Medium to high - depends on selection of quota variables	Moderately high to reasonable	High
Purposive	Low - dependent on researcher choices	Reasonable	Reasonable
Snowball	Low - but characteristics relevant	Reasonable	Low
Self-selection	Low	Low	Low
Convenience	Very Low	Low	Low

Source: Adapted from Kevin (1992) and Patton (1990), cited in Saunders, Lewis and Thornhill (2000).

5.6 Method

For this research, between-groups, quasi-experimental design offered the ability to test and compare consumer responses to the different treatments of brand placement in videogames, namely players and watchers, and the processing of

brands in a racing game, plus a control group.

5.6.1 Participants

The sample subjects were recruited on a convenience basis from undergraduate and postgraduate level marketing related degree courses at a large UK university. The choice of this convenience sample may limit the external validity and does pose other limitations, discussed later. However, it was selected to reduce the individual level of variation. Students provide a homogenous group in terms of demographics and thus any differences in the dependent variables would most likely be explained by the manipulations rather than the individual differences. The randomisation of the allocation of participants to the three experiment treatments should also reduce individual levels of variation. Randomisation is important, as the systematic variation created by the participants experience with gaming cannot be separated from the effect of the experimental manipulation. Randomisation minimises the risk that the groups differ on variables other than one being manipulated (Field, 2018).

Student samples do pose problems in terms of population validity. However, Falk et al. (2013) found very similar behavioural patterns for students and the general population in their experiments on social preferences. As part of this study the mere exposure effect (MEE) was examined, and in his meta-analysis of the MEE Bornstein (1989) contended that there was no indication that MEE depends on age, gender or education. The data collection took place in November and December of 2018, and January, February and March of 2019. Students received debriefings about the purpose of the study after the conclusion of the data collection.

5.6.2 Stimulus development

In order to ensure the internal and external validity of the experiments an existing game could not be used due to the effects of residual memory, which would compromise any results. Thus, a professional game developer was sourced and Silo Black Games provided a game demo that they used internally and thus was not publicly available. The game demo was then modified in relation to the visual stimulus provided. This allowed for control over prior exposure and ensured that

manipulations are presented unequivocally. Racing games are popular in the study of IGA because the placement of brands within the context is naturalistic. Put otherwise, in actual track car racing, e.g. *F1* (Codemasters, 2016b) or *Nascar* (Eutechnyx, 2014), brand placements do appear on billboards and trackside advertising (Nelson et al., 2004; Nelson et al., 2006).

The visual stimulus for the experiments consisted of inserting fictitious brand logos for five of the most popular product categories in racing games. The product categories were decided by conducting a content analysis of four top-selling racing games where brand placements were part of the game design. The content analysis involved a systematic review of the games to identify all the placements. The racing games selected for this analysis were *F1* (Codemasters, 2016b), *Dirt Rally* (Codemasters, 2016a), *Gran Turismo* (Digital, 2013) and *Forza Motorsport* (Studios, 2013). From this process, the most popular product categories identified were banks, tyres, petrol, airlines, game developers and soft drinks. Fictitious brand names were created by looking at existing brand names for these product categories and developing a similar name by changing either the prefix, suffix. For example, Bridgestone tyres became Copperstone. In addition, obsolete brand names were researched and used for some the product categories such as Northern Bank for the bank and Apple Slice for the soft drink.

A pre-test (N= 20) was necessary to ensure appropriateness of product category brand names selected for the experiments. Once the categories were decided, ten fictitious brand names were created for each category, fifty in total and an online survey was conducted with postgraduate students to ascertain which of the ten brand names they thought was most appropriate for each of the five product categories. The two most popular brand names for each product category were selected and these were either very appropriate or appropriate. These resultant ten brand names (2 per category) were passed to a graphic designer with over twenty years' experience and a simple logo was created for each brand name. The brand logos were simple in design, in that only the name/logo appeared on the billboard. A range of typefaces and colours were utilised and the graphic designer used their experience to select the most suitable typefaces/colours for each brand logo prior to final approval and design.

The ten brand name logos, see Table 5.2 were then further tested via an online survey (n=102) and sent out to undergraduate students. For each of the brand categories, for the two brand name logos shown respondents were asked to state which logo was most appropriate for the brand category.

Table 5.2 Brand names and product categories used in pre-test

Brand	Product category
Dynamix Westwood Studios	Game developer
Copperstone Jupiter	Tyres
Double 7 Apple Slice	Soft drink
MBSB Northern Bank	Bank
Volare Airlines Silverfly	Airline

Respondents were then asked via the pre-test survey for the brand name that they thought was most appropriate for the product category. Semantic differential scales measuring brand attitude have frequently appeared in the marketing literature. The survey results were analysed and the brand logo for each category that was scored as most appropriate was selected. These were sent to the game designer to insert in the racing game at a range of pre-determined locations. The final brand logos are presented below in Figure 5.1 to 5.5. The five brand logos that were not selected and were used as foils are presented in Appendix 1.

Figure 5.1 Tyres – Copperstone



Figure 5.2 Bank – MBSB



Figure 5.3 Airline – Volare Airlines



Figure 5.4 Game developer – Dynamix

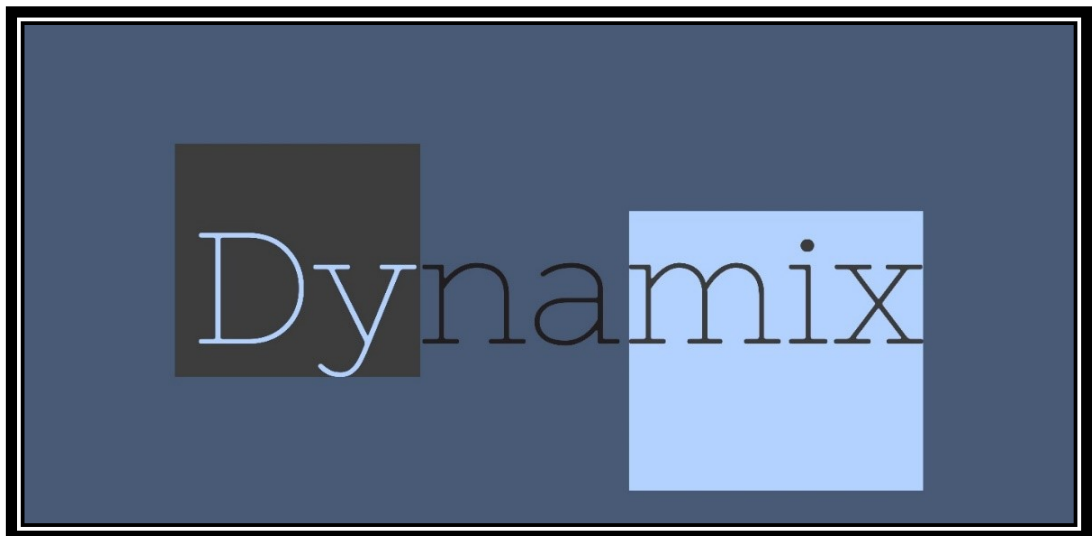
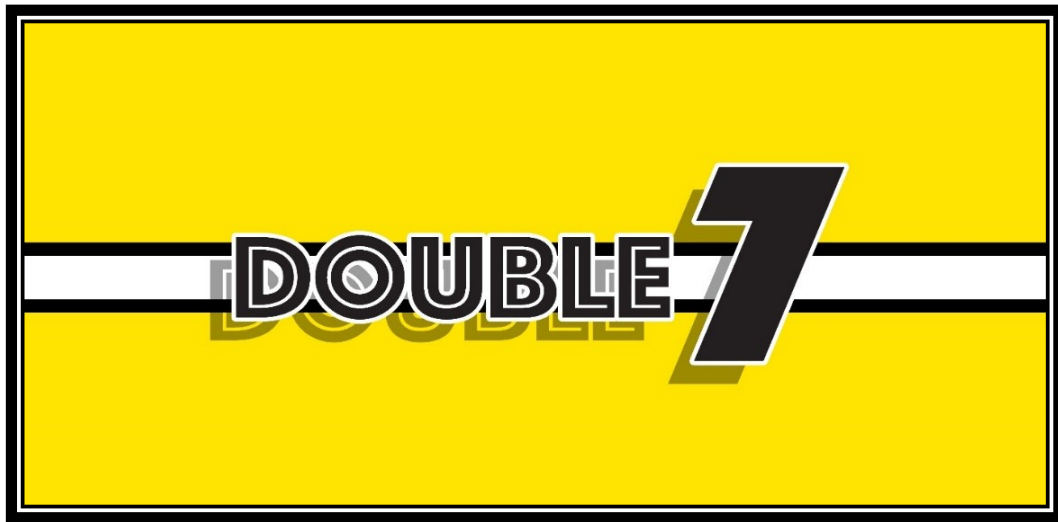


Figure 5.5 Soft drink – Double 7



5.6.3 Experimental procedure

The current research seeks to investigate whether exposure to brand placement affects unknown brand likeability as a result of mere exposure for game players and game watchers in videogames, refer to Section 1.11. Thus, causal research design is employed, specifically a quasi-experiment using a specially designed racing game. The method uses three experimental conditions. In the first one gamers play the racing game with brand placements inserted as billboards (play), and in the second condition participants watch the game in which brand placement billboards are present (watch). The third condition is a control group where gamers play the game but no billboards are inserted (control). This allows for the direct effect of brand placement to be investigated. During the racing game, each participant passes five billboards, which display the brand logos: Double 7, MBSB, Volare Airlines, Dynamix and Copperstone Tyres.

5.6.4 Pilot study

A pilot was undertaken in order to test the effectiveness of the stimulus, experimental procedure and measures. Students were randomly allocated to one of the three conditions: play (n=20), watch (n=20) and control (n=20). This was done by randomly assigning 1 (control), 2 (play) or 3 (watch) to the participants. The

participants were unaware of the meaning of the assigned numbers. During the recruitment stage, subjects were told they would play an online PC racing game and answer a brief survey about their online gaming experience and the design of the game. Prior to commencing the experiment, the participants received instructions about the purpose of the research and how to play the game. Students played the game on a laptop and were requested to complete three laps to ensure that all participants had the same number of exposures to the billboards for the play condition. Immediately after playing the racing game, respondents completed a memory task, which acted as a distraction activity and was designed to disrupt the short-term memory prior to completing the survey (Gangadharbatla et al., 2013; Yang et al., 2006). Short-term memory is memory that used for short-term retention (usually less than twenty seconds) of information. Whereas working memory retains and uses information (Cowan, 2008). Hence, the distractor activity will ensure that it is not simply short-term memory operating. In the distraction activity there was no mention of the racing game or any of the associated brands and product categories. After completing the memory test respondents clicked on a link on the computer screen that took them to an online survey where they were asked questions about the likeability of the 5 exposed brand logos and the 5 non-exposed brand logos. Further questions included videogame-playing expertise, recall, and recognition of the brand names in relation to the racing game they had just played or watched. The control group were not exposed to any of the brand logos in the game. Finally, respondents were asked for their demographic information. Students were thanked for their participation and received a debriefing about the purpose of the research after the conclusion of the data collection.

The pilot was used to trial the experimental procedure, to ensure that the racing game and survey worked faultlessly, and that the game was perceived to be of a commercial/professional standard by participants. All participants questioned agreed that the game and game play were similar to commercially available racing games. The pilot study assisted in determining a realistic minimum time for participants to play/watch the game, undertake the distraction activity and complete the survey.

5.6.5 Main study sampling

Quota sampling was considered as the population of people playing games in the UK is 32.4 million Ukie (2019), and thus sufficiently large. However, this sampling approach was eventually rejected due to time constraints and access to data that would allow the quota calculations to be made. A convenience sampling approach was therefore utilised, as the sample was easier to obtain as the participants were based on the campus where the experiments were conducted, and respondents were willing to participate, as they were interested in videogames or could observe experimental research design. The method is criticised because the data gathered is subject to bias and does not allow definitive findings to be generated due to the problem of subsequent generalisations being flawed. However, a student sample was deliberately chosen to reduce individual level of variation. Furthermore, 45% of male gamers and 31% of female gamers are aged 10 to 35 NewzooHQ (2019), and thus a student sample is justified as the objective of this research is not to extrapolate results to the general population but to the primary market of videogame consumers whose demographics match those of the sample.

Further, most of the studies on brand placement have been conducted using student samples (van Reijmersdal et al., 2010; Dens et al., 2012). In their content analysis of 57 brand placement studies 80% of the studies were based on student samples. (van Reijmersdal et al., 2010). Thus, this research also used students as participants as they are commonly utilised in brand placement research. Moreover, by selecting a student sample it ensured that homogeneity of the sample is easier to achieve and this is important in experimental research design. Homogeneity involves filtering out any confounding factors that affect the group conditions, such as age, gender or income. Hence, the participants should share the same general characteristics so as not to compromise the internal validity.

For this research, power analysis was used to determine the size of the sample, to ensure high external and internal validity and statistical estimation of error. Power is enhanced by a larger sample, larger effect size, and small effect variation; and by using the most powerful statistical analysis available (Gorad, 2013). However, power analysis is not infallible as the factors are interconnected. Hence changing

one can factor can radically alter the computed sample size. The figures provided to calculate the sample are estimates and the calculated size can be significantly affected by slight revisions to the estimates. The precise calculations for power do not accommodate non-response or measurement error in the scores (Gorad, 2013). Thus, response bias must be managed and this can be achieved by conducting wave analysis or a respondent/non-respondent analysis (Creswell, 2013). However, using power analysis and as large, a sample size as possible provides a more robust justification for any claims made.

Hair (2019) suggests the sample sizes required for various levels of statistical complexity. To achieve statistical power of .80 in Manova for three groups, two variables and a small effect size, 98 respondents are required. This number increases as the number of dependent variables increases, thus for three groups, four dependent variables and a small effect, 125 respondents are required. In this research as there were three treatment groups, five dependent variables and 100 respondents in each group a medium effect size was attained at .80 statistical power (Hair, 2019).

5.6.6 Data Collection

In this study, online questionnaires will be used as the data collection tool. After playing the racing game and the distraction activity, respondents were asked to complete the questionnaire.

5.6.6.1 Study one

In the main study the data collection was divided into, study one where the participants played the racing game, completed the distraction activity and answered the survey questions on an individual, one-at-a-time basis. For study one participants were given information on the purpose of the study and instructions on how to play the game (Appendix 2). This ensured that the play participants completed three laps of the game and went clockwise around the track as they were observed. This procedure was also followed for the main study one control condition. None of the main study one or main study two participants took part in

any of the pre-tests. The exposure phase for study one was conducted over a period of three months. Participants were randomly assigned to either the play or control condition. This was done by randomly assigning number 1 (control), 2 (play) to the participants. The participants were unaware of the meaning of the assigned numbers. The participants were asked to complete three laps of the track, which took approximately five minutes. Asking the participants to complete three laps ensured that they were exposed to all the brands in the racing game and concurs with research on the MEE, which suggests that repetition increases the chances of the MEE occurring. This procedure is consistent with previous studies using racing game manipulations (Hang and Auty, 2011; Lee and Faber, 2007). After playing the racing game, the participants were asked to complete the distractor activity and complete the survey by accessing a link on the laptop that they had previously played the game on.

5.6.6.2 Study two

For Study two, participants watched the racing game being played in a lecture theatre, completed the distraction activity, and then went to a link on their course Moodle page to complete the survey. The exposure phase for Study two occurred over several weeks. Collecting the watch condition data in this manner, it more realistic as it created the E-Sports conditions by creating a quasi-naturalistic setting. Three gamers played the game, one after each other at the front of the lecture hall and competed to see who could achieve the fastest lap time. The game appeared on a large screen and the lecture hall partially replicated a tournament venue, whilst still maintaining the rigour of a controlled experiment design. In addition, collecting data in this manner allowed a relatively large number of participants and thus access to greater statistical power when analysing the results. Additionally, it allowed the audience to interact with the focal material (the racing game) but allowed for variations in duration, frequency of brand exposure, angle and distance from brand exposures. All of which, are common in an eSports arena gaming tournament. Thus, study two seeks to replicate the conditions under which the MEE might naturally occur, rather than a controlled laboratory experiment, and this has a precedent (Stafford and Grimes, 2012). As the participants had not previously seen, the racing game there was no residual memory for the brand placements and thus internal

validity was maintained. The MEE is most likely to occur because of brief switches in attention and/or peripheral processing in real-world environments and Study two attempts to replicate these conditions (Ha and Litman, 1997; Skinner and Stephens, 2003).

5.7 Measures

The survey instrument was developed based on the conceptual framework presented in Section 4.17. A copy of the questionnaires for play, watch and control conditions are included in Appendices 3, 4 and 5.

The use of existing scales and questions is advocated in the literature, particularly when measuring a variable (which is central to this study), as it reduces the potential for errors associated with the survey instrument (Bryman and Bell, 2007). The selection of scales for this study took into consideration their appropriateness, reliability and ease of use. The scales used were combined to create overall measures for the constructs of interest. Questions were developed and measured on a 7-point Likert scale (1 = strongly agree, 7 = strongly disagree). When employing measures that have previously been used and refined, it is necessary to test the reliability of the measuring instrument to ensure it is free from random error (Hoyle *et al.*, 2002). Cronbach's alpha is a useful measure for this task, as it can help ensure the reliability of each scale and ascertain the extent to which the results can be repeated. A value greater than 0.70 indicates an acceptable level of reliability (Easterby-Smith *et al.*, 2015).

The research suggests that affective measures are more appropriate in subliminal processing studies (Zajonc, 2001), because after subliminal processing participants cannot recall ads and might not recognise those to which they were previously exposed (Acar *et al.*, 2007). The main dependent variable was attitude towards the brand logos and this was measured with a semantic differential scale consisting of seven items. Subjects were shown the five selected brands included in the racing game and the five distractor brand logos that were not selected from the initial 10 selected in the pre-test. Participants were asked how much they liked the brands

they had been shown. The order of the brands on the survey was randomised to reduce order bias. Both sets of brands were from the most prevalent occurring product categories in racing games. Bornstein (1989) meta-analysis on mere exposure effects, liking ratings, goodness ratings and appealing ratings showed the best results in terms of MEE. Zajonc (1968) found a significant positive relationship after 25 exposures of photographs of students and mean liking. Moreover, Zajonc et al. (1974) found stronger effects for liking ratings than for goodness ratings of merely exposed photograph stimuli. Thus, liking ratings were utilised and it was the first question respondents were asked as this acknowledges the possibility that the MEE, might be short term (Bornstein, 1989). Further, in Matthes et al. (2007) liking, goodness and appeal measures were utilised as MEE necessitates an unprompted, unelaborated assessment of brand preference. Similar scales were adopted by (Russell, 2002).

Participants' self-reported level of game expertise was measured using three bipolar items, beginner/expert, bad/very good and novice/very skilled. This was originally utilised by Gangadharbatla et al. (2013) and adopted from scales that were used to measure internet expertise by (Fang 1998). Participants were asked to note down the time it took them to complete the first lap of the game in order to cross-reference this to self-reported levels of game expertise as experience may confound the results (Lee and Faber, 2007).

Participants were also asked to evaluate the racing game and to rate various aspects of the game such as graphics and game play. These measures were included to determine the extent to which the game was perceived as realistic and thus supporting the naturalistic quasi-experimental research design utilising a commercial standard racing game. A semantic differential scale with six bipolar items was used to measure participants' evaluation of the racing game. These items were defined as follows bad/good, unappealing/appealing, unattractive/attractive, unpleasant/pleasant, boring/interesting and dislike/like. Gangadharbatla (2006) adopted this measure in his study on the effectiveness of brand placement in videogames. Bruner et al. (1992) to measure advertising attitudes used similar scales. The scale for purchase intention was a semantic differential scale consisting of the following four items, unlikely/likely, probable/improbable, uncertain/certain,

and definitely/definitely not. This was adopted from (MacKenzie et al., 1986; Day and Stafford, 1997).

In order to assess brand logo recall participants were asked to list any brand names that they recalled after playing and/or watching the racing game. This is consistent with previous brand placement research where participants were asked an open-ended question to assess recall (Russell, 2002; Nelson, 2002; Law and Braun, 2000; Gupta and Lord, 1998). To measure recognition, subjects were shown ten brand names, five that were included in the racing game and five distractors that were rejected from the final 10 and asked to tick any of the brands they recognised seeing in the racing game (Gangadharbatla et al., 2013). This measure has been consistently used in brand placement research (Gupta and Lord, 1998; Brennan and Babin, 2004; Russell, 2002; Nelson, 2002). This provided the recognition dependent variable, which was the number of correct brand logos selected. Respondents were finally asked questions about demographic data, such as age, 18 to 25, 26 to 35, 40 plus and gender, male or female. Participants were asked to indicate what type of videogame genres they played from the following list, simulation, adventure, first person shooter, massively multiplayer online (MMO), sports, strategy, role playing and educational. Participants could select more than one game genre. The measures and constructs utilised in the questionnaire are summarised in Table 5.3.

Table 5.3 Summary of survey measures

Question/Measure	Construct	Source
I like the brand logo..... (7 point scale)	Brand likeability Mere exposure Implicit memory	Zajonc (1968), Zajonc <i>et al.</i> (1974), (2001), Bornstein (1989) Russell (2002) Acar (2007) Matthes et al. (2007)
Please insert how long it took you to complete the first lap.	Exposure time Attention capacity Repetition	Vashisht and Sreejesh (2015) Vashisht and Royne (2016)
Please rate your level in playing videogames.	Expertise Gaming experience	Fang (1998) Chaney et al. (2004) Lee and Faber (2007)

(7 point scale)		Gangadharbatla (2013)
Overall feelings about the racing game just played. (7 point scale)	Realism Attitude	Bruner et al. (1992) Gangadharbatla (2006)
Rating aspects of the racing game (5 point scale)	Realism Attitude	Nelson(2006) Gangadharbatla (2006)
Would you purchase this videogame (7 point scale)	Purchase Intention	MacKenzie et al. (1986), Day and Stafford (1997)
Unaided recall	Brand recall Incidental exposure Explicit memory	Gupta and Lord (1998) Law and Braun (2000) Russell (2002), Russell et al.,(2004), Nelson (2002) Hang and Auty (2011)
Recognition	Brand recognition Incidental exposure Explicit memory	Gupta and Lord (1998) Russell (2002), Nelson (2002), Brennan and Babin (2004) Yang <i>et al.</i> (2006) Lee and Faber (2007) Van Reijmersdal et al (2009) Gangadharbatla (2013)
Age	Demographics	Gangadharbatla (2013) Chaney et al. (2018) Verberckmoes et al. (2016)
Gender	Demographics	Gangadharbatla (2013) Verberckmoes et al. (2016) Chaney et al. (2018)

5.8 Data analysis

A number of issues need to be considered when determining the most appropriate statistical techniques for analysing collected data. These include the research question, number of dependent and independent variables, and the existence of covariates.

A range of different techniques was applied to analyse the data and these included both descriptive and inferential statistics. These were calculated using SPSS software. Univariate analysis was carried out to determine frequencies, for example, the gender/age split of respondents and ages of the sample population. Measures of central tendency such as mean, median and mode were also calculated (Bryman and Bell, 2007).

Multivariate analysis of variance (MANOVA) was employed, as there are several outcomes, dependent variables and three groups. When employing MANOVA there are a number of assumptions that must be adhered to namely, that the observations should be statistically independent, and that data should be randomly sampled for the population of interest and measured at an interval level. It is assumed that the dependent variables have multivariate normality within groups and that there is homogeneity of covariance matrices (Field, 2018).

As the MANOVA results were significant they were followed up by discriminant function analysis as MANOVA looks at whether groups differ along a linear combination of outcome variables, and discriminant analysis breaks down the linear combination in more detail. Discriminant function analysis is a statistical procedure that classifies unknown individuals and the probability of their classification into a certain group such as play or watch in this study. Discriminant analysis predicts a grouping variable from a set of outcome measures (Field, 2018). Thus, it can be used to classify participants into predetermined groups and is used when there are three or more groups. In this study, there are three groups therefore this is an appropriate test. It is commonly used as a way of identifying which of the dependent variables (or combinations of them) in MANOVA testing are 'causing' differences in group means and thus is a justified test for the current research. Indeed, Field (2018) suggests that discriminant analysis is the best test to follow up a significant

MANOVA.

Discriminant analysis was followed up with multinomial logistic regression, which was used to predict the membership of the three groups i.e. the outcome categories. The model breaks the outcome variable into a series of comparisons between two categories. The outcome categories (1-control, 2-play, 3-watch) can be compared against the first outcome category e.g. 1 vs. 2 and 1 vs. 3, the last outcome category e.g. 1 vs.3 and 2 vs 3, or a custom category that the researcher specifies (Field, 2018). In this study, the baseline category selected was the control group. This further test examined the results and provided another layer of justification to the MANOVA and discriminant analysis. It is an approach where the results can be easier to interpret, and is unaffected by non-normality of independent variables (Hair, 2019).

5.9 Ethics

When conducting research it is paramount that ethical considerations are firmly embedded in the research to be undertaken. Mason et al. (1995) argue that researchers should operate as reflective practitioners who are prepared to ask difficult questions about the ethics and politics of their research on a regular basis. Furthermore, the researcher must be conversant with the ethical principles that relate to data collection, storage and use in terms of harming the interests of the participants (Easterby-Smith et al., 2015).

Bryman and Bell (2007) offer a checklist of issues to consider in connection with ethical issues. These include the principle of informed consent so that participants understand the purpose of the research, how any resultant data will be used, the nature of their involvement, confidentiality, and whether their participation is voluntary, so that they might withdraw at any time. Such issues are addressed in the instructions to participants in Appendix 2.

By conducting research, online, specific ethical issues arise that are not necessarily relevant to offline studies. The specific site, software or venue used for conducting the research may have its own ethical expectations. This may concern issues such

as privacy, confidentiality and anonymity of the registered users (Bryman and Bell, 2007). The participants were briefed about the nature of the research and assured that all responses would be confidential and anonymous. The researcher does not believe the topic raised emotional issues with the participants. They were granted the right to withdraw from the study at any time. The research was conducted in accordance with Manchester Metropolitan University's (MMU's) ethics procedures.

5.10 Limitations

Despite the contribution of this research, there are a number of limitations associated with it, the most significant of which relates to the external validity. There may be issues in generalising the findings to the real-world context due to limitations relating to the sample selection, nature of the stimuli and experimental design, and these are discussed below.

5.10.1 Sample limitations

The use of convenient samples does present limitations in terms of external validity. For both studies, participants were drawn from an English university using simple random sampling see Section 5.6.5. Samples using this technique may not be representative of the larger population. Other types of gamers might respond differently to brand placement, such as participants from other UK and international universities and experienced e-sports participants. In the UK, a quarter of the videogames audience equates to 15 to 34-year-old males and this represents around five million gamers; hence, the student sample is justified. Furthermore, of the 20m people estimated by Gametrack to be actively playing videogames in the UK, 58% are male, 42% are female, and thus the sample is broadly representative by gender (Ukie, 2019).

5.10.2 Experiment design limitations

Quasi-experimental design was selected for the research, specifically a post-test-only, control group design. Quasi-experiments were justified for this research as it allowed for high internal validity, such as ensuring that each participant completed three laps of the racing game and went in a clockwise direction, which ensured that all participants saw the billboards in the same order. Study one research was conducted in classrooms and Study two in a variety of lecture halls - both artificial settings. Hence, the results may have been reflective of the contrived environment and although the design ensures incidental processing, it may have prevented the participants from involuntarily diverting their attention, as they would do in a natural setting. A simulated lounge, which would replicate one of the normal environments that videogames are, played in or actual lounge at the home of participants may have produced different results.

For this research, a post-test only, two group design plus control was implemented in preference to a pre-test/post-test design. This allowed for the true purpose of the research to be disguised from the participants, it reduced the risk of demand artefacts such as structural mere exposure and prevented the experimental procedures from adversely affecting the internal validity. The disadvantage of this method is that it did not allow for levels of liking to be measured prior to the quasi-experiments taking place and therefore more accurately gauge the effect of the placement exposures in the racing game. However, as a control group was included, comparing groups could measure the responses to the placement exposures in the racing game and hence, the absence of a pre-test is not deemed to be a major weakness.

Participants played or watched the racing game for less than ten minutes, when in reality gamers/spectators usually play/watch videogames repeatedly and thus will be exposed to any billboards multiple times. For individuals to process information, the message needs to be repeated, which increases the likelihood of the MEE (Bornstein, 1989). Repeated playing/watching the racing game would increase the familiarity of the track and environment and decrease the processing demands, thereby allowing spare processing capacity, which could be used to process

secondary information such as billboards. In this research, the experiment design did incorporate some repetition, as all participants were required to play/watch the racing game three times. Furthermore, this element of repetition allowed for repeated exposure of the billboards, which should have a more positive impact on MEE than if there had been no repetition.

The stimulus used was an authentic demonstration racing game used by Silo Black Games and thus not an artificial slideshow that was utilised in the classical mere exposure studies in cognitive psychology. In these classical mere exposure studies, the exposure time is controlled and typically between 0.5 and 3 seconds. In this research, the brand placements were embedded in a complex gaming environment and thus the participants may have not been directly exposed to the placements. However, the exposure times do partly replicate realistic exposure times in real-world contexts and thus potentially enhance the external validity of the results.

The current research measured short-term effects only and thus no conclusions about long-term effects could be derived. It would be beneficial to consider a longitudinal approach in future research to determine time delay effects (Nelson, 2002). This would allow differences to emerge in brand information processing levels over time, and the corresponding effect on attitude formation could be tested. Repeat exposure may see the player's skill improve, freeing up cognitive resources for placement processing. A longitudinal study would not only allow for the determination of the effects of repeat exposures on brand attitude, but also potential risks associated with over exposure such as player irritation or message wear out.

5.10.3 Experiment procedure limitations

Control was exercised over a number of aspects of the experiment procedure, such as presence of the researcher, brand knowledge and environment. The presence of the researcher was required to achieve internal validity and to exert a degree of experimental control, but it is acknowledged that it did create an artificial condition. Researcher presence was also necessary to ensure that the observations from the research could be recorded. To reduce the risk of social desirability response, self-administered surveys were utilised and participants, as per MMU Ethics procedures,

were advised that all responses would be anonymous. The researcher was as unobtrusive as possible during both the game play and survey completion in the play condition. In the watch condition, the data was collected in lecture halls and the researcher was even more distant from the participants, who filled out the survey via an online link on their course Moodle area. Although procedures were put in place to ensure that the game play was as 'normal' as possible in the data collection stage of the research, the results cannot be generalised to every game playing situation - for example settings such as the home and larger population of gamers. Prior knowledge of the brand logos was controlled as no pre-existing brands were used and thus no residual memory would exist.

There may have been limitations associated with the post-treatment measurement. Efforts were made to replicate the game playing experience, but the number of exposures to the racing game was controlled. Participants were required to complete/watch three laps of the racing game, hence the time of exposure to the racing game would have been 6-10 minutes, but the actual exposure to the brand name logos was not controlled. Brand logo likeability was measured after exposure. This does not replicate the true video gaming or e-sports experience as gamers may play or watch a game multiple times. Although, this research addresses many of the method-based limitations of previous brand placement research such as laboratory settings, small non-random samples and lack of control groups, the exposure time is a weakness that could be addressed in future research.

Brand likeability, a key measure of MEE, was measured after one game playing session. It has been acknowledged that MEE and increased positive effect is enhanced by repetition. In the current research, repetition was ensured as participants were asked to play three laps of the racing game. For the watchers, three individual gamers completed a lap each to see who could complete the fastest lap time. Hence, ensuring that each brand was exposed three times for both watchers and players. In addition, the design of racing game included a fork in the track and hence participants could take the left route, which included a jump, or right which was the straight road. The billboard Volare Airlines was included on both these options to ensure that all the billboards in the racing game had an equal chance of being exposed. Repetition of the racing game and repeat exposures over

a longer period may produce different results to those observed in this research. This would have to be implemented in a more complex racing game with multiple levels, as the game used in this research was one figure of eight track with one level and may result in boredom and disinterest if asked to play the game for longer.

5.10.4 Stimulus limitations

The nature of the racing game stimulus also presents potential limitations. The research focused on one genre of videogame, a racing game, and five fictitious brands. In this research, some of the limitations were mitigated by not using a pre-existing racing game and thus residual memory and knowledge of the game was not present. This may have compromised the results. Nonetheless, it is problematic to generalise findings to other game genres and brands used in brand placement. The scope of the study and the racing game utilised also dictated that the game had to be played on a PC with the arrow controls used to navigate the game. This limits the generalizability of the findings to other game types such as consoles, mobile and arcade games.

5.10.5 Survey items limitations

Survey measures are unlikely to present further limitations to the survey instrument as the guidelines for successful survey design were observed. There is a possibility, that there may have been an error of central tendency as 7-point Likert scales were used throughout the survey. Factors that potentially could affect cognitive and affective measures were not included in the current study, for example: involvement, mood, product and category involvement, and real versus fictitious brands are some of the considerations that need to be taken into account to gain a comprehensive understanding of brand placement effectiveness in videogames in future research.

5.11 Summary

This chapter outlines the major research philosophies of positivism and phenomenology and briefly summarizes the ontological and epistemological debates surrounding each philosophy. It noted that the stance taken for this

research equates to the basic tenets of positivism, although the notion of value freedom may deviate from a truly positivist perspective.

The chapter then proceeded to outline and review the range of quantitative and qualitative methods available to the researcher determined by the methodology. It was argued that because of the central aims and objectives of this thesis, a quantitative method was selected; namely, a quasi-experiment proceeded by a large-scale survey. An in depth explanation of quasi-experiments, the stimulus and the survey instrument then followed, with a justification of the scales used in the survey. Thus, constructs were defined and evidence of the scales' reliability and validity was presented.

The chapter then explained the data collection, which included a pilot test, sampling and data analysis processes. The chapter explained the ethical considerations that were adhered to when undertaking the research. Finally, limitations relating to the sample selection, nature of the stimuli, survey items and experimental design were discussed.

CHAPTER 6

DATA ANALYSIS

6.1 Introduction

This chapter presents the quantitative analyses of the data collected. The analysis techniques used are justified, the data is explored, key assumptions are tested and results of statistical analyses are presented. The purpose of the chapter is to present the results, and as such, it does not discuss the findings in any depth, either in relation to the existing literature or in terms of any implications of the findings, as these are fully addressed in Chapter 7 of this thesis. All the analyses were conducted using SPSS for Windows version 25.

6.2 Justification of analysis techniques

Prior to determining the most appropriate statistical techniques for analysing the data collected, it is useful to recap on the nature of the research and its purpose. The research sought to understand the effects on brand evaluation for brand placements which were exposed in videogames. This aim of this study was to investigate whether exposure to brand placement affects unknown brand likeability as a result of mere exposure for game players and game watchers in videogames. The objective was to identify the differences between mean brand likeability by exposed brand (the dependent variables) across three groups: the participants who played the racing game (Play group); those who watched the game (Watch group); and those not exposed to the racing game (Control group).

In order to ensure no confounding variables were driving mean brand likeability differences between the groups, the same participants also were asked to feedback brand likeability for 5 non-exposed brands in addition to the five exposed brands. If there are no confounding variables, given that these five brands were not placed (exposed) in the video game, then analysis should not identify differences between the groups (otherwise other unidentified variables, not exposure, are causing the differences).

To examine these relationships, multivariate analysis of variance (MANOVA), discriminate analysis and multinomial regression were identified as the most appropriate statistical techniques.

MANOVA is used when there is a need to detect group differences when there are several dependent variables as is the case in this research. The dependent variables in this research are the exposed brands which are Volare Airlines, Double 7, MBSB, Copperstone, Dynamix, refer to Figure 5.1 to 5.5. MANOVA, by including all the dependent variables in the same analysis, takes into account any relationship (correlations) between the dependent variables, and allows control over the experiment -wide error rate. If the number of dependent variables is five or fewer then MANOVA has greater statistical power than separate univariate tests (Hair et al., 2019).

MANOVA identifies whether or not across the combined set of dependent variables, as a whole there are differences between groups. Discriminant function analysis can be used to try to identify which group (nominal or categorical variable) that a particular combination of independent metric variables will predict. It is commonly used as a way of identifying which of the dependent variables (or combinations of them) in MANOVA testing are 'causing' differences in group means (Field, 2018).

In order to further validate and understand the findings from discriminant function analysis, multinomial logistic regression was applied to understand which brand logos were most meaningful in explaining the differences between the groups. Multinomial logistic regression predicts membership of more than two categories using combinations of both metric and non-metric (categorical) variables. It is an approach that provides results which can be easier to interpret, and is unaffected by non-normality of independent variables (Hair et al., 2019).

6.3 Profile of participants

The technique used to gather the data, as explained in Chapter 5, resulted in a useable sample of 300 participants. There were equal numbers of participants in each of the three groups (100 in each group). To ascertain the demographic characteristics of the participants, descriptive statistics were calculated. The results of this analysis were as follows:

Age

77% of the sample were aged 18-25, 20% 26-35 and 3% were 40 plus. The age range can be explained by the fact that the participants were recruited on a university campus at different times and days over the course of three months.

Gender

60% of the sample was male and 40% was female. The mix of males and females in the sample does address the male gender bias in previous studies and is more representative of the current gaming audience, where of the 20m gamers in the UK 58% are male and 42% female (Mintel, 2017).

6.4 MANOVA

6.4.1 Assumptions – MANOVA testing

The key assumptions necessary for the use of MANOVA are that observations (responses) are independent of each other, variance-covariance matrices should be equal for all treatment groups, and the dependent variables should be multivariate and normally distributed (Hair et al., 2019). Random assignment of individuals to groups should ensure the necessary independence of observations (Hair et al., 2019). This was the approach taken in this study as participants were randomly assigned to each of the three groups

Equivalence of variance-covariance matrices can be checked using Box's test, which should be non-significant. However, if this test is not met, but sample sizes for each group are equal, then Box's test can be disregarded as it is unstable and in the current data set, it can be assumed that Hotelling's Trace and Pillai's Trace statistics are robust.

Multivariate normality can be assessed by examining the univariate normality of the dependent variables and if these have achieved skewness < 2 and kurtosis < 7, and approximate normality can be justified (Curran et al., 1996; Chou and Bentler, 1995).

For the both the exposed brands and non-exposed brands the above assumptions were met. Individuals were randomly assigned to the three groups, group sizes were equal and the sample size is reasonably large. Univariate normality is present based on the above criteria.

6.4.2 MANOVA testing

This section will present the results of the MANOVA tests performed to examine the non-exposed brands, and then the results for exposed brands. The scale for measuring brand attitude was based on one measure of likeability, as per Bornstein (1989) and his meta-analysis on MEE. It was measured on a 7-point Likert scale, with 1 representing very strong brand logo liking and thus positive brand attitude and 7 very strong brand logo disliking and thus negative brand attitude. The summated scale was the same for all ten brands. Table 6.1 lists the non-exposed and exposed brands.

Table 6.1 Names and product categories for the exposed and non-exposed brand logos

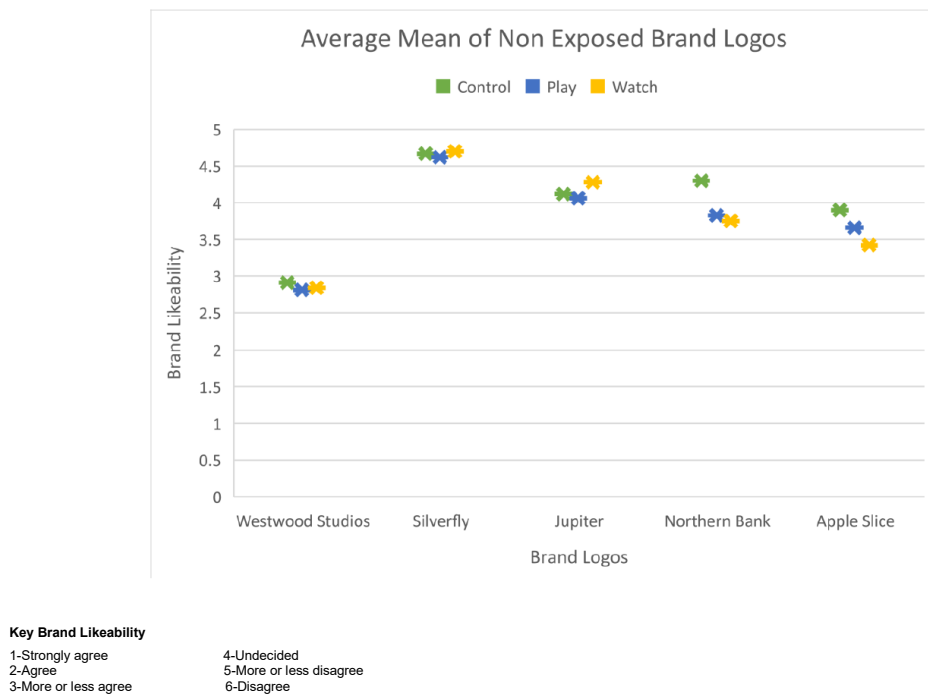
Exposed brand logos	Non-exposed brand logos
Dynamix (games developer)	Westwood Studios (game developer)
Copperstone (tyres)	Jupiter (tyres)
Double 7 (soft drink)	Apple Slice (soft drink)
MBSB (bank)	Northern Bank (bank)
Volare Airlines (airline)	Silverfly (airline)

The non-exposed brands were investigated to determine if there were differences in brand likeability and thus brand attitude between the two treatment groups and control. Five brand logos were investigated and the mean scores for each of the five non-brand logos and groups are summarised in Table 6.1 and exposed brand logos in Table 6.2. The MANOVA test statistics are shown in Table 6.3 and Table 6.5 respectively.

Table 6.2 Means of the brand liking for the brand placements for the non-exposed brands.

Descriptive Statistics				
Group		Mean	Std. Deviation	:::
Northern Bank	Control Group	4.30	1.997	100
	Play Group	3.83	1.664	100
	Watch	3.75	1.527	100
	Total	3.96	1.752	300
Silverfly	Control Group	4.67	1.859	100
	Play Group	4.62	1.644	100
	Watch	4.70	1.611	100
	Total	4.66	1.703	300
Apple Slice	Control Group	3.90	1.714	100
	Play Group	3.66	1.634	100
	Watch	3.42	1.793	100
	Total	3.66	1.721	300
Westwood Studios	Control Group	2.91	1.538	100
	Play Group	2.81	1.354	100
	Watch	2.84	1.441	100
	Total	2.85	1.442	300
Jupiter	Control Group	4.12	1.838	100
	Play Group	4.06	1.769	100
	Watch	4.28	1.735	100
	Total	4.15	1.778	300

Figure 6.1 Mean brand liking for the non-exposed brand logos



The graph in Figure 6.1 indicates no differences for the two treatment groups and control for brand likeability and thus brand attitude for Westwood, Silverfly and minimal for Jupiter. The Watch group reported higher brand liking for Northern Bank and Apple Slice but these results were not significant.

Table 6.3 Summary multivariate results for the brand placements for the non-exposed brands.

Multivariate Tests ^a						
Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	0.952	1172.079 ^b	5.000	293.000	0.000
	Wilks' Lambda	0.048	1172.079 ^b	5.000	293.000	0.000
	Hotelling's Trace	20.001	1172.079 ^b	5.000	293.000	0.000
	Roy's Largest Root	20.001	1172.079 ^b	5.000	293.000	0.000
Group	Pillai's Trace	0.036	1.065	10.000	588.000	0.387
	Wilks' Lambda	0.965	1.068 ^b	10.000	586.000	0.385
	Hotelling's Trace	0.037	1.071	10.000	584.000	0.383
	Roy's Largest Root	0.033	1.942 ^c	5.000	294.000	0.087

a. Design: Intercept + Group

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

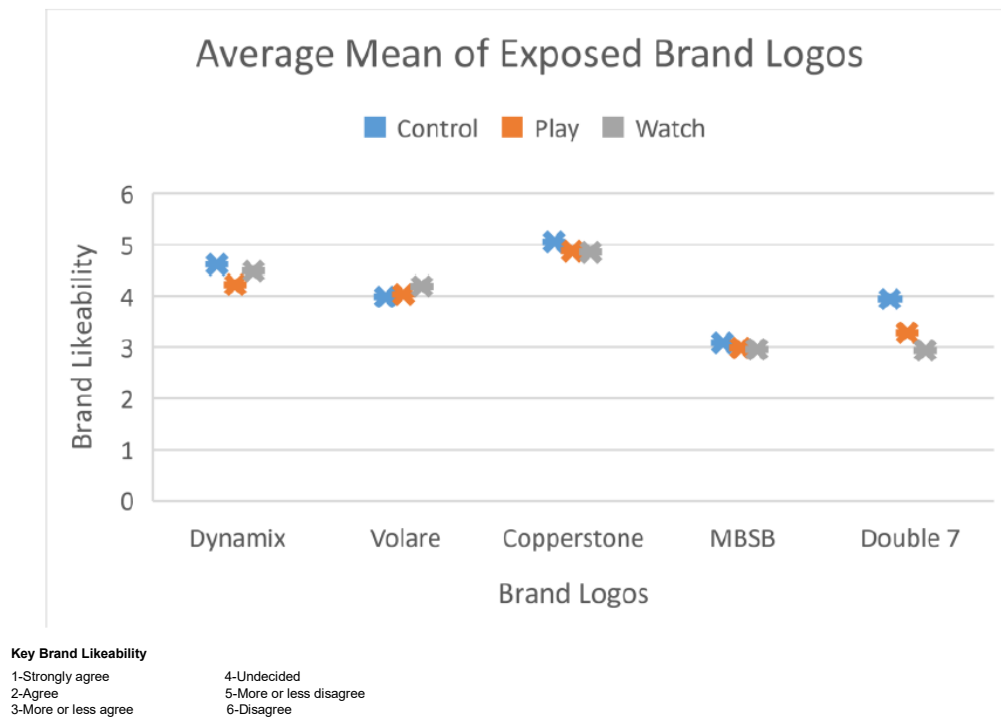
In order to test whether differences in means were significant, a MANOVA was conducted. Only Pillai's trace and Hotelling's trace can be considered robust due to equality of group size (see Section 6.4.1). Using Pillai's trace there are no significant differences in brand attitude between the groups where the brand is not exposed in the racing game, $V = 0.04$, $F(10, 588) = 1.07$, $p = 0.387$ and $p = .383$). Using Hotelling's trace statistic there are no significant differences in brand attitude between the groups where the brand is not exposed in the racing game, $V = 0.04$, $F(10, 584) = 1.07$, $p = 0.383$). This gives support to the argument that no confounding variables are present as outlined in Section 6.2.

The exposed brands were investigated to determine if there were differences in brand likeability and thus brand attitude between the two treatment groups and control. The five exposed brand logos were investigated and the mean scores for each of the five brand logos and groups are summarised in Table 6.4 and Figure 6.2 below. The MANOVA test statistics are shown in Table 6.5.

Table 6.4 Means of brand liking for the exposed brand logos.

Descriptive Statistics				
Group		Mean	Std. Deviation	N
Dymanix	Control Group	4.61	1.763	100
	Play Group	4.23	1.657	100
	Watch	4.49	1.624	100
	Total	4.44	1.684	300
VolareAirlines	Control Group	4.02	1.786	100
	Play Group	4.04	1.681	100
	Watch	4.20	1.570	100
	Total	4.09	1.678	300
Copperstone	Control Group	5.03	1.909	100
	Play Group	4.88	1.794	100
	Watch	4.86	1.633	100
	Total	4.92	1.778	300
MBSB	Control Group	3.10	1.605	100
	Play Group	2.99	1.403	100
	Watch	2.96	1.428	100
	Total	3.02	1.478	300
Double7	Control Group	3.97	1.823	100
	Play Group	3.28	1.538	100
	Watch	2.94	1.562	100
	Total	3.40	1.696	300

Figure 6.2 Average mean brand liking for the exposed brand logos



The graph in Figure 6.2 indicates that there are differences for the two treatment groups and control in brand likeability and thus brand attitude for the Double 7 brand logo and more minor differences for Dynamix. The Watch group reported the highest liking for Double 7, followed by the Play group and both groups reported higher liking than the Control group who were not exposed to the brand logos. For Dynamix, the Play group reported higher liking, followed by the Watch group and both groups reported marginally higher liking than the Control group. Volare Airlines, Copperstone and MBSB do not indicate differences in brand likeability and thus differences for brand attitude for the two treatment groups and Control.

Table 6.5 : Summary multivariate results for the brand placements for the exposed brands.

Multivariate Tests ^a						
Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	0.947	1041.326 ^b	5.000	293.000	0.000
	Wilks' Lambda	0.053	1041.326 ^b	5.000	293.000	0.000
	Hotelling's Trace	17.770	1041.326 ^b	5.000	293.000	0.000
	Roy's Largest Root	17.770	1041.326 ^b	5.000	293.000	0.000
Group	Pillai's Trace	0.083	2.534	10.000	588.000	0.005
	Wilks' Lambda	0.918	2.563 ^b	10.000	586.000	0.005
	Hotelling's Trace	0.089	2.592	10.000	584.000	0.004
	Roy's Largest Root	0.081	4.775 ^c	5.000	294.000	0.000

a. Design: Intercept + Group

b. Exact statistic

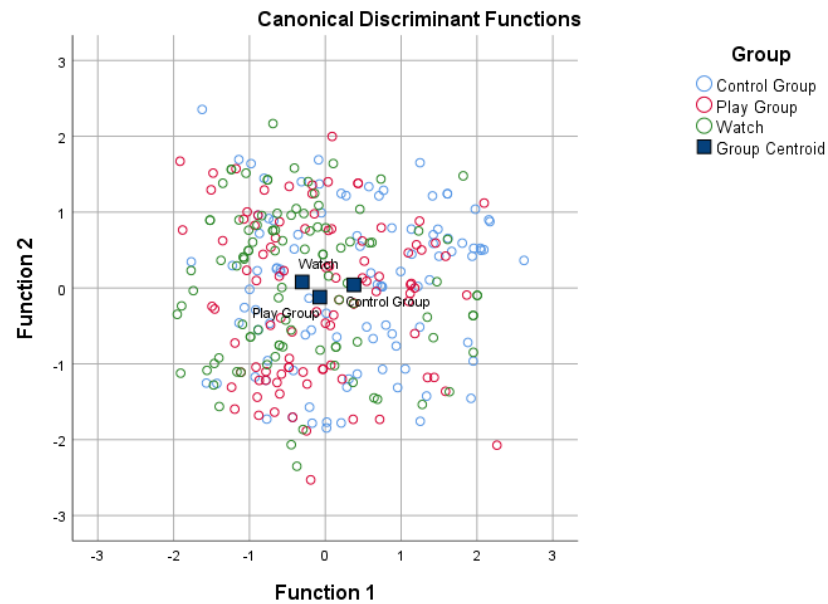
c. The statistic is an upper bound on F that yields a lower bound on the significance level.

Only Pillai's trace and Hotelling's trace can be considered robust due to equality of group size (see Section 6.4.1). Using Pillai's trace there are significant differences in brand attitude between the groups where the brand logos are exposed in the racing game, $V = 0.08$, $F(10, 588) = 2.53$, $p = 0.005$). Using Hotelling's trace statistic there are significant differences in brand attitude between the groups where the brand logos are exposed in the racing game, $V = 0.09$, $F(10, 584) = 2.59$, $p = 0.004$.

6.5 Discriminant function analysis

The MANOVA for exposed brands was followed up with discriminant analysis, which revealed the discriminant functions. The first discriminant function explained 91.5% of the variance (canonical $R^2=0.07$), whereas the second only explained 8.5% (canonical $R^2=0.007$). In combination these discriminant functions significantly differentiated the treatment groups ($\Lambda=0.92$, $\chi^2(10) = 25.26$, $p=0.005$), but removing the first function indicated that the second function did not significantly differentiate the treatment groups ($\Lambda=0.99$, $\chi^2(4) = 2.22$, $p=0.695$). The discriminant function mapping is presented in Figure 6.3.

Figure 6.3 Discriminant function mapping



The correlations between outcomes and the discriminant functions (see Table 6.6) revealed that the Double 7 loaded higher on the first function ($r = 0.918$) than the second function ($r = 0.035$). Copperstone also loaded higher on the first function ($r = 0.146$) than the second ($r = 0.114$); and MBSB loaded higher on the first function ($r = 0.142$) than the second ($r = 0.064$). Dynamix loaded more higher on the second function ($r = 0.958$) than the first ($r = 0.158$); and Volare Airlines also loaded higher on the second function ($r = 0.315$) than the first ($r = -0.139$).

Table 6.6 : Loadings to discriminant functions

Structure Matrix		
	Function	
	1	2
ExpD7	.918*	0.035
ExpCopperstone	.146*	0.114
ExpMBSB	.142*	0.064
ExpDynamix	0.158	.958*
ExpVA	-0.139	.315*

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions
Variables ordered by absolute size of correlation within function.

It would appear that the primary difference between groups is due to differences in mean scores for the Double 7 Brand. There is some minor contribution from Copperstone and MBSB brands, but since these loadings are less than 0.4 they are not considered substantive (Hair *et al.*, 2019). A secondary contribution to difference comes predominantly from the Dynamix brand, with a minor contribution (again not substantive) from the Volare Airlines brand.

6.6 Multinomial logistic regression

A multinomial logistic regression was performed to model the relationship between the predictors and membership in the three groups (Control, Play, and Watch). The traditional 0.05 criterion of statistical significance was employed for all tests. Goodness of fit was explored by conducting Pearson Chi-Square; $p = .004$ which is statistically significant and therefore the model fits the data well.

Table 6.7 Likelihood Ratio Tests

Likelihood Ratio Tests						
Effect	Model Fitting Criteria			Likelihood Ratio Tests		
	AIC of Reduced Model	BIC of Reduced Model	-2 Log of Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	693.763	923.398	569.763 ^a	0.000	0	
ExpDynamix	677.875	863.065	577.875	8.112	12	0.776
ExpVA	675.695	860.884	575.695	5.932	12	0.919
ExpCopperstone	696.794	881.983	596.794	27.031	12	0.008
ExpMBSB	680.316	865.505	580.316	10.553	12	0.568
ExpD7	697.502	882.692	597.502	27.739	12	0.006

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

According to a multinomial logistic regression model that predicts group membership of the brands on the basis of the experimental conditions (with the Control group as base), two brands significantly predict group membership, Double 7 $\chi^2(12) = 27.74$, $p=0.006$ and Copperstone $\chi^2(12) = 27.03$, $p=0.006$, $p=0.008$. These results are displayed in Table 6.7.

Double 7 is a predictor for the Play Group $p= 0.04$ but Copperstone is not. Both Double 7 $p= 0.007$ and $p=0.008$ and Copperstone $p= 0.002$ are a predictor for membership of the Watch Group. See Table 6.8. For full parameter estimates see Appendix 6.

Table 6.8 Parameter estimates

Parameter Estimates									
Group ^a		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
Play Group	Intercept	-1.659	1.217	1.858	1	0.173			
	[ExpD7=1]	1.634	1.052	2.415	1	0.120	5.127	0.653	40.278
	[ExpD7=2]	1.958	0.949	4.254	1	0.039	7.084	1.102	45.526
	[ExpD7=3]	1.504	0.979	2.361	1	0.124	4.501	0.661	30.656
	[ExpD7=4]	1.389	0.968	2.059	1	0.151	4.012	0.602	26.753
	[ExpD7=5]	1.489	0.963	2.391	1	0.122	4.434	0.671	29.292
	[ExpD7=6]	0.010	1.027	0.000	1	0.992	1.010	0.135	7.556
	[ExpD7=7]	0 ^b			0				
Watch	Intercept	-1.619	1.278	1.606	1	0.205			
	[ExpCopperstone=1]	-20.831	0.000		1		8.977E-10	8.977E-10	8.977E-10
	[ExpCopperstone=2]	-0.166	0.634	0.069	1	0.793	0.847	0.245	2.931
	[ExpCopperstone=3]	0.139	0.551	0.064	1	0.800	1.149	0.390	3.384
	[ExpCopperstone=4]	2.095	0.664	9.967	1	0.002	8.129	2.213	29.854
	[ExpCopperstone=5]	-0.024	0.556	0.002	1	0.966	0.977	0.328	2.905
	[ExpCopperstone=6]	-0.295	0.488	0.365	1	0.546	0.745	0.286	1.938
	[ExpCopperstone=7]	0 ^b			0				
	[ExpD7=1]	2.807	1.044	7.237	1	0.007	16.566	2.143	128.092
	[ExpD7=2]	2.561	0.962	7.090	1	0.008	12.945	1.966	85.250
	[ExpD7=3]	1.994	1.001	3.966	1	0.046	7.341	1.032	52.225
	[ExpD7=4]	1.406	0.999	1.980	1	0.159	4.080	0.576	28.916
	[ExpD7=5]	1.233	1.011	1.487	1	0.223	3.431	0.473	24.885
	[ExpD7=6]	1.153	1.031	1.251	1	0.263	3.169	0.420	23.922
	[ExpD7=7]	0 ^b			0				

a. The reference category is: Control Group.

b. This parameter is set to zero because it is redundant.

6.6.1 Influence of age

In order to determine if age was a confounding factor in any exposure effects on brand liking a multinomial logistic regression was performed to model the relationship between the predictors and membership in the three groups (Control, Play, and Watch). Goodness of fit was explored by conducting Pearson Chi-Square; $p = .033$ which is statistically significant and therefore the model fits the data well. The results are displayed in Table 6.8. Age $\chi^2(4) = 34.44$, $p = 0.000$ was a significant

factor in explaining the differences in exposure effects between the groups. Double 7 $\chi^2(12) = 30.71$, $p = 0.002$ and Copperstone $\chi^2(12) = 25.60$, $p = 0.012$.

Table 6.9 Age likelihood ratio tests

Likelihood Ratio Tests						
Effect	Model Fitting Criteria			Likelihood Ratio Tests		
	AIC of Reduced Model	BIC of Reduced Model	-2 Log of Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	669.152	913.602	537.152 ^a	0.000	0	
ExpDynamix	655.401	855.405	547.401	10.249	12	0.594
ExpVA	651.824	851.829	543.824	6.672	12	0.878
ExpCopperstone	670.753	870.758	562.753	25.601	12	0.012
ExpMBSB	659.259	859.263	551.259	14.107	12	0.294
ExpD7	675.868	875.872	567.868	30.716	12	0.002
Age	695.596	925.230	571.596	34.444	4	0.000

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

Double 7 is a predictor for the Play Group $p = 0.02$ but Copperstone is not. Both Double 7 $p = 0.005$ and $p = 0.004$ and Copperstone $p = 0.003$ are a predictor for membership of the Watch Group referred to in Table 6.10. For full parameter estimates see Appendix 7.

Table 6.10 Age parameter estimates

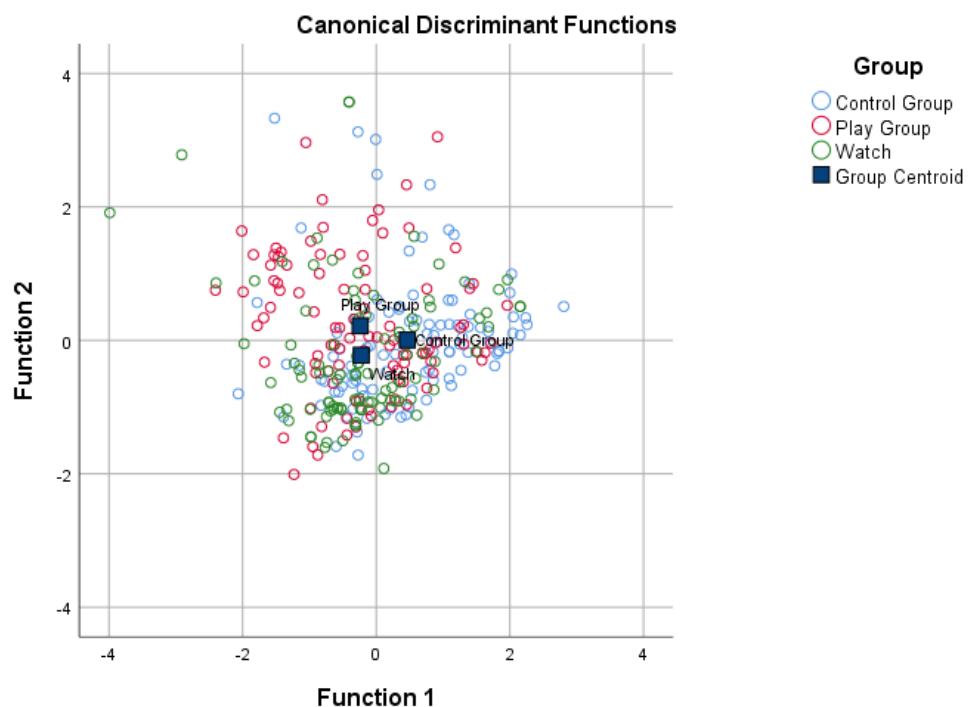
Parameter Estimates									
Group ^a		B	Std. Error	Wald	d f	Sig.	Exp(B)	95% Interval for Lower Bound	Confidence Upper Bound
Play Group	Intercept	-2.623	1.740	2.272	1	0.132			
	[ExpD7=1]	2.123	1.196	3.149	1	0.076	8.353	0.801	87.117
	[ExpD7=2]	2.647	1.114	5.648	1	0.017	14.113	1.591	125.230
	[ExpD7=3]	2.069	1.123	3.398	1	0.065	7.920	0.877	71.501
	[ExpD7=4]	2.177	1.137	3.662	1	0.056	8.817	0.949	81.947
	[ExpD7=5]	1.886	1.102	2.932	1	0.087	6.596	0.761	57.153
	[ExpD7=6]	0.522	1.159	0.203	1	0.653	1.685	0.174	16.351
	[ExpD7=7]	0 ^b			0				
	[Age=1]	-0.491	1.364	0.129	1	0.719	0.612	0.042	8.877
	[Age=2]	1.830	1.368	1.788	1	0.181	6.233	0.427	91.080
	[Age=3]	0 ^b			0				
Watch	Intercept	-0.743	1.566	0.225	1	0.635			
	[ExpCopperstone=1]	-20.071	0.000		1		1.920E-09	1.920E-09	1.920E-09
	[ExpCopperstone=2]	-0.238	0.642	0.138	1	0.710	0.788	0.224	2.772
	[ExpCopperstone=3]	-0.026	0.561	0.002	1	0.963	0.974	0.324	2.926
	[ExpCopperstone=4]	1.966	0.671	8.576	1	0.003	7.143	1.916	26.631
	[ExpCopperstone=5]	-0.128	0.565	0.051	1	0.821	0.880	0.291	2.664
	[ExpCopperstone=6]	-0.380	0.501	0.575	1	0.448	0.684	0.256	1.825
	[ExpCopperstone=7]	0 ^b			0				
	[ExpD7=1]	3.656	1.295	7.965	1	0.005	38.703	3.055	490.237
	[ExpD7=2]	3.610	1.245	8.403	1	0.004	36.961	3.219	424.349
	[ExpD7=3]	2.965	1.267	5.478	1	0.019	19.390	1.620	232.147
	[ExpD7=4]	2.465	1.258	3.840	1	0.050	11.759	1.000	138.332
	[ExpD7=5]	2.115	1.272	2.766	1	0.096	8.290	0.685	100.258
	[ExpD7=6]	2.051	1.282	2.558	1	0.110	7.773	0.630	95.913
	[ExpD7=7]	0 ^b			0				
	[Age=1]	-1.932	1.205	2.569	1	0.109	0.145	0.014	1.538
	[Age=2]	-0.971	1.240	0.613	1	0.434	0.379	0.033	4.306
	[Age=3]	0 ^b			0				

a. The reference category is: Control Group. b This parameter is set to zero because it is redundant

6.6.2 Age discriminant function analysis

As age was a significant factor in determining the differences in the exposure effects between groups a further discriminant analysis was conducted. The first discriminant function explained 77% of the variance, canonical $R^2=0.09$ whereas the second only explained 23%, canonical $R^2=0.003$. In combination these discriminant functions significantly differentiated the treatment groups, $\Lambda=0.87$, $\chi^2(12)=40.02$, $p=0.000$ but removing the first function indicated that the second function did not significantly differentiate the treatment groups, $\Lambda=0.97$, $\chi^2(5)=9.48$, $p=0.091$. These are displayed in figure 6.4.

Figure 6.4 Age discriminant function mapping



The correlations between outcomes and the discriminant functions – see Table 6.11 revealed that the Double 7 loaded highly onto the first ($r = 0.762$) than the second function ($r=0.479$). Copperstone loaded more highly on the first function ($r = 0.153$) than the second function ($r = 0.028$). MBSB loaded more highly onto the first function ($r = 0.102$) than the second function ($r = 0.047$). Dynamix loaded more highly onto the first function ($r = 0.210$) than the first function ($r = -$

0.347) and Volare Airlines loaded more heavily onto the second function ($r = -0.067$) than the first function ($r = -0.217$). Age loaded more highly onto the second function ($r = 0.790$) than the first function ($r = -0.396$).

Table 6.11 Age loadings to discriminant functions

Structure Matrix		
	Function	
	1	2
ExpD7	.762*	0.479
ExpCopperstone	.153*	0.028
ExpMBSB	.102*	0.047
Age	-0.396	.790*
ExpDynamix	0.210	-.347*
ExpVA	-0.067	-.217*

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions
Variables ordered by absolute size of correlation within function.

*. Largest absolute correlation between each variable and any discriminant function

It would appear that the primary difference between groups is present due to difference in mean scores for the Double 7 Brand. There is some minor contribution from Copperstone and MBSB, Dynamix and Volare Airlines brands but since these loadings are less than 0.4 they are not considered substantive (Hair et al., 2019).

6.6.3 Influence of gender

In order to determine if gender was a confounding factor in any exposure effects on brand attitude a multinomial logistic regression was performed to model the relationship between the predictors and membership in the three groups (Control, Play, and Watch). Goodness of fit was explored by conducting Pearson Chi-Square; $p = .002$ which is statistically significant and therefore the model fits the data well. The results are displayed in Table 6.12. Gender was a significant factor $\chi^2(4) = 34.30$, $p = 0.000$ in explaining the differences in exposure effects between the groups for Double 7 $\chi^2(12) = 30.52$, $p = 0.002$ and Copperstone 7 $\chi^2(12) = 28.05$, $p = 0.005$.

Table 6.12 Gender likelihood ratio tests

Likelihood Ratio Tests						
Model Fitting Criteria				Likelihood Ratio Tests		
Effect	AIC of Reduced Model	BIC of Reduced Model	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	674.031	918.481	542.031 ^a	0.000	0	
ExpDynamix	655.981	855.985	547.981	5.950	12	0.919
ExpVA	656.738	856.743	548.738	6.707	12	0.876
ExpCopperstone	678.082	878.087	570.082	28.051	12	0.005
ExpMBSB	661.700	861.705	553.700	11.669	12	0.473
ExpD7	680.551	880.555	572.551	30.520	12	0.002
Gender	700.330	929.964	576.330	34.299	4	0.000

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

Copperstone is a predictor for the Play Group $p = 0.02$ but Double 7 is not. Both Double 7 $p = 0.006$ and $p = 0.007$ and Copperstone $p = 0.002$ are a predictor for membership of the Watch Group, referred to in Table 6.13. For full parameter estimates see Appendix 8.

Table 6.13 Gender parameter estimates

Parameter Estimates									
Group ^a		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Interval for Exp(B) Lower Bound	Confidence Upper Bound
Play Group	Intercept	15.343	1293.310	0.000	1	0.991			
	[ExpCopperstone=1]	0.403	1.005	0.161	1	0.689	1.496	0.209	10.724
	[ExpCopperstone=2]	0.239	0.623	0.147	1	0.701	1.270	0.374	4.310
	[ExpCopperstone=3]	0.481	0.579	0.690	1	0.406	1.617	0.520	5.030
	[ExpCopperstone=4]	1.685	0.723	5.439	1	0.020	5.394	1.309	22.237
	[ExpCopperstone=5]	0.218	0.613	0.126	1	0.722	1.243	0.374	4.133
	[ExpCopperstone=6]	0.545	0.486	1.260	1	0.262	1.725	0.666	4.469
	[ExpCopperstone=7]	0 ^b			0				
	[Gender=1]	-15.644	1293.309	0.000	1	0.990	1.606E-07	0.000	. ^c
	[Gender=2]	-17.173	1293.309	0.000	1	0.989	3.482E-08	0.000	. ^c
	[Gender=3]	0 ^b			0				
Watch	Intercept	-2.678	1.301	4.241	1	0.039			
	[ExpCopperstone=1]	-15.092	773.692	0.000	1	0.984	2.790E-07	0.000	. ^c
	[ExpCopperstone=2]	-0.170	0.639	0.071	1	0.790	0.843	0.241	2.953
	[ExpCopperstone=3]	0.126	0.561	0.050	1	0.823	1.134	0.377	3.407
	[ExpCopperstone=4]	2.087	0.672	9.644	1	0.002	8.061	2.159	30.090
	[ExpCopperstone=5]	0.028	0.566	0.003	1	0.960	1.029	0.339	3.118
	[ExpCopperstone=6]	-0.291	0.490	0.353	1	0.553	0.747	0.286	1.954
	[ExpCopperstone=7]	0 ^b			0				
	[ExpD7=1]	2.963	1.069	7.673	1	0.006	19.347	2.378	157.378
	[ExpD7=2]	2.671	0.991	7.262	1	0.007	14.451	2.072	100.803
	[ExpD7=3]	2.171	1.030	4.448	1	0.035	8.771	1.166	65.974
	[ExpD7=4]	1.447	1.025	1.995	1	0.158	4.252	0.571	31.677
	[ExpD7=5]	1.191	1.036	1.320	1	0.251	3.290	0.432	25.085
	[ExpD7=6]	1.258	1.055	1.420	1	0.233	3.517	0.444	27.834
	[ExpD7=7]	0 ^b			0				
	[Gender=1]	0.791	0.341	5.371	1	0.020	2.205	1.130	4.304
	[Gender=2]	0.978	0.000		1		2.659	2.659	2.659
	[Gender=3]	0 ^b			0				

a. The reference category is: Control Group.

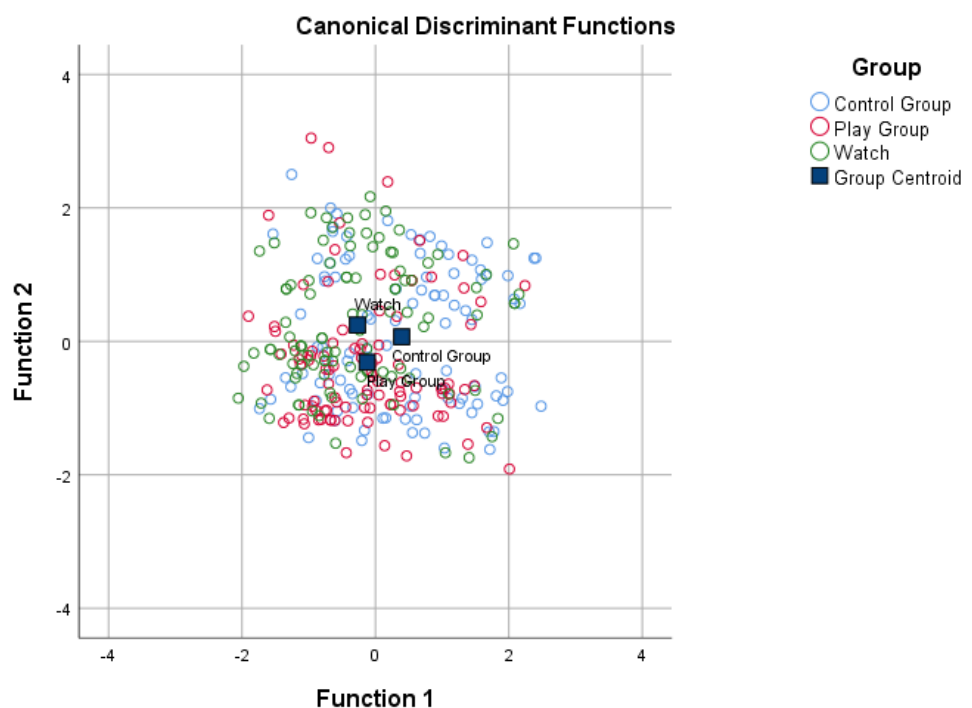
b. This parameter is set to zero because it is redundant.

c. Floating point overflow occurred while computing this statistic. Its value is therefore set to system missing.

6.6.4 Gender discriminant function analysis

As gender was a significant factor in determining the differences in the exposure effects between groups a further discriminant analysis was conducted. The first discriminant function explained 60% of the variance, canonical $R^2=0.07$ whereas the second only explained 40%, canonical $R^2=0.005$. In combination these discriminant functions significantly differentiated the treatment groups, $\Lambda=0.88$, $\chi^2(12) = 38.87$, $p=0.000$ but removing the first function indicated that the second function did not significantly differentiate the treatment groups, $\Lambda=0.95$, $\chi^2(5) = 15.72$, $p=0.008$. These are displayed below in Figure 6.5.

Figure 6.5 Gender discriminant function mapping



The correlations between outcomes and the discriminant functions – see Table 6.14 revealed that the Double 7 loaded highly onto the first ($r = 0.908$) than the second function ($r = -0.134$). Copperstone loaded more highly on the first function ($r = 0.140$) than the second function ($r = 0.016$). MBSB loaded more highly onto the first function ($r = 0.143$) than the second function ($r = 0.001$). Dynamix loaded more highly onto the second function ($r = 0.327$) than the first function ($r = -0.195$) and Volare Airlines loaded more heavily onto the second

function ($r = -0.138$) than the first function ($r = -0.125$). Gender loaded more highly onto the second function ($r = 0.878$) than the first function ($r = -0.203$).

Table 6.14 Gender loadings to discriminant functions

Structure Matrix		
	Function	
	1	2
ExpD7	.908*	-0.134
ExpMBSB	.143*	0.001
ExpCopperstone	.140*	0.016
Gender	0.203	.878*
ExpDynamix	0.195	.327*
ExpVA	-0.125	.138*

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions

Variables ordered by absolute size of correlation within function.

*. Largest absolute correlation between each variable and any discriminant function

It would appear that the primary difference between groups is present due to difference in mean scores for the Double 7 Brand. There is some minor contribution from Copperstone and MBSB, Dynamix and Volare Airlines brands but since these loadings are less than 0.4 they are not considered substantive (Hair et al., 2019).

Throughout all discriminant analyses, function 2 discriminated between the Play and Watch groups, and Double 7 had a significant loading to function 2 (see for example Figure 6.4). Double 7 has a lower mean brand likability for the Play than for the Watch group however (see Figure 6.2). So H2 is only partially supported.

6.6.5 Influence of lap time

It was anticipated that time taken to finish the first lap of the racing game may have acted as a confounding variable in any exposure effects on brand attitude for the three experiment groups. Participants were asked to report the time taken to complete the first lap and this was displayed at the end of the game. A multinomial logistic regression was performed to model the relationship

between the predictors and membership of the three groups (Control, Play, and Watch). Goodness of fit was explored by conducting Pearson Chi-Square; $p = .032$ which is statistically significant and therefore the model fits the data well. The results are displayed in Table 6.15 Lap time was not significant $\chi^2(4) = 4.21, p = 0.378$.

Table 6.15 Lap time likelihood ratio tests

Likelihood Ratio Tests						
Model Fitting Criteria				Likelihood Ratio Tests		
Effect	AIC of Reduced Model	BIC of Reduced Model	-2 Log of Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	309.782	425.048	239.782 ^a	0.000	0	
ExpDynamix	302.710	398.216	244.710	4.927	6	0.553
ExpVA	300.657	396.163	242.657	2.875	6	0.824
ExpCopperstone	302.256	397.761	244.256	4.473	6	0.613
ExpMBSB	303.685	399.191	245.685	5.903	6	0.434
ExpD7	312.399	407.904	254.399	14.616	6	0.023
Lap 1 time	305.996	408.088	243.996	4.214	4	0.378

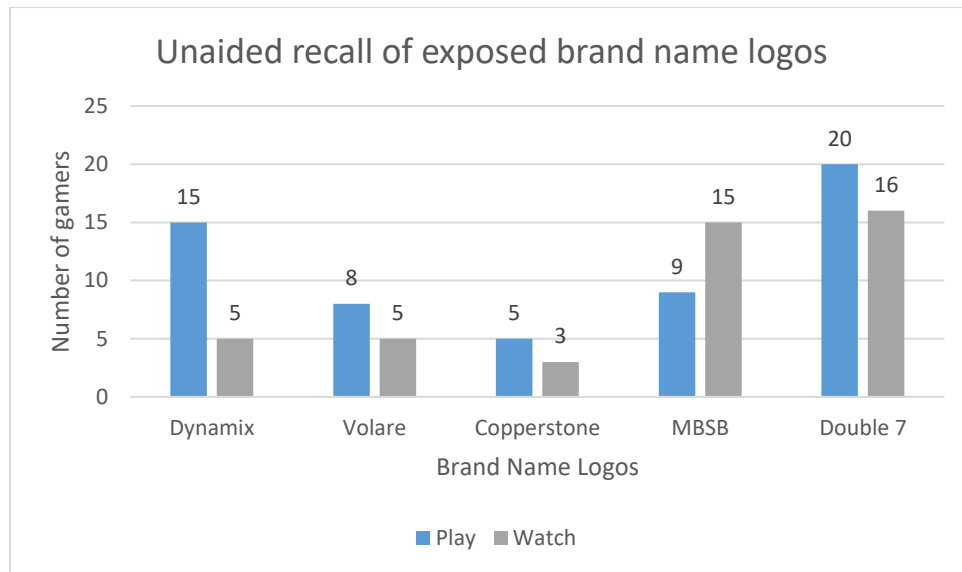
The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

6.7 Recall

As is typical in brand placement research, the unaided recall of participants for the exposed brands was tested by asking the participants to list all the brands they recalled after either playing or watching the racing game (Nelson, 2002; Chaney et al., 2004; Grigorovici and Constantin, 2004). The results are displayed below in Table 6.5.

Figure 6.6 Unaided recall of exposed brand name logos.



The results indicate that the highest recall was for Double 7 for both players and watchers of the racing game, however this represents 20% of the Play sample and 16% of the Watch sample and thus 80% of the Play sample and 84% of the Watch sample did not recall Double 7. The Play participants displayed higher recall rates for Dynamix, Volare Airlines, Copperstone and Double 7. Thus the Play condition reported higher implicit memory than the Watch group for four of the exposed brand logos. The exception was MBSB, where the implicit memory was higher for the Watch group. Copperstone had the lowest recall for both the Play and Watch groups and this is as expected as this was the subtle brand placement.

6.7.1 Recall age breakdown for participants

As age was identified as a significant factor in determining the differences between the exposure effects between the treatment groups further analysis was conducted for the age breakdown of the participants for individual unaided brand recall for Double 7 and Copperstone. This was because these were the brands that contributed to the differences. The results are displayed in Figure 6.6 and 6.7.

Figure 6.7 Double 7 unaided recall by age

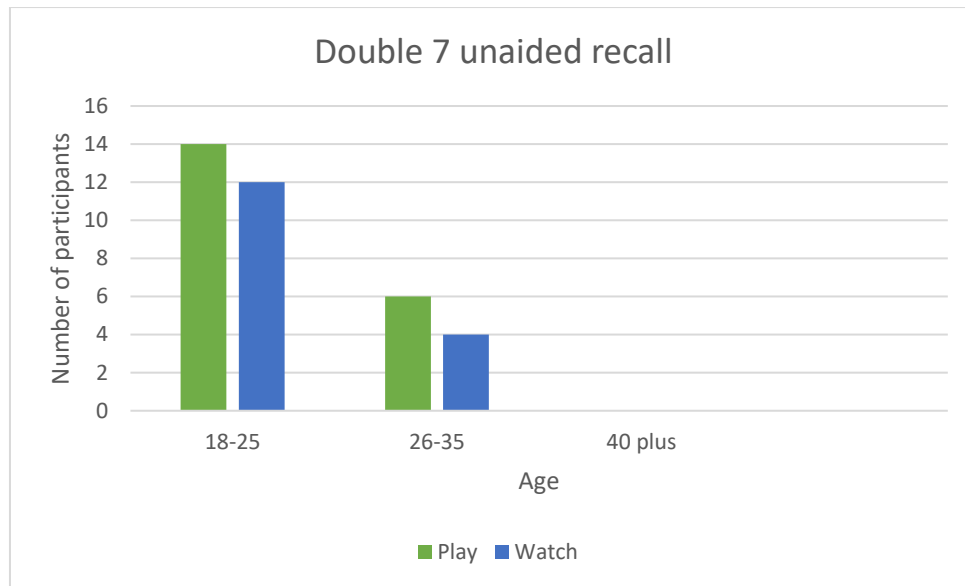
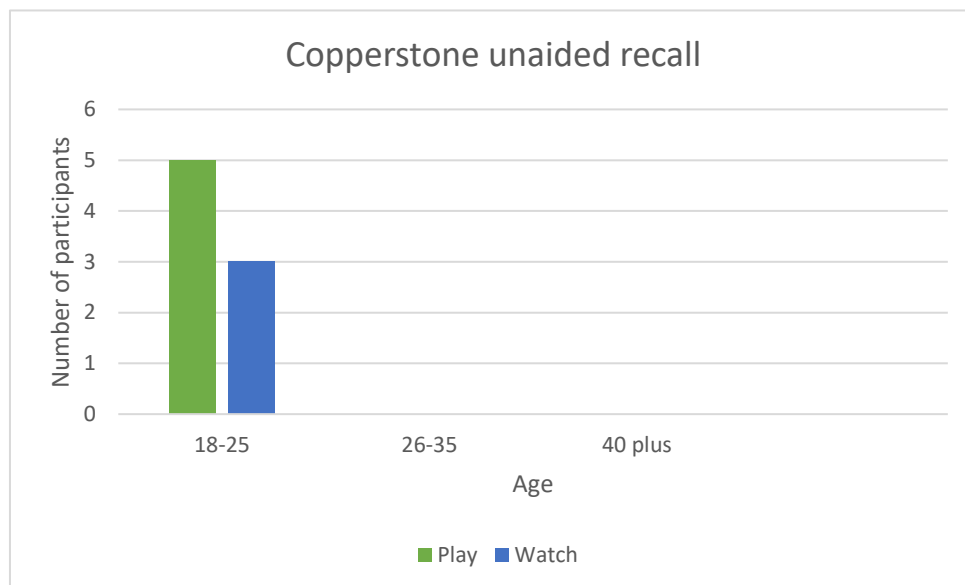


Figure 6.8 Copperstone unaided recall by age



The 18-25 age range reported the highest unaided recall in the Play Group (n=100), Double 7 14%, Copperstone 5% and for the Watch Group (n=100) Double 7 12% and for Copperstone 3%. For the 26-35 age group Play Group Double 7 reported unaided recall of 6% and Watch Group 4%. Copperstone was not recalled by this age group.

6.7.2 Recall gender breakdown for participants

Gender was also identified as a significant factor in determining the differences between the exposure effects between the treatment groups and more detailed analysis was conducted for the gender breakdown of the participants for unaided brand recall for Double 7, Copperstone as these were the brands that contributed to the differences. The results are displayed in Figure 6.8 and 6.9.

Figure 6.9 Double 7 unaided recall by gender

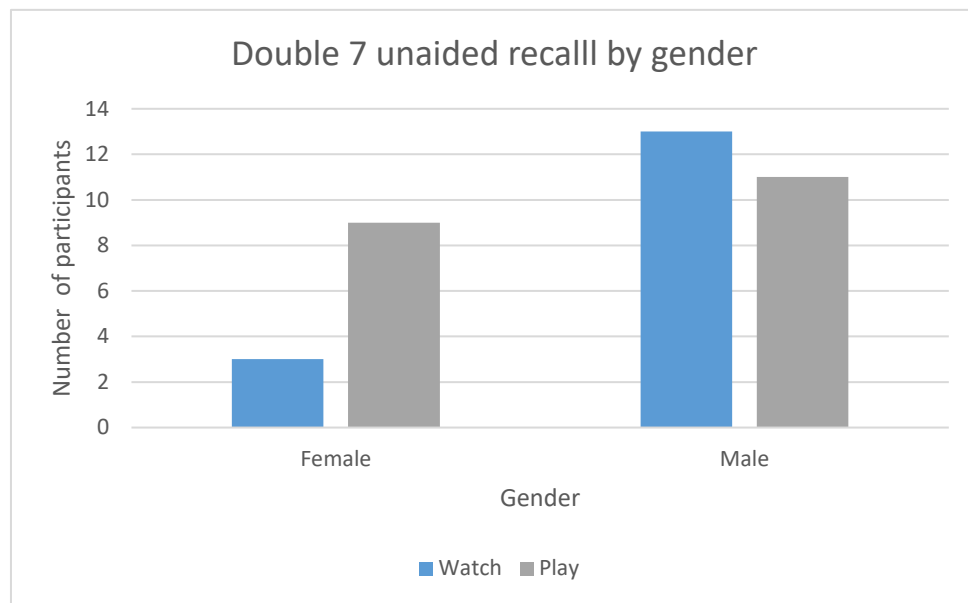
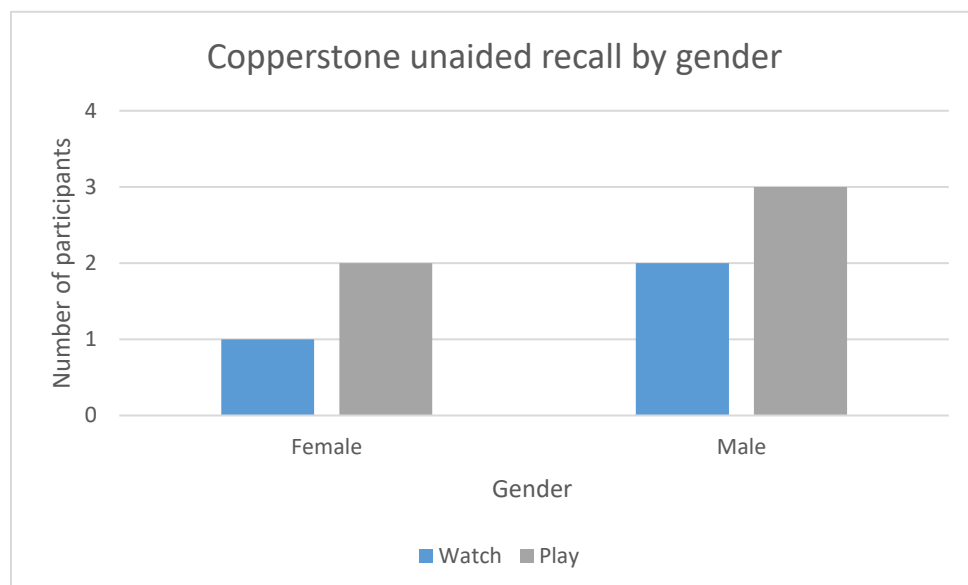


Figure 6.10 Copperstone unaided recall by gender



In the Play Group (n=100) 9 females and 11 males reported unaided recall for Double 7 and in the Watch Group (n=100) 3 females and 11 males. In the Play Group (n=100) 2 females and 3 males reported unaided recall for Copperstone and in the Watch Group (n=100) 1 female and 3 males.

6.8 Summary

This chapter presented the results of the data analysis. It began by outlining the sample characteristics of 300 participants, which aligned with current gender split and age range for the UK wide gaming audience. A series of statistical analyses were performed to understand the data and its implications for the exposure effects for the active (Play Group) and passive (Watch Group) and brand placement in videogames. The analyses provided valuable insights and served to partially support the hypothesis presented in figure 6.16.

Table 6.16 Summary research questions and hypothesis

Research Questions	Hypothesis	Outcome
R1 Repeated exposure to an unknown brand placement in a videogame leads to more positive brand affect (brand liking).	H1 The repeated exposure to an unknown brand placement in videogames can lead to an increase in liking for the brand, when gamers do not remember that they were exposed to the placement (mere exposure effect).	Partially supported
R2 Active and passive consumption modes differently affect brand liking following repeated exposure to an unknown brand placement in a videogame.	H2 Brand liking will be different between the play and watch groups, and lower for individuals watching the videogame than for individuals playing the game due to low involvement.	Partially supported

Multivariate analyses was conducted to identify whether or not across the combined set of dependent variables, as a whole there are differences between groups. Significant differences in brand likeability between the groups where the brand is exposed in the racing game were reported which partially supports H1.

Discriminant function analysis was used to identify which of the brand logos (or combinations of them) in MANOVA testing were 'causing' differences in group means (Field, 2018).

From the discriminant function analyses it would appear that the primary differences between the play and Watch Group was due to the mean scores for Double 7 with minor contribution from Dynamix. Throughout all discriminant analyses, function 2 discriminated between the Play and Watch groups, and Double 7 had a significant loading to function 2 (see for example Figure 6.4). Double 7 has a lower mean brand likability for the Play than for the Watch group however (see Figure 6.2). So H2 is only partially supported

In order to further validate and understand the findings discriminant function analysis, multinomial logistic regression was applied to understand which brand logos were most meaningful in explaining the differences between the groups.

CHAPTER 7

DISCUSSION

7.1 Introduction

The aim of this thesis was to investigate whether exposure to brand placement affects unknown brand likeability as a result of mere exposure for game players and game watchers in videogames. This chapter discusses the findings regarding MEE, Persuasion Knowledge and implicit and explicit processing effects and brand placement. The chapter concludes with a summary of the key findings.

7.2 Mere exposure effects

The first research question in this study (R1) was to investigate if repeated exposure to an unknown brand placement in a videogame leads to more positive brand affect (brand liking). The present study does imply that videogame players were processing brand placements in videogames and their implicit memory was influenced by these placements. Exposure effects do activate implicit memory processing and the MEE was observed for two brands.

Since the publication of the Zajonc (1968) monograph describing the mere exposure effect there have been more than 200 published experiments investigating the exposure–effect relationship (Bornstein, 1989). The exposure effect has proven to be a robust, reliable phenomenon, yielding strong results for a variety of stimuli such as polygons, drawings, photographs, nonsense words, and ideographs. It has also been captured using a variety of rating liking, pleasantness ratings, and forced-choice preference judgments. In his meta-analysis Bornstein (1989) reported that a number of key factors such as repetition, size of effect, type of stimulus, exposure time and order of stimulus are required to produce maximum MEE. It is acknowledged that the MEE is facilitated by repetition, with a minimum of three exposures and a maximum of 25, after which an inverted U curve may occur (Sawyer, 2006). In this study, the minimum three exposures was adopted.

In contrast to affective conditioning, mere exposure procedures only require the presentation of the brand name and thus no affect evoking information. Further, mere exposure does not require a conscious recognition of having previously seen the mere exposure stimuli. This is an important factor as it demonstrates that the

automatic nature of mere exposure is distinct from the deliberate inferences that consumers make about the conscious familiarity created by advertising. Thus the gamer will not have an evoked set of recollections that may influence their subsequent evaluation. This has implications for proto brands (Muzellec et al., 2012), which are fictitious brands that appear in videogames. Videogames could be a useful test bed for new brands. New brands could appear as proto brands, consumer feedback gathered and brand attitudes established before the actual brand is launched.

The research into the MEE and advertising indicates support for the effect for consumer behaviour and brand choice (Baker, 1999; Bluher and Pahl, 2007). Baker's (1999) results indicated that advertising employing mere exposure and affective conditioning was unsuccessful for known, well-established brands. However, it was successful against unknown brands if the leading competitors' brands did not have superior performance characteristics and the motivation to deliberate about brand choice was therefore low. The findings were important as they indicated strong support for the mere exposure effect and suggested that advertisers should maximise the prominence of the brand name and package in advertisements. Bluher and Pahl (2007) observed that participants in the exposed treatment group showed a clear preference for the exposed brands, thus indicating a link between mere exposure and brand choice and reinforcing (Baker, 1999).

In earlier brand placement studies several researchers suggested that brand placements could influence brand attitudes even though they are unobtrusively placed and are thus not attentively processed (Law and Braun, 2000; Russell, 2002; Grimes and Kitchen, 2007). Law and Braun (2000) and Yang et al. (2004) found that brand placements increased participants' implicit memory for placed brands in television and films respectively. Both studies used existing brands and did not contextualise their findings in terms of the MEE. Nevertheless, these studies do support the use of implicit memory measures to reveal placement exposure effects.

In a later study Yang et al. (2006) demonstrated that a participant's implicit memory for brands was influenced by in-game advertising (IGA) for players of sports and racing games. Their study supported that IGA did influence implicit memory but

observed only a small effect of IGA on explicit memory for the brands. They further concluded that measures of implicit memory might provide more sensitive tests of the influence of brand placements than measures of explicit memory more commonly associated with recall and recognition.

To date four studies into brand placement provide support for the MEE in television, film and music videos. Matthes et al. (2007) reported that when the viewer displays high involvement with the television programme, and persuasion knowledge is low and exposures to the placement are frequent, the MEE can be observed. Ruggieri and Boca (2013) demonstrated that in a high-involvement context (watching a film) one exposure was sufficient to activate the MEE and positive brand evaluation. Matthes et al. (2011) investigated individual differences in field-dependence/independence for the perception of product placements. Field-dependent individuals are more easily able to extract relevant information from a complex background than field-independent individuals (Witkin and Goodenough, 1981). Their study concluded that field independent individuals liked the placement more and demonstrated higher recall. Matthes et al. (2012) considered subtle placements and the MEE, building on previous studies using music videos (Law and Braun, 2000; Russell, 2002). Their findings indicated that in a high-involvement condition, the MEE is strong for subtle placements, but has no effect in the low-involvement condition. Further, it is suggested that the MEE can only be observed for frequently presented subtle placements and for moderate or high programme involvement (Matthes et al., 2012). Moreover, independent of involvement, frequently presented prominent placements exert no MEE.

In the current study there were no significant differences for brand likeability between the treatment groups where the brand logos were not exposed in the racing game, see Tables 6.2 and 6.3. In the MANOVA tests using Pillai's trace, there was not a significant exposure effect for the non-exposed brands $V = 0.04$, $F(10,588) = 1.07$, $p = 0.387$. This was confirmed by Hotelling's trace, $V = 0.04$, $F(10,584) = 1.07$, $p = 0.383$.

But there was a significant difference in brand liking for the treatment groups when the brands' logos were exposed refer to Tables 6.4 and 6.5. Using Pillai's trace,

there was a significant exposure effect for the exposed brands $V = 0.08$, $F(10,588) = 2.53$, $p = 0.005$. This was confirmed by Hotelling's trace, $V = 0.09$, $F(10,584) = 2.59$, $p = 0.004$. Figure 6.2 illustrates a summary of the average mean of exposed brand logos.

The findings of this study offer some support for the idea that frequent exposure to an unknown brand logo leads to an increased liking. This progresses the idea that the impact of brand placements on gamers' brand evaluations may be interpreted as the MEE (Zajonc, 1968; Bornstein, 1989). The MEE can be explained by perceptual fluency, which suggests that repeated exposure to a stimulus results in a representation of that stimulus in the memory. Further, when this stimulus is encountered again, the stored representation will make it easier to encode and process the stimulus (Bornstein and D'Agostino, 1992). Perceptual fluency is hedonically marked which implies high perceptual fluency will result in a more positive affective reaction. The results indicate that this is the case for the Double 7 and Dynamix as a higher brand liking was observed for the two exposed groups (Play and Watch) than for the Control group who were not exposed to the brand logos. Double 7 and Dynamix were identified as the brands that contributed to the group differences after the discriminant function analysis was applied. The differences in effects between watchers and players will be considered in Section 7.3.

7.3 Player and watcher exposure effects

In this thesis the second research question R2 was to ascertain if active and passive consumption modes differently affect brand liking following repeated exposure to an unknown brand placement in a videogame. This is particularly important due to the growth of e-Sports. By 2019, eSports generated \$1.1bn global revenue and a global audience of 454 million (Newzoo, 2019). Thus, it is becoming even more imperative to understand the passive and active consumption modes for videogames.

Videogames are an interactive medium requiring greater cognitive resources than more passive mediums such as film and television, and it has been suggested that brand placements may not work in these complex, interactive environments as the

active nature of a videogame inhibits gamers from noticing the background brand placements (Yang et al., 2006).

The ELM model does not explicitly acknowledge the potential of non-conscious processing and assumes that low-involvement processing and peripheral processing assumes some degree of consciousness and thus the activation of explicit memory by the stimulus response (Petty et al., 1983). A game player actively interacts with a game by modifying and controlling the course of events (Nicovich, 2005). Hence, because of the immersive and co-created consumption environment, it may be far more difficult for the gamers to remember brands (Chaney et al., 2004). Therefore, the ability to elaborate brand placement in films and television is considered low. However, in videogames there are a number of studies which indicate that brand placement adds to the gaming experience (Homer, 2009; Molesworth, 2006). Placements create a more realistic environment in certain game genres such as sports. Hence, in these contexts it is possible that gamers will be able to process the brand placements. Yang (2006) proposed that in game advertisements might influence implicit memory more than explicit memory for brands in an interactive videogame.

Lang (2000) suggests that message processing may be impaired by the fact that individuals may choose to selectively process and thus choose to allocate fewer resources to a message or that the message may require more resources than allocated by the individuals. Hence, this may explain the processing of billboards in a typical racing videogame. Thus the gamer may choose to concentrate on playing the game and thus not processing the placements or the placements may require more resources than the gamer actually allocates due the placement being subtle rather than prominent. Thus, the limited capacity model would suggest that gamers actively playing a racing videogame are less likely to process the placements embedded in a racing game. Thus, the brand recall post exposure is expected to be more for individuals who watch the game as they have more resources at their disposal to allocate to processing the billboards. However, a range of external distractions such as talking, boredom may compromise the ability of individuals watching a racing game to process billboards. It has been theorised that for MEE to occur brand placements should be processed with a

limited amount of attention (Fang et al., 2007; Grimes and Kitchen, 2007) which suggests support for players exhibiting more positive brand evaluations than watchers.

There have only been limited studies in relation to active and passive processing in videogames. The most noteworthy are Nelson et al. (2006) who found that game players recalled significantly fewer brands for both real and fictitious, than did watchers. Gangadharbatla (2007) concurred with Nelson et al. (2006) and reported that 98% of watchers recalled at least one of the nine brands placed in the background, while only 46% of the game players recalled at least one brand. However, there were no differences in attitude and purchase intention as a result of brand exposure between players and watchers (Gangadharbatla, 2007; Gangadharbatla, 2016).

In order to determine which of the brands was a predictor for the Play Group and Watch Group the MANOVA was followed up by discriminant function analysis which revealed two discriminant functions. The first discriminant function (Double 7) explained 91.5% of the variance, canonical $R^2=0.07$ whereas the second (Dynamix) only explained 8.5%, canonical $R^2=0.007$. In combination these discriminant functions significantly differentiated the treatment groups, $\Lambda=0.92$, $\chi^2(10) = 25.26$, $p=0.005$, but removing the first function indicated that the second function did not significantly differentiate the treatment groups, $\Lambda=0.99$ $\chi^2(4) = 2.22$, $p=0.695$. Refer to Figure 6.3 for the discriminant function mapping and for the loadings to discriminant functions Table 6.6. It would appear that the primary difference between groups is due to difference in mean scores for the Double 7 Brand. There is some minor contribution from Copperstone and MBSB brands but since these loadings are less than 0.4 they are not considered substantive (Hair et al., 2019). A secondary contribution to difference comes predominantly from Dynamix with a minor contribution (again not substantive), from the Volare Airlines, refer to Table 6.6 and Figure 6.3. This is further illustrated in Figure 6.2 where the average means for the three treatment groups are plotted and there are differences in the mean scores for the 3 groups for Double 7 and Dynamix.

Whilst the results were observed for two brands, they do suggest that the MEE increases implicit memory and this was apparent for Double 7 for the Watch Group and less so for Dynamix for the Play Group thus supporting the work of Yang (2006).

In addition the multinomial regression model applied predicted that two brands, significantly predicted group membership (control group as base), Double 7 $\chi^2(12) = 27.74$, $p = 0.006$ and Copperstone, $\chi^2(12) = 27.03$, $p = 0.008$. Refer to Table 6.7. In the application of the first multinomial regression model, Double 7 was the only brand to significantly predicted membership of the Play Group, whilst Double 7 and Copperstone significantly predicted membership of both Play and Watch Group, refer to Table 6.8.

The brand likeability mean for Double 7 for Watch Group was ($M = 2.94$, $SD = 1.56$), Play Group ($M = 3.28$, $SD = 1.54$), hence the watchers had a higher brand liking. For brand liking, 1 indicated very high brand liking and 7 very low brand liking. Thus, this research does not concur with Gangadharbatla (2007) who reported no differences in brand attitude due to exposure for players or watchers. The results revealed a primary contribution of 91.5% from Double 7 and a secondary contribution of 8.5% from Dynamix and thus there is some support that there are differences in the way the placements are processed in multidimensional videogame environments for gamers and watchers.

In the Borstein (1989) meta-analysis of mere exposure research there was no indication that MEE was depended on age or gender. In this study this assertion was partially supported but when age and gender were factored in it revealed the following. When age is considered the results partially support the initial analysis in supporting Double 7 as having a significant effect for both the Play and Watch Group but Copperstone was only significant for the Watch Group. Double 7 is a predictor for the Play Group $p = 0.02$ but Copperstone is not. Both Double 7 $p = 0.005$ and $p = 0.004$ and Copperstone $p = 0.003$ are a predictor for membership of the Watch Group. Refer to Table 6.9 and 6.10. For full parameter estimates see Appendix 7.

When gender is considered the results partially support the initial analysis in supporting Double 7 as having a significant effect but only for the Watch Group but Copperstone was significant for both the play and Watch Group. Copperstone is a predictor for the Play Group $p=0.02$ but Double 7 is not. Both Double 7 $p=0.006$ and $p=0.007$ and Copperstone $p=0.002$ are a predictor for membership of the Watch Group. Refer to Table 6.12 and 6.13. For full parameter estimates see Appendix 8.

Throughout all discriminant analyses, function 2 discriminated between the Play and Watch groups, and Double 7 had a significant loading to function 2 (see for example Figure 6.4). Double 7 has a lower mean brand likability for the Play than for the Watch group however (see Figure 6.2). So H2 is only partially supported. This could be because the Watch Group experienced less reactance effects than the Play Group and thus the MEE was stronger.

It was predicted that lap time might act as a confounding factor on exposure effects. More experienced game players could achieve faster lap times and thus have lower levels of attention resources for secondary processing than less experienced game players with slower lap times have. In this study lap time was not a significant predictor of group membership $\chi^2(4)=4.21$, $p=0.378$, refer to Table 6.12. It should be noted that none of the participants had played the racing game used in the experiments and they were not provided with a practice session so as not to activate structural mere exposure.

Gupta and Lord (1998) defined placement prominence and generally it describes the extent to which a placement is central to the plot or size on screen. Subtle visual placements, on the other hand may be small, have a low time exposure or be a background prop out of the main field of visual focus. Billboards have a higher recall Grigorovici and Constantin (2004) and unsurprisingly prominent placements are recalled more easily (Schneider and Cornwell, 2005). In a study conducted by Mau et al., (2008) Coca Cola appeared on a billboard (prominent position) in the game *Counter Strike* (Valve Corporation, 2012) and 71% of the players recalled the brand correctly.

In this study of the five brand name logos placed, four were prominent, Dynamix, Volare Airlines, Double 7 and MBSB. Copperstone was the only subtle brand name logo that was placed in the racing game. Refer to Figures 7.1 to 7.4 for still images of the brand placements in the racing game stimulus.

Figure 7.1: Double 7 logo (prominent) at the entrance to a town ahead on the left pillar



Figure 7.2: Volare Airlines logo (prominent) on both sections of the fork in road



Figure 7.3: Dynamix logo (prominent) visible at the bottom of a hill on the apex of the first bend and prior to entering the town and Copperstone logo (subtle) on a bridge in the background at the beginning of the game



Figure 7.4: MBSB logo (prominent) on the apex of the last bend just before the finish line



The results for Double 7 reinforce Matthes et al. (2012) who observed MEE in high-involvement contexts and frequent exposures. For Double 7, the brand likeability mean for the Watch Group was ($M = 2.94$, $SD = 1.56$), Play Group ($M = 3.28$, $SD = 1.54$), hence the watchers had a higher brand liking. For brand liking, 1 indicated very high brand liking and 7 very low brand liking refer to Figure 6.2 and Table 6.6. In addition, Matthes et al. (2012) observed the MEE for subtle placements and high-involvement conditions, but no effects in low-involvement conditions. This study concurred with Matthes et al. (2012) but only when multinomial logistic regression tests were conducted, where Copperstone, a subtle placement, was a significant predictor for the Watch Group but not the Play Group. Double 7 is a predictor for the Play Group $p = 0.04$ but Copperstone is not. Both Double 7 $p = 0.007$ and $p = 0.008$ and Copperstone $p = 0.002$ were predictors for membership of the Watch Group refer to Table 6.7 and 6.8. The results for Double 7 do not concur with previous research. Matthes et al. (2007) suggests that subtle placements are more likely to activate MEE, but Double 7 brand was prominent in this study.

As discussed in the literature review (see Section 3.4), Bhatnagar et al. (2004) suggests that placements that do not fit with the game genre may be perceived as cynical marketing attempts, rather than enhancing game realism or adding to the

verisimilitude. Thus, out-of-context brand placements may result in negative brand evaluations. Balasubramanian et al. (2006) suggest that congruence may follow the peripheral route to persuasion (Petty et al., 1983). Balasubramanian et al. (2006) in their theoretical model imply that congruent placements yield higher affective outcomes than incongruent placements. This concurs with IGA research in an experimental setting where perceived fit between brand and game genre was positively related to brand attitudes and purchase intention (Nelson et al., 2006; Yang et al., 2006). The hidden and secondary nature of brand placements may not activate the processes that typically put a consumer on guard, as in the case of advertising, and activate persuasion knowledge.

In the current study, the five brand placements in the racing game are related to the most popular categories that occurred in the top 10 racing games - refer to Section 5.6.2 for further explanation. From the content analysis product categories selected to be developed into the brand placement stimulus were tyres, soft drinks, game developers, banks and airlines as these were the most popular product categories counted in the content analysis. These could be deemed as congruent as they were typical product categories in commercially available racing games. Thus, the brand placements did not activate persuasion knowledge due to incongruence. The results for Double 7 do support Nelson et al. (2006) and Yang et al. (2006), where perceived fit between brand and game genre relate to positive brand evaluations.

Nelson et al. (2006) study measured brand recall rather than brand attitude. The current research did not concur with the previous research in terms of recall as the Play Group (n=100) displayed higher recall rates for Dynamix, Volare Airlines, Copperstone and Double 7, refer to Table 6.13. Thus, the Play Group reported higher explicit memory than the Watch Group for four of the exposed brand logos. The exception was MBSB where the explicit memory was higher for the Watch Group. Interestingly, Copperstone was the only billboard that could be deemed as subtle but still displayed higher recall by the Play Group, but did report the lowest recall for both groups with 5% of watchers and 3% of players recalling Copperstone. It should be noted that none of the brand logos achieved the 20% industry standard by the Watch Group and all the brand logos were fictitious.

The results do offer some support that the interactive, multi-dimensional environment of videogames does not totally inhibit gamers from processing secondary messages. Further, the results do indicate that game players are able to both play a videogame (the primary task) and process the placements (the secondary task) simultaneously. There is therefore support for the ELM low involvement, peripheral route of elaboration for some of the brand placements in this study.

The availability of processing resources could explain the differences in the results for players and watchers, as the watchers have potentially more resources to process the brand logos in the racing game. This does however contravene the accepted thinking that the less cognitive resources are available to the placement itself; the stronger the attitudinal effects (Fang et al., 2007; Grimes and Kitchen, 2007). In this study watchers reported higher brand liking than players for Double 7. But for Dynamix players reported higher brand liking than watchers. Further research is required to determine the reasons for the differences in these results.

The findings also offer support for the integrative attitude formation model which recognises motivation has a determining influence on attitude formation, as it affects the direction of an individual's attention and the intensity of their information processing (Petty et al., 1983). The influence of motivation on the attitude formation process, however, is not as simplistic as it may seem, because the antecedents of opportunity and ability moderate the impact of motivation on attention and processing capacity. Therefore, whether an individual attends to and processes a message depends on not only their motivation level, but also whether they have sufficient opportunity and ability. When all three of these conditions are high, attitude change is most likely. This concept can be used to explain why Double 7 was processed with higher brand likeability. Double 7 consistently reported significant effects in all tests, refer to Figure 6.1, 6.2 and Table 6.4, 6.6 and 6.7. But an absence of motivation, ability and opportunity could be used to explain the brand placements that were not processed in this study.

7.4 Reactance effects

Psychological Reactance Theory (PRT) suggests that if an individual's free behaviour in the present or future is eliminated or threatened the motivational state of psychological reactance will be motivated (Brehm, 1988). Reactance is an unpleasant motivational arousal that emerges when people experience a threat to or loss of their free behaviours. It serves as a motivator to restore one's freedom and these reactions can be in the form of behavioural responses, avoidance or aggression towards the source.

PRT has particular relevance to brand placement and especially videogames, as the player or watcher is a situation where they cannot avoid the placements that are embedded in the videogame or turn them off. When a placement is more prominent, the players may notice it more, become annoyed, reject the placement, and experience negative attitudes towards the brand and videogame. Thus, these negative attitudes caused by a feeling of losing a freedom can result in the complete opposite effect of what the placement was intended to accomplish. PRT may be more apparent for watchers who are more passive such as in eSports than active players who may not notice the brand placements which could the lack of significance for exposure effects for some of the brands. Refer to Table 6.4 and Figure 6.2.

The lack of cognitive capacity may explain why some of the brand logos in this research were not processed as the player's cognitive capacity is dedicated to playing the racing game, which leaves insufficient resources available for processing the secondary messages-the billboards. It is possible that some of the watchers were completely engrossed in watching the three players compete to achieve the fastest lap time, thus leaving them with limited resources to process the billboards. Lang (2000) limited capacity processing does not fully explain why the watchers did not process some of the brands in this research. Brand placements messages are processed differently from traditional advertising as they do not contain an extensive amount of brand information (Russell, 1998). Placements are embedded into the media vehicle and are therefore secondary importance even if they add realism (Balasubramanian et al., 2006).

The lack of processing of some of the brand placements accords with the Friestad and Wright (1995) persuasion knowledge model, which points to reactance effects due to persuasion knowledge. The persuasion knowledge model implies that consumers will process a message in a non-perceived persuasion setting differently than a setting where they believe persuasion intent or an advertising message is implicit (Ahluwalia and Burnkrant, 2004). Brand placements may not be recognised as promotional messages as they are designed to persuade unobtrusively. Whilst these characteristics may offer significant benefits over advertising, they may also prevent them from being processed. This coupled with the complex gaming environment perhaps explains why they are unable to affect brand likeability for some of the brands in this study.

Thus, in this study activation of persuasion knowledge could be an explanation as to why some of the brand placements resulted in less positive evaluations. Refer to Table 6.4 and Figure 6.2. For Dynamix Watch Group ($M = 4.49$, $SD = 1.62$), Play Group ($M = 4.23$, $SD = 1.66$), Volare Airlines Watch Group ($M = 4.20$, $SD = 1.57$), Play Group ($M = 4.04$, $SD = 1.68$), Copperstone Watch Group ($M = 4.86$, $SD = 1.63$), Play Group ($M = 4.88$, $SD = 1.79$). Copperstone was significant when age and gender were factored into the multinomial logistic regression tests and this was discussed in Section 7.3. For brand liking, 1 indicated very high brand liking and 7 very low brand liking.

Russell (2002) suggests persuasion knowledge can impede mere exposure effects. She suggested that the viewers may comprehend that the placements are intentionally placed to affect their judgements, and 'they may counter-argue them just as they do in traditional advertising messages' (Russell, 2002:307). Consequently, high persuasion knowledge appears to hinder positive mere exposure effects for some of the brands in this study.

Russell (1998) suggested that subtle placements rather than prominent placements would be more effective in activating the association of brand and context. Her findings support the PKM, which assumes that consumers use their knowledge about the persuasive tactics and goals of marketers to help them process these

communications. Thus as prominent placements have more obvious persuasive intent than subtle placements they may generate more negative brand attitudes ((Campbell and Kirmani, 2000). Chan et al. (2016) argued that the prominence of placed brands resulted in significantly more extensive levels of processing, which was negatively correlated with brand attitudes. Prominent brand placements thus activate persuasion knowledge and as the audience realise that the brand is placed for commercial reasons they become more cynical which leads to negative attitudes and beliefs about the brand and the placement and thus this may impact negatively on purchase intent (Balasubramanian et al., 2006).

The results of this study do not concur with Chan et al. (2016) as both a prominent placement, Double 7 and a subtle placement Copperstone resulted in higher brand liking. However, Copperstone only became significant for the Play Group when age and for both Watch Group and Play Group when gender was factored in to the multinomial logistic regression analysis. This is discussed in more detail in Section 7.3.

In this study, it is possible that persuasion knowledge was activated for the brand placements that did not report significant exposure effects as these placements were prominent thus supporting Chan (2016) and Balasubramanian et al. (2006). In addition Matthes et al. (2007) concluded that frequent repetition of brand placements resulted in less favourable brand attitudes when persuasion knowledge was apparent.

7.5 Explicit memory processing

Early studies in film and television largely focused on audiences' brand recall, recognition and attitudes to the actual practice of product/brand placement, which were generally favourable (Karrh, 1998; d'Astous and Seguin, 1999; Gould et al., 2000; Vollmers and Mizerski, 1994; Reid, 1999; Nebenzahl and Secunda, 1993). An aided recall test conducted by Steortz (1987) indicated a 32-38% recall of placements. From this research Steortz (1987) concluded that 20% audience awareness of the placement of a brand in a film is deemed an effective placement and over 30% is considered a highly successful placement and both measures are

still used as industry standard (Lehu,2007). However Babin and Carder (1996) criticised Steortz (1987) for lack of a control group and Vollmers and Mizerski (1994) as their results were based on clips rather than full films and thus limited information processing occurred.

The existing research on brand placement in videogames to date has provided limited insights into implicit memory processing and these have been outlined in Chapter 3. Prominence has been identified as a key determinant of product placement effectiveness and previous research indicated that prominent placements resulted in superior recall and film and television programmes (Russell, 2002; Dens et al., 2012). For videogames, the picture was more mixed and results to date have been inconclusive. Nelson (2002) found a positive effect on brand recall. However other studies suggested only weak effects on brand recall and recognition (Chaney et al., 2004; Grigorovici and Constantin, 2004; Nelson et al., 2006; Yang et al., 2006).

In this study, of the five brand name logos placed 4 could be deemed as prominent, Dynamix, Volare Airlines, Double 7 and MBSB. Copperstone was the only subtle brand name logo in the racing game, refer to Figures 7.1 to 7.4. In this study the Play Group (n=100) reported higher recall rates for three of the prominent brands and the one subtle brand Copperstone. The exception was MBSB, which had a higher recall rate 15% by the Watch Group (n=100) as opposed to the 9% by the watchers. The standard industry recall rate of 20% was only achieved by Double 7 by the Play Group, refer to Figure 6.6 (Lehu, 2007). For the Watch Group three of the prominent brands were recalled but recall was low and ranged from 5% to 3%, hence 95% of the watchers did not recall Dymanix and 97% Copperstone. Double 7 proved to be the brand with the highest recall for the Watch Group at 16% and 20% for the players. Copperstone had the lowest recall for both the Play and Watch Groups.

Players were better able to separate the brand placements from the multi-dimensional gaming environment than watchers. Consequently, players scored higher on recall for four of the brand logos. The research does concur with previous research of Chaney et al. (2004) and Yang et al. (2006) as the recall effects were

weak and did not achieve the industry standard for any of the brand logos for the Watch Group and only Double 7 for the Play Group. However Nelson et al. (2006) and Gangadharbatla (2016) watchers recalled more brands than players. The study only used a racing game and thus replication with a different game genre may produce different results. The results indicate only a small effect for explicit memory for brand exposure for in game advertising but contradict Nelson et al. (2006) and Gangadharbatla (2016). The possible reasons for this will be explored in section 7.6.

Whilst the MEE is ubiquitous and widely tested, there is an emerging body of research, which raises questions the independence of conscious and unconscious exposure effects. Newall and Shanks (2007) implemented a more direct test of the correction process hypothesis by using stimuli presented at both supraliminal and subliminal durations. Participants were exposed to photographs of faces and polygons for optimal (400ms) and suboptimal (4ms) durations and then forced liking and recognition decisions were administered for previously seen stimuli and unseen stimuli. Contrary to the attributional model of mere exposure, a significant MEE was found when recognition performance was at its highest. Moreover, liking and recognition were positively correlated across the three experiments conducted. Newall and Shanks (2007) findings are consistent with Fox and Burns (1993) who reported significant liking effects when the stimuli used were above the recognition threshold. Miller and Berry (1998) findings also demonstrated an absence of subliminal effects.

Explicit memory effects for four of brand placements were below the 20% accepted industry standard, apart from Double 7, which did achieve the 20% recall rate, refer to figure 6.6. It does offer some, albeit limited support for Newall and Shanks (2007), Fox and Burns (1993) that both liking and recall are not totally independent as previously thought. This occurs if the stimuli is above the recognition threshold. This has implications for the design of brand placements and does explain why the Double 7 brand logo, which was mainly yellow and arguably, the most noticeable colour was able to report both affective and cognitive effects.

There have been limited studies into the effects of fictitious versus real brands in videogames. In a study, that measured game players' recall of fictitious brands in a racing game Chaney et al. (2004) reported very low recall rates. This can be explained by the fact that the game players are so engrossed in the actual game thus limiting their processing capacity to process peripheral elements. Mau (2008) and Nelson et al. (2006) indicated that real brands had stronger effects on brand memory than fictitious brands. Molesworth (2006) suggested that interaction with the brand might be so rich in imagery in the virtual game environment that it has the same effect as the real product experience. To date this assumption has yet to be empirically tested.

In the current study, real brands were not used due to residual memory and the difficulty in disentangling this from implicit memory for the exposed fictitious brand logos. In this study there was no comparison with real world brands and thus, a comparison could not be carried out. The findings overall concur Chaney et al. (2004) as the recall rates for four of the brand logos were below the 20% industry standard as per Lehu (2007), refer to Figure 6.5.

In general, incongruent placements produce higher cognitive outcomes than congruent placements. In a racing game Nelson et al. (2008) reported that congruence between game and brand was negatively related to recall when brands were placed along the side of the racing track. This was supported by Lee and Faber (2007) who observed that highly incongruent brands such as pet food in a racing game were significantly more likely to be recalled than moderately incongruent brands such as deodorant or congruent brands for example gasoline. These higher recall rates were attributed to inexperienced game players who were highly involved in the game. Lewis and Porter (2010) argued that moderately incongruent brand did trigger higher awareness rates than extremely incongruent brand placements. They argued that extremely incongruent brands reduced the perceived sense of realism and created.

In the current study, the five brand placements related to the most popular categories that occurred in the top 10 racing games and thus could be deemed congruent and were identified from the content analysis, which was referred to in

Section 5.6.2. The findings do not support Lewis and Porter (2010) and Nelson et al. (2008) and Lee and Faber (2007) as all the brands could be considered congruent. Moreover, from a practitioner perspective, it is unlikely that incongruent brands would be included in a racing game as they would detract from the realism and more over could activate the reactance effect, which would be the opposite of the brand owner's intention to create positive brand evaluations.

7.6 Explanation of the effects on the brand placements

A number of factors may explain the exposure effects and these are outlined below.

The actual position in the lap that the brand logo occurs in the racing game could explain the MEE. For Double 7 the gamer has to pass through two pillars to enter the town, hence this is a key point in the lap refer to Figure 7.1. Therefore the gamer may subconsciously notice this brand logo more, as they have to slow down to manoeuvre through the entrance. Volare Airlines appears on a straight road section and thus the gamer is able to pick up speed and will be intent on finishing the race, so possibly does not actually see the brand logo as flow and presence will be high at this point in the lap. As the MBSB logo appears immediately before the finish line, it is probable that a player's attention would be solely focused on the primary task of finishing the race, rather than processing secondary messages as Ghosh (2016) suggests the motivation to win affects memory and attitude. Dynamix appears at the bottom of a hill on the apex of the first bend and in the experiments some gamers crashed at this point. This could have activated explicit memory and thus could explain why MEE for Dymanix was so minimal as a key determinant of MEE is the independence of conscious and subconscious processing (Zajonc, 1968). Copperstone was the only subtle brand logo, being in the background and hence more difficult to process. Moreover, for the second and third laps, the gamer will be familiar with the figure of eight lap layout and its obstacles, and thus will complete faster lap times, contributing to even less exposure time.

Although some evidence supports a recency effect (the last placement is remembered better), the majority of literature supports the primacy effect, suggesting that the first brand placement will be recalled more than subsequent

placements (Gupta and Gould, 2007; van Reijmersdal et al., 2009). In this study there is some support for this assertion in that Dymanix, the first placement encountered did report a small contribution to the differences in the effects for watchers and players, refer to Figure 6.2 and 6.3. However as Double 7, which appeared second in the racing game delivered the strongest MEE effects, the findings provide support for Chaney et al. (2018) whose study did not support recency effects.

It is possible that the exposure time was insufficient to activate the MEE for Volare Dynamix, Airlines, Copperstone and MBSB logos. Grigorovici and Constantin (2004) suggest that gamers are likely to allocate most of their attention and processing resources to the primary task of playing the game, and fewer resources to the secondary messages and the placements, as was observed in the current research for some of the brand logos. The participants may not have actively seen some of the brand logos and/or motivated to process the placements. For the players they did not split their attention from playing the game to secondary message processing. As the mean brand likeability score for Double 7 Watch Group was ($M = 2.94$, $SD = 1.56$), Play Group ($M = 3.28$, $SD = 1.54$), hence the watchers had a higher brand liking than the players. For brand liking, 1 indicated very high brand liking and 7 very low brand liking. Refer to Table 6.4 for all mean averages for the exposed brands.

Brand logo design could explain the differences in processing for the exposed brand placements. Of all the five exposed brand logos Double 7 had what could be deemed the most noticeable colour combination, as it was yellow, black and white and the name clearly stood out from the background and had the strongest graphic design. Congruent colour-product combinations are processed more fluently and thus will be liked more, and rated as more appropriate, than incongruent combinations (Bottomley and Doyle, 2006). This reinforces Baker's (1999) findings in advertising where he suggested that brand name and packaging should be prominent. However, due to the constraints imposed by the complex, graphic environment of the racing game, the brand logo design for some of the placements may have limited the gamers' abilities to process the billboards. Dynamix was dark blue and black and did fade into the environment more than Double 7 and thus could

explain the lower brand likeability as it was not as actively processed or participants. The brand likeability mean for Double 7 Watch Group was ($M = 2.94$, $SD = 1.56$), Play Group ($M = 3.28$, $SD = 1.54$), hence the watchers had a higher brand liking. For Dynamix Watch Group ($M = 4.49$, $SD = 1.62$), Play Group ($M = 4.23$, $SD = 1.66$), hence the Play Group had a slightly higher brand liking than the Watch Group. Refer to Table 6.4 6.5 and Figure 6.1. For brand liking, 1 indicated very high brand liking and 7 very low brand liking.

Some of the brand names may have resonated with the participants more than others. Different linguistic concepts can be combined to affect meaning and brand memorability. For example construction of alphanumeric components such as DW-40 (Pavia and Costa, 1993). As Double 7 was alphanumeric it may have been easier for participants to process. Moreover, even though in the study Double 7 was a fictitious brand logo, there may have been an element of conceptual fluency, in which the implicit effects are primed by existing conceptual links such as pre-existing knowledge. In the case of Double 7 there may have been an association with James Bond and 007 and this could have enhanced processing. Copperstone was similar to Bridgestone tyres, which is a real world brand and MBSB was similar to HBSB bank. Participants could have made these associations and hence these brand placements may have appeared to be more familiar. In this study this was not the case for MBSB but conceptual fluency could explain the results for Copperstone refer to Tables 6.9, 6.10, 6.12 and 6.13. Dynamix is a fabricated name that suggests movement and as the participants were playing a racing game this may have resonated with them.

The results, refer to Table 6.5, Table 6.6 and Figure 6.2 do support the idea that frequent exposure to an unknown brand logo leads to an increased liking for that brand logo, and thus can have an effect on a player's attitudes, even when explicit memory of the brand logo is low. However, the effect may be quite small and non-existent in some circumstances, such as when the billboard is hard to detect e.g. if it is a small size or blends into the gaming environment. Of the four brand logos where the exposure effect was not observed, refer to Table 6.5 and 6.7, all the billboards were the same size. Some may have blended into the background such as Dynamix and Copperstone. Additionally, Copperstone was a subtle placement

as it was in the background, whereas the others could be classified as prominent as they were at key intersections in the racing game. Conceptual fluency reflects the ease with which a stimuli comes to an individual's mind and relates to the processing of meaning representation of the stimuli (Shapiro et al., 1997). Conceptual fluency may have been have been impaired by the modality and graphic design of the brand placements in this study.

7.6 Summary

The major finding of this study is that brand placements in videogames do have an effect on both players and watchers brand likeability. The findings of this study offer some support that frequent exposure to an unknown brand logo leads to an increased liking and thus can have an effect on the players' attitudes, even when the explicit memory for the brand logo is low, thus supporting R1 one as stated in Section 1.11. Hence, progressing the idea that the effect of brand placements on gamers' likeability may be interpreted as the MEE (Zajonc, 1968; Bornstein, 1989).

The results do offer some support that the interactive, multi-dimensional environment of videogames does not totally inhibit gamers from processing secondary messages. Further, the results in do indicate that that game players are able to both play a videogame-the primary task and process the placements-the secondary task. There was some support for R2 that there are differences in the way the brand placements are processed in videogame environments for gamers and watchers, thus supporting R2 as stated in Section 1.11.

Players scored higher on recall for four of the brand logos than the watchers. However, the recall effects were weak and did not achieve the industry standard of 20% for any of the brand logos for watchers and 4 of the brand logos for the players. Thus, the results indicate only a small effect for explicit memory for brand exposure for in game advertising.

The lack of processing of some of the brand placements accords with the Friestad and Wright (1995) persuasion knowledge model, which points to reactance effects due to persuasion knowledge.

CHAPTER 8

CONCLUSION

8.1 Introduction

The final chapter concludes this thesis by considering its overall contribution to knowledge within the field of marketing communications and videogames. The chapter begins by briefly reviewing the context of the research and the main elements of the study before considering the contribution to the development of brand placement processing and marketing communications. The implications for videogame practice are then explored and recommendations for future research.

8.2 Context of the research

Brand placement has a long history dating back to 1882, but it was not until the advent of films in the 1920s that the practice truly began to develop. In the 1940s the importance of financial monetary exchange between the film studios and the possible opportunities for brands was recognised, but at this time there were concerns about creative integrity and thus the practice was limited (Lehu, 2007). However, in the 1970s brand placement was re-framed as a valuable revenue stream and this was coupled with the diminishing role of the Hollywood studios and the emergence of independent film producers. A further major development was the arrival of television in the 1950s. Soon there were with up to 15 brand appearances per half hour in prime time television programming (Avery and Ferraro, 2000). A further development was the placement of brands in videogames when Sega Games introduced Marlboro billboards into a racing game (Acar et al., 2007). By 2000, 50% of the top 25 videogames included branded placements (Nelson, 2002).

As discussed in Chapter 1 the UK media landscape has undergone significant changes, such as shifting audience viewing habits, media fragmentation, and the growth of digital branding and advertising. These changes present a number of challenges in targeting 18-25 year old consumers. Consequently, brand owners are looking for new channels to reach these consumers such as brand placement. To date, academic research appears to be inconclusive in validating brand placement in videogames as a promotional tool and this is discussed in Chapters 2 and 3.

Moreover, there is a lack of empirical evidence concerning the effects of brand placement on consumers and brands and the marketing messages in the videogame environment.

As the practice of placement evolved so did research into the impact on viewers' processing of this (Nelson et al., 2004). Initially, recall and recognition dominated the research in the context of passive media such as films and television. As brand placement was adopted in other media such as videogames and music videos the research became more sophisticated in terms of isolating modality and prominence versus subtlety. However, there was still an emphasis on recall and recognition with limited attention to affective and conative responses to brand placements.

Most of the initial research into brand placement and videogames centred on game players with scant studies on watchers. The growth of e-Sports adds a new potentially lucrative dimension to placement. eSports generated \$1.1bn global revenue and a global audience of 454 million (Newzoo, 2019).

The present study is located in the context of assessing both active and passive consumption modes of brand placement and implicit processing. The imperative of this study was to address these research gaps by building on the basic understanding of brand likeability as a precursor of attitude in videogames. This was facilitated by exploring how exposure to brands in videogames impacted brand likeability for both game players and those watching games being played. The study sought to verify theories of low involvement processing Heath (2001) and Grimes (2008), MEE Zajonc (1968), implicit and explicit processing Petty et al. (1983) and affect responses MacInnis and Jaworski (1989) in relation to brand placement in videogames.

This study evaluated the extent to which brand placement affects brand likeability because of the MEE for game players and spectators in videogames. Based on a review of the literature from mere exposure, brand placement and implicit and explicit processing, a number of research questions and hypothesis were developed and these are summarised in Table 8.1.

Table 8.1 Summary research questions and hypothesis

Research Questions	Hypothesis	Outcome
R1 Repeated exposure to an unknown brand placement in a videogame leads to more positive brand affect (brand liking).	H1 The repeated exposure to an unknown brand placement in videogames can lead to an increase in liking for the brand, when gamers do not remember that they were exposed to the placement (mere exposure effect).	Partially supported
R2 Active and passive consumption modes differently affect brand liking following repeated exposure to an unknown brand placement in a videogame.	H2 Brand liking will be different between the play and watch groups, and lower for individuals watching the videogame than for individuals playing the game due to low involvement.	Partially supported

To test the hypotheses, a quasi-experiment was conducted, which involved a large sample of participants (n=300). Chapter 5 outlines the research method employed and provided details of the statistical tests used for the data analysis. The results of the statistical tests are presented in Chapter 6.

In summary, the major finding of this study is that brand placements in videogames do have an effect on both players' and watchers' brand likeability. The findings of this research indicate that frequent exposure to an unknown brand logo leads to an increased liking and thus can have an effect on the players' attitudes, even when the explicit memory for the brand logo is low. This progresses the idea that brand placements affects on implicit memory be interpreted as the MEE (Zajonc, 1968; Bornstein, 1989). The results indicate that game players are able to both play a videogame (the primary task) and process the placements (the secondary task) simultaneously. The lack of processing of some of the brand placements accords

with the Friestad and Wright (1995) persuasion knowledge model, which points to reactance effects due to persuasion knowledge.

There were differences in the way the placements were processed in videogame environments for gamers and watchers, with watchers reporting more positive brand likeability for Double 7 and players for Dynamix. Players scored higher on recall for four of the brand logos than the watchers. However, the recall effects were weak and did not achieve the industry standard of 20% for any of the brand logos for watchers, and for four of the brand logos for players. Thus, the results indicate only a small effect of explicit memory for brand exposure for in-game advertising.

8.3 Theoretical contribution of the study

The current study addressed developments in marketing practice and more specifically brand placement and has implications for both the development of academic theory and practice in the gaming industry. It builds on the existing paradigms of low-involvement processing Heath (2001) and Grimes (2008), MEE Zajonc (1968), implicit and explicit and implicit processing Petty et al. (1983) and affect responses MacInnis and Jaworski (1989) in relation to brand placement in videogames. This is the first study that specifically addresses mere exposure effects, brand placements and videogames. The findings of the study make a valuable contribution to the understanding of brand placement in videogames with specific reference to low involvement processing. More recently, there has been an increasing call for research into affective rather than cognitive outcomes and brand placement. Grimes and Kitchen (2007) have made a strong case for mere exposure effects, as 'the majority of marketing communication stimuli do not receive *any* active processing' (p. 191). The current study contributes to the brand placement literature by addressing brand placement implicit processing in videogames. Whilst there is considerable research on cognitive measures such as recall and recognition, there is scant research on affective measures in videogames and this study has addressed this issue.

This study investigated whether exposure to brand placement affects unknown brand likeability as a result of Mere Exposure for game players and game watchers

in videogames. This is the first study that specifically explores the MEE in videogames and thus examines implicit exposure effects for unknown brand logos in a racing game.

Two research questions formed the basis for the research underpinning this thesis. R1 Repeated exposure to an unknown brand placement in a videogame leads to more positive brand affect (brand liking). In testing mere exposure in videogames, a medium in which it had not been previously tested, the aim was to contribute to the brand placement literature. The findings of this research do indicate that frequent exposure to an unknown brand logo leads to an increased liking and thus can have an effect on the brand attitudes, even when the explicit memory for the brand logo is low (Zajonc, 1968; Bornstein, 1989). Hence, progressing the idea, that implicit brand placement processing occurred and this may be interpreted as the MEE. However, the effect may be quite small and non-existent in some circumstances, such as when the billboard is hard to detect for example when it is a small size or blends into the gaming environment. Validation of the findings in different contexts is therefore necessary.

The study contributes to both implicit and explicit memory literature by showing that watchers reported more positive brand attitudes, but low recall that did not meet industry standards. However, players had higher recall and in the case of Double 7, the 20% industry standard but still reported liking Double 7. This progresses the argument that liking and recall can be related which refutes the earlier studies into MEE (Newall and Shanks (2007).

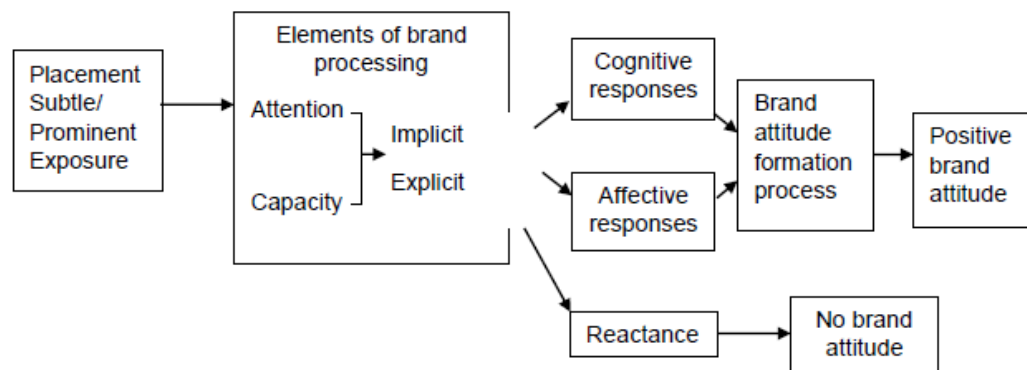
The second research question was that active and passive consumption modes differently affect brand liking following repeated exposure to an unknown brand placement in a videogame. There were differences in the way the placements are processed in interactive videogame environments for gamers and watchers, with watchers reporting higher liking for Double 7 and player for Dynamix. Additionally, players scored higher on recall for four of the brand logos than watchers. However, the recall effects were low and did not achieve the industry standard of 20% for any of the brand logos for watchers and for four of the brand logos for players. The results do not support Nelson et al. (2006), Gangadharbatla (2006) and Gangadharbatla (2016) as they suggest watchers recall more brand placements.

The results indicate only a small effect of explicit memory for brand exposure for in-game advertising. Hence the watchers in this study expressed better implicit than explicit processing which accords with MEE (Zajonc, 1968; Bornstein 1989). Thus, to encapsulate the findings the following model is proposed to demonstrate MEE in videogames.

Videogames are a rich medium combining narrative, verbal, acoustic and visual stimuli. The game player controls the multisensory environment and thus they direct the gameplay. Lee and Faber (2007) suggest that the game player will devote most of their processing resources to the gameplay and thus the peripheral elements such as placements will suffer in terms of processing because players will focus on the primary task. The lack of cognitive capacity may explain why some of the brand logos in this research were not processed as the player's cognitive capacity is dedicated to playing the racing game, which leaves insufficient resources available for processing secondary messages such as placements. Thus, from this study there is some support and evidence that the multisensory environment of videogames does inhibit processing which concurs with Yang (2006). This could be due to the complexity of the environment itself, or that persuasion knowledge is activated. The persuasion intent was apparent to the participants and reactance effects follow.

Therefore, this study provides further support for PKM Friestad and Wright (1994) and reactance effects (Brehm, 1988). However as some of the brand placements were processed by the game players it does further support the finding that game players are able to both play a videogame (the primary task) and process the placements (the secondary task). Thus, the results are inconclusive as some of the brand placements exposure effects did produce positive attitudes but some did not. Possible explanations for the processing of the brands or lack of are outlined in Section 7.6.

Figure 8.1 Mere exposure effects in videogames



8.4 Contribution to practice of the study

The effectiveness of traditional marketing communications is being questioned and new models are emerging (Fill, 2013). Brand placement has emerged as a response to new methods to communicate with an audience. Heath and Feldwick (2008) noted that most marketers believe that brand placements are most effective when processed with high levels of attention. Indeed, it may be hard to justify why marketers allocate significant budget to placements that are not consciously recognised by gamers. In contrast, the effect of placement prominence on recall is easier to justify (Matthes et al., 2012). Moreover, to date, the research has been inconclusive for its effects on gamers/spectators and the predicted positive outcomes for marketers. Thus, whilst the use of brand placement is becoming ubiquitous, more information is needed by marketers to justify this technique as part of their marketing communications strategy. Therefore, the current study is of paramount practical importance.

The results of this research offer some valuable insights for brand owners, game developers, and the use of brand placement. The present study does demonstrate that video game players and watchers are processing unknown brands in videogames and their implicit memory is influenced by placements. Previous research in psychology indicates that implicit memory survives longer than explicit memory (Tulving and Schacter, 1990). Hence, brand placements may have a long-term effect on implicit memory and thus brand evaluations. Although the current study does not establish how strong or enduring the MEE is, it does have implications for new brand launches.

By placing a new brand in a highly involved medium such as a videogame and aiming for mere exposure effect, a positive brand attitude may be established. This could be followed up by highly prominent brand placements, leading to high recall and recognition as Matthes et al. (2011) suggests. Thus, once the positive brand attitude has been established the hedonistic fluency model suggests mild and positive affective responses occur as a result of familiar stimuli, usually meaning a harmless situation. Successful recognition creates good feelings and coherent interpretation leads to positive moods (Winkielman and Cacioppo, 2001). Hence, affective judgements reinforce cognitive judgements with positive outcomes.

Alternatively, a more integrated marketing communications strategy could be adopted with more explicit forms of advertising such as social media posts or billboards in a real setting forming part of a brand's strategy. Marti-Parreno et al. (2016) support this and suggest that brand placement in videogames should be supplemented by for example in-store visual merchandising which would trigger brand recognition. Further, proto brands (Muzellec, 2012) could be placed in games, positive attitudes established prior to actual launch. By establishing the positive attitude prior to launch, the marketing communications strategy may well be more effective and less costly.

The findings offer some evidence for brand owners and game developers that brand placements do indeed influence implicit memory and this may affect later purchase decisions, as there was significance for the exposed brands but non for the non-exposed brands. Hence, this provides justification for brand placement as part of

the brand strategy. The watchers demonstrated better implicit than explicit processing in this study and this has implications for eSports. As noted above, eSports generated \$1.1bn global revenue and a global audience of 454 million (Newzoo, 2019). eSports is a potentially lucrative additional market for brand promotion.

The study used a real racing game demo that is utilised by a professional game developer and thus realism is preserved. Further, the product categories used in the study: tyres, soft drinks, airlines, banks and game developers are those typically placed in racing games and therefore the findings have direct relevance to these types of businesses and potentially their marketing communications strategy.

For game developers and brand owners, the study has implications for the design of videogames and the most effective position for placements in a game and graphic design elements for the placements. However it is important to stress that position of placements should not compromise the realism. Of all the five exposed brand logos Double 7 had what could be deemed the most noticeable colour combination, as it was yellow, black and white and the name clearly stood out from the yellow background and had the strongest graphic design. Congruent colour-product combinations will be processed more fluently and thus will be liked more, and rated as more appropriate, than incongruent combinations (Bottomley and Doyle, 2006). This reinforces Baker's (1999) findings in advertising where he suggested that brand name and packaging should be prominent. Different linguistic concepts can be combined to affect meaning and memorability. For example construction of alphanumeric components such as DW-40 (Pavia and Costa, 1993). As Double 7 was alphanumeric it may have been easier for participants to process. Thus when brand owners are considering placement strategy for their brands they should consider, graphic design elements of the brands and how these will be processed in videogame environments. Further, placement position should be carefully considered.

8.5 Further research

This research centred on a racing game and it is important to consider the context of the stimulus and the contribution of this to MEE research. It would be advantageous to consider other videogame genres to ascertain if the results apply. There is some evidence that the MEE can be generalised to other stimuli (Matthes et al. 2007). The optimal mixture of placement frequency and prominence is unique to the stimulus used in this research and this may not have the same results in a different videogame genre or medium.

Russell (1998) differentiated between visual, auditory and plot connection placements and as this research was limited to frequency and prominence of placements, it would be beneficial to investigate whether or not other aspects of placement modality moderate the MEE. It would also be useful to investigate different sensory cues, such as visual versus auditory, to determine effects of brand evaluations. Auditory could be music, versus sound effects, versus announcer.

Nelson (2002) identified passive (billboards in a racing game) and active (where the player chooses the brand of car to race) dimensions of in game-placements and as the current research focused on passive placements, active placements should be investigated to ascertain the effects. This would test how gamers interact with brand placements, rather than just respond to them.

This study related to traditional static brand placements in the form of billboards in a racing game. Developments in gaming include dynamic billboards, whereby the placements appearing in games can be changed to target certain demographic groups and further research could consider the implications of these on brand processing in videogames and how this might further our understanding of brand processing.

The research was conducted in a quasi-experimental setting and thus it would be of interest to practitioners to ascertain if similar results occur in actual settings such as an eSports tournament. This would be particularly relevant as eSports is a growing industry and thus presents a potential highly lucrative platform for brand owners.

Although, this research addresses many of the method-based limitations of previous brand placement research such as laboratory settings, small non-random samples and lack of control groups, the exposure time is a weakness that could be addressed in future research. Ruggieri and Boca (2013) demonstrated one exposure was sufficient to activate the MEE and positive brand evaluation. In this study, participants were exposed three times to the stimuli and thus the effect of one exposure was not measured and this could be a potential area for future research.

It would be useful to consider at which point no mere exposure effects can be detected. As Sawyer (2006) notes, the effectiveness of frequency may have an inverted U-curve and this could prove to be a rich area for research and particularly have impacts for game design as videogames are played multiple times. Processing fluency could also be further evaluated to ensure that fluency is not resulting from placement graphic design elements such as colour, easy-to-read fonts, or contrast of colour against the racing track. In addition, investigations using different game platforms such as smartphones would also facilitate understanding of placement processing, interactivity and flow and game involvement, and enhance understanding of gaming and brand placement.

The current research measured short-term effects only and thus no conclusions about long-term effects could be derived. It would be beneficial to consider a longitudinal approach in future research to determine time delay effects (Nelson, 2002). This would allow differences in brand information processing levels over time and the corresponding effect on attitude formation could be tested. Repeat exposure may see the player's skill improve, freeing up cognitive resources for placement processing. A longitudinal study would not only allow for the determination of the effects of repeat exposures on brand attitude, but also potential risks associated with over exposure, such as player irritation or message wear out.

A convenience sample was used in this research, namely business students with knowledge of marketing, advertising. Further research could include a probability sample to strengthen the analysis of the implications for practice. Moreover, different

demographic sectors could be investigated as playing videogames is a popular global pastime for different genders, children and adults.

The use of eye-tracking software could be employed, to understand to what extent gamers actually notice the brand placements or are primarily concerned with playing the racing game. Eye tracking software could be used to determine the precise exposure time of the brand placement. Eye tracking could also be combined with electroencephalogram (EEG) analysis to look at cognitive and affective processes, which would provide a more in depth understanding of neuro-marketing and consumer behaviour as advocated by Gangadharbatla (2006).

Grimes and Kitchen (2007) and Matthes et al. (2012), there is no direct evidence for the implicit process underlying the MEE in this research. Hence, as these authors suggest, word completion techniques may be a fertile supplement to future research. Brand placement outcomes could also be compared with the outcomes of other forms of promotion such as social media and sponsorship. Comparative studies that examine different promotional techniques and their outcomes would assist marketing practitioners in deciding on their promotional strategy.

The current study and recommendations for future research presented in this thesis provide a framework to guide further research into brand placement effects in videogames. This study has indicated that brand placements are not simply processed and further research, which manipulates brand placement presentation, is required with suggestions being provided to facilitate this.

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APPENDIX 1

Unselected Brand Logos

Apple Slice-soft drink



Northern Bank-bank



Silverfly-airline



Westwood Studios-game developer



Jupiter-tyres



Appendix 2

Participant Instructions

Racing Game Design Evaluation Study

Michelle Gledhill

Manchester Metropolitan
University



Statement of ethics

- Michelle Gledhill is undertaking doctoral research Manchester Metropolitan University. One element of this work involves participants taking part in a controlled experiment and completing a questionnaire.
- The University understands that you are willing to take part in the experiment. It is important to the University that only people who want to do so participate in this study. You should also have been made aware that you do not need to answer any particular question and that you may stop your involvement at any time. **By agreeing to take part in the experiment you are giving your consent.**
- All personal details will be anonymised and your details will not intentionally be revealed to anyone outside the research/supervision team.
- The results of the experiment and questionnaire – including yours – will be analysed and written up during the course of the research. The findings may be included in unpublished theses submitted for higher degrees, and later lodged in the University Library. They may also be used in published works, such as academic journal articles or scholarly texts.

Manchester Metropolitan
University



Game 1

- Thank you for agreeing to participate in this videogame design evaluation study. Whilst playing the videogame you will encounter elements that are typically included in a racing videogame such as an off road circuit, obstacles, racing against the clock and in game advertising. You will play the game, fill in the evaluation survey and this should take approximately 20 minutes.



Instructions

- The rules of the game (or how it is played)
 - the objective is to race the car to the finish line in the fastest time.
 - driving controls are up arrow—to move forward, down arrow—to brake/stop/move backward, left arrow—to turn left and right arrow—to turn right.
 - the route is in a clockwise direction
 - Esc key to go back to the start and restart track or quit after 3 laps have been completed.
- Please complete 3 laps and **note the time it takes to complete the first lap. Your lap time is recorded on the screen.**



After playing the game.....

- First you will see 13 different pictures.
- All the pictures will go very quickly so do not be surprised.
- Then stop the video and get a pen and paper ready.
- Now, you will see a pair of pictures and your task is to write down whether you have already seen picture A or B. The correct answers will be displayed at the end of the video.
- Please complete the following visual [memory task](#)



- What was your score ?
- Psychologists claim that our visual memory is much better than any other kind of memory so do not be surprised if you score 13.



Racing Videogame Design Evaluation Survey

- Please click on the evaluation survey link and complete all the questions.
- [Survey](#)

THANK YOU FOR YOUR TIME.



Debriefing

- The purpose of the experiment was to investigate the effectiveness of billboards in videogames. Some of you saw the billboards and some of you didn't while either playing or watching the videogame. And the post-experiment questionnaire measured the different variables on which the three groups are to be compared.
- Do you have any questions.

Appendix 3

Control Questionnaire

After playing the racing videogame please indicate how much you like the following brand logos.

[illegible][illegible][illegible]

	Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
--	----------------	-------	--------------------	-----------	-----------------------	----------	-------------------

Strongly agree Agree **More or less agree** Undecided **More or less disagree** Disagree Strongly disagree

☐ ☐ ☒ ☐ ☐ ☐ ☐

Northern Bank

Strongly agree Agree More or less agree Undecided More or less disagree Disagree Strongly disagree



Strongly agree Agree More or less agree Undecided More or less disagree Disagree Strongly disagree


Aspirin Slice

Strongly agree Agree More or less agree Undecided More or less disagree Disagree Strongly disagree


Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
----------------	-------	--------------------	-----------	-----------------------	----------	-------------------

	Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
<i>Westwood Studios</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I like the brand logo Double 7 (soft drink)

	Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I like the brand logo Jupiter (tyres)

	Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Block 1

Please insert how long it took you to complete the first lap

- ☐ 0-59 seconds (under 1 minute)
- ☐ 60-119 seconds (under 2 minutes)
- ☐ 120 -179 seconds (under 3 minutes)
- ☐ 180-239 seconds (under 4 minutes)
- ☐ 240-299 seconds (under 5 minutes)

Block 2

Please rate your level of experience in playing videogames.

Beginner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Expert
Bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very Good
Novice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Skilled

Block 3

For each of the items below, mark the circle that best describes your overall feelings about the racing videogame you just played.

Bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Good
Unappealing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Appealing
Unpleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Pleasant
Unattractive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Attractive
Boring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Interesting
Dislike	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Like

Block 4

How would you rate the the following aspects for the racing videogame you have just played.

	Poor	Fair	Neutral	Good	Excellent
Gameplay	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Realism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Difficulty	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Graphics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Block 5

Would you purchase this videogame.

Unlikely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Likely
Improbable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Probable
Uncertain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Certain

19/09/2019

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Definitely



Definitely not

Block 7

Please indicate your gender.

- ☐ Male
☐ Female

Please indicate your age.

- ☐ 18-25
☐ 26-35
☐ 40 PLUS

If you play videogames, what type of videogames do you play. Please tick all that apply.

- | | |
|---|---------------------------------------|
| <input type="checkbox"/> Massively Multiplayer Online (MMO) | <input type="checkbox"/> Sports |
| <input type="checkbox"/> Simulation | <input type="checkbox"/> Strategy |
| <input type="checkbox"/> Adventure | <input type="checkbox"/> Role Playing |
| <input type="checkbox"/> First Person Shooter | <input type="checkbox"/> Educational |

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Appendix 4

Play Questionnaire


Default Question Block

Some of the following brand logos were embedded in the racing videogame you just played, and some were not. Please indicate how much you like the following brand logos.


I like the brand logo Dymanix (games developer)

	Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I like the brand logo Volare Airlines (airlines)

	Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I like the brand logo Copperstone (tyres)

	Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I like the brand logo MBSB (bank)

	Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

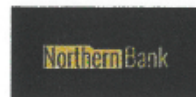
19/09/2019

Qualtrics Survey Software

MBSB

Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I like the brand logo Northern Bank (bank)



Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I like the brand logo Silverfly (airline)



Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I like the brand logo Apple Slice (soft drink)




Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I like the brand logo Westwood Studios (game developer)


Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
<i>Westwood Studios</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I like the brand logo Double 7 (soft drink)

	Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I like the brand logo Jupiter (tyres)

	Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Block 1

Please insert how long it took you to complete the first lap

- ☐ 0-59 seconds (under 1 minute)
- ☐ 60-119 seconds (under 2 minutes)
- ☐ 120 -179 seconds (under 3 minutes)
- ☐ 180-239 seconds (under 4 minutes)
- ☐ 240-299 seconds (under 5 minutes)

Block 2

Please rate your level of experience in playing videogames.

Beginner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Expert
Bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very Good
Novice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Skilled

Block 3

For each of the items below, mark the circle that best describes your overall feelings about the racing videogame you just played.

Bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Good
Unappealing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Appealing
Unpleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Pleasant
Unattractive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Attractive
Boring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Interesting
Dislike	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Like

Block 4

How would you rate the the following aspects for the racing videogame you have just played.

	Poor	Fair	Neutral	Good	Excellent
Gameplay	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Realism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Difficulty	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Graphics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Block 5

Would you purchase this videogame.

Unlikely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Likely
Improbable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Probable
Uncertain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Certain

Definitely



Definitely not

Block 8

List all the brand logos you recall seeing after playing the racing videogame.

Block 6

Which of the following brand logos do you recall after playing the racing videogame.
Please highlight all that you remember seeing in the racing game.

☐


Jupiter (tyres)

☐


Volare Airlines (airline)

☐


MBSB (bank)

☐

Westwood Studios

Westwood Studios (games developer)

☐


Silverfly (airline)

☐

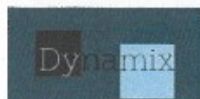

Double 7 (soft drink)

☐


Apple Slice (soft drink)

☐


Copperstone (tyres)

☐


Dynamix (games developer)

☐


Northern Bank (bank)

Block 7

Please indicate your gender.

- ☐ Male
☐ Female

Please indicate your age.

- ☐ 18-25
☐ 26-35
☐ 40 PLUS

If you play videogames, what type of videogames do you play. Please tick all that apply.

- | | |
|---|---------------------------------------|
| <input type="checkbox"/> Massively Multiplayer Online (MMO) | <input type="checkbox"/> Sports |
| <input type="checkbox"/> Simulation | <input type="checkbox"/> Strategy |
| <input type="checkbox"/> Adventure | <input type="checkbox"/> Role Playing |
| <input type="checkbox"/> First Person Shooter | <input type="checkbox"/> Educational |

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Appendix 5

Watch Questionnaire


Default Question Block

Some of the following brand logos were embedded in the racing videogame you just watched, and some were not. Please indicate how much you like the following brand logos.


I like the brand logo Dymanix (games developer)

	Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I like the brand logo Volare Airlines (airlines)

	Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I like the brand logo Copperstone (tyres)

	Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I like the brand logo MBSB (bank)

	Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19/05/2019

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Strongly agree Agree More or less agree Undecided More or less disagree Disagree Strongly disagree



☐ ☐ ☐ ☐ ☐ ☐ ☐

I like the brand logo Northern Bank (bank)

Strongly agree Agree More or less agree Undecided More or less disagree Disagree Strongly disagree



☐ ☐ ☐ ☐ ☐ ☐ ☐

I like the brand logo Silverfly (airline)

Strongly agree Agree More or less agree Undecided More or less disagree Disagree Strongly disagree



☐ ☐ ☐ ☐ ☐ ☐ ☐

I like the brand logo Apple Slice (soft drink)

Strongly agree Agree More or less agree Undecided More or less disagree Disagree Strongly disagree




☐ ☐ ☐ ☐ ☐ ☐ ☐

I like the brand logo Westwood Studios (game developer)


Strongly agree Agree More or less agree Undecided More or less disagree Disagree Strongly disagree

18/09/2013


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	Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I like the brand logo Double 7 (soft drink)

	Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I like the brand logo Jupiter (tyres)

	Strongly agree	Agree	More or less agree	Undecided	More or less disagree	Disagree	Strongly disagree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Block 2

Please rate your level of experience in playing videogames.

Beginner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Expert
Bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very Good
Novice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Skilled

Block 3

For each of the items below, mark the circle that best describes your overall feelings about the racing videogame you just watched.

Bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Good
-----	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	------

<https://mmmc.co.uk/qualtrics.com/Q-Edit/Section/Block2/Ajax/GetSurveyPrintPreview>

3/6

Unappealing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Appealing
Unpleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Pleasant
Unattractive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Attractive
Boring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Interesting
Dislike	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Like

Block 4

How would you rate the the following aspects for the racing videogame you have just watched.

	Poor	Fair	Neutral	Good	Excellent
Gameplay	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Realism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Difficulty	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Graphics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Block 5

Would you purchase this videogame.

Unlikely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Likely
Improbable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Probable
Uncertain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Certain
Definitely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Definitely not

Block 8

List all the brand logos you recall seeing after watching the racing videogame.

Block 6

Which of the following brand logos do you recall after watching the racing videogame.
Please highlight all that you remember seeing in the racing game.

**Block 7**

Please indicate your gender.

- ☐ Male
☐ Female

Please indicate your age.

- ☐ 18-25

18/08/2019

Qualtrics Survey Software

- ☐ 26-35
- ☐ 40 PLUS

If you play videogames, what type of videogames do you play. Please tick **all** that apply.

- | | |
|---|---------------------------------------|
| <input type="checkbox"/> Massively Multiplayer Online (MMO) | <input type="checkbox"/> Sports |
| <input type="checkbox"/> Simulation | <input type="checkbox"/> Strategy |
| <input type="checkbox"/> Adventure | <input type="checkbox"/> Role Playing |
| <input type="checkbox"/> First Person Shooter | <input type="checkbox"/> Educational |

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Appendix 6

Parameter Estimates

Parameter Estimates									
Group ^a		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
Play Group	Intercept	-1.659	1.217	1.858	1	0.173			
	[ExpDynamix=1]	0.309	1.248	0.061	1	0.804	1.362	0.118	15.725
	[ExpDynamix=2]	0.906	0.675	1.804	1	0.179	2.475	0.659	9.292
	[ExpDynamix=3]	1.215	0.710	2.928	1	0.087	3.371	0.838	13.563
	[ExpDynamix=4]	0.469	0.692	0.459	1	0.498	1.598	0.411	6.209
	[ExpDynamix=5]	1.103	0.631	3.059	1	0.080	3.013	0.875	10.369
	[ExpDynamix=6]	0.785	0.627	1.567	1	0.211	2.192	0.641	7.493
	[ExpDynamix=7]	0 ^b			0				
	[ExpVA=1]	-0.032	0.937	0.001	1	0.973	0.968	0.154	6.079
	[ExpVA=2]	-0.744	0.786	0.898	1	0.343	0.475	0.102	2.216
	[ExpVA=3]	-0.613	0.754	0.661	1	0.416	0.542	0.124	2.375
	[ExpVA=4]	-0.634	0.759	0.698	1	0.403	0.531	0.120	2.346
	[ExpVA=5]	-0.375	0.764	0.241	1	0.624	0.688	0.154	3.073
	[ExpVA=6]	-0.359	0.728	0.243	1	0.622	0.698	0.168	2.909
	[ExpVA=7]	0 ^b			0				
	[ExpCoppers tone=1]	-0.186	0.945	0.039	1	0.844	0.831	0.130	5.292
	[ExpCoppers tone=2]	0.116	0.607	0.037	1	0.848	1.123	0.342	3.691
	[ExpCoppers tone=3]	0.098	0.549	0.032	1	0.859	1.103	0.376	3.233
	[ExpCoppers tone=4]	1.260	0.694	3.298	1	0.069	3.527	0.905	13.744
	[ExpCoppers tone=5]	-0.166	0.567	0.086	1	0.769	0.847	0.279	2.573
	[ExpCoppers tone=6]	0.319	0.457	0.488	1	0.485	1.376	0.562	3.372
	[ExpCoppers tone=7]	0 ^b			0				
	[ExpMBSB=1]	-0.491	1.172	0.176	1	0.675	0.612	0.061	6.087
	[ExpMBSB=2]	-0.317	1.072	0.088	1	0.767	0.728	0.089	5.951
	[ExpMBSB=3]	0.299	1.097	0.075	1	0.785	1.349	0.157	11.577
	[ExpMBSB=4]	0.087	1.118	0.006	1	0.938	1.091	0.122	9.765
	[ExpMBSB=5]	-0.814	1.170	0.484	1	0.487	0.443	0.045	4.388
	[ExpMBSB=6]	-0.955	1.239	0.593	1	0.441	0.385	0.034	4.369
	[ExpMBSB=7]	0 ^b			0				
	[ExpD7=1]	1.634	1.052	2.415	1	0.120	5.127	0.653	40.278
	[ExpD7=2]	1.958	0.949	4.254	1	0.039	7.084	1.102	45.526
	[ExpD7=3]	1.504	0.979	2.361	1	0.124	4.501	0.661	30.656
	[ExpD7=4]	1.389	0.968	2.059	1	0.151	4.012	0.602	26.753
	[ExpD7=5]	1.489	0.963	2.391	1	0.122	4.434	0.671	29.292
	[ExpD7=6]	0.010	1.027	0.000	1	0.992	1.010	0.135	7.556
	[ExpD7=7]	0 ^b			0				
Watch	Intercept	-1.619	1.278	1.606	1	0.205			
	[ExpDynamix=1]	-0.109	1.287	0.007	1	0.932	0.897	0.072	11.179
	[ExpDynamix=2]	-0.336	0.686	0.240	1	0.624	0.715	0.186	2.740
	[ExpDynamix=3]	0.600	0.691	0.756	1	0.385	1.823	0.471	7.056
	[ExpDynamix=4]	-0.050	0.668	0.006	1	0.940	0.951	0.257	3.522
	[ExpDynamix=5]	0.528	0.610	0.750	1	0.386	1.696	0.513	5.609
	[ExpDynamix=6]	0.083	0.610	0.019	1	0.891	1.087	0.329	3.590
	[ExpDynamix=7]	0 ^b			0				
	[ExpVA=1]	-1.858	1.314	1.999	1	0.157	0.156	0.012	2.050
	[ExpVA=2]	-0.764	0.794	0.925	1	0.336	0.466	0.098	2.209
	[ExpVA=3]	-0.916	0.763	1.440	1	0.230	0.400	0.090	1.786
	[ExpVA=4]	-0.507	0.771	0.433	1	0.511	0.602	0.133	2.728
	[ExpVA=5]	-0.409	0.767	0.284	1	0.594	0.665	0.148	2.990
	[ExpVA=6]	-0.367	0.736	0.248	1	0.619	0.693	0.164	2.935
	[ExpVA=7]	0 ^b			0				
	[ExpCoppers tone=1]	-20.831	0.000		1		8.977E-10	8.977E-10	8.977E-10
	[ExpCoppers tone=2]	-0.166	0.634	0.069	1	0.793	0.847	0.245	2.931
	[ExpCoppers tone=3]	0.139	0.551	0.064	1	0.800	1.149	0.390	3.384
	[ExpCoppers tone=4]	2.095	0.664	9.967	1	0.002	8.129	2.213	29.854
	[ExpCoppers tone=5]	-0.024	0.556	0.002	1	0.966	0.977	0.328	2.905
	[ExpCoppers tone=6]	-0.295	0.488	0.365	1	0.546	0.745	0.286	1.938
	[ExpCoppers tone=7]	0 ^b			0				
	[ExpMBSB=1]	-0.298	1.265	0.056	1	0.814	0.742	0.062	8.849
	[ExpMBSB=2]	-0.036	1.153	0.001	1	0.975	0.965	0.101	9.250
	[ExpMBSB=3]	0.752	1.179	0.407	1	0.523	2.122	0.210	21.411
	[ExpMBSB=4]	-0.419	1.212	0.120	1	0.729	0.658	0.061	7.071
	[ExpMBSB=5]	-0.334	1.250	0.071	1	0.789	0.716	0.062	8.302
	[ExpMBSB=6]	-0.533	1.306	0.167	1	0.683	0.587	0.045	7.582
	[ExpMBSB=7]	0 ^b			0				
	[ExpD7=1]	2.807	1.044	7.237	1	0.007	16.566	2.143	128.092
	[ExpD7=2]	2.561	0.962	7.090	1	0.008	12.945	1.966	85.250
	[ExpD7=3]	1.994	1.001	3.966	1	0.046	7.341	1.032	52.225
	[ExpD7=4]	1.406	0.999	1.980	1	0.159	4.080	0.576	28.916
	[ExpD7=5]	1.233	1.011	1.487	1	0.223	3.431	0.473	24.885
	[ExpD7=6]	1.153	1.031	1.251	1	0.263	3.169	0.420	23.922
	[ExpD7=7]	0 ^b			0				

- The reference category is: Control Group
- This parameter is set to zero because it is redundant

Appendix 7

Parameter Estimates Age

Parameter Estimates									
Group ^a		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
Play Group	Intercept	-1.659	1.217	1.858	1	0.173			
	[ExpDynamix=1]	0.309	1.248	0.061	1	0.804	1.362	0.118	15.725
	[ExpDynamix=2]	0.906	0.675	1.804	1	0.179	2.475	0.659	9.292
	[ExpDynamix=3]	1.215	0.710	2.928	1	0.087	3.371	0.838	13.563
	[ExpDynamix=4]	0.469	0.692	0.459	1	0.498	1.598	0.411	6.209
	[ExpDynamix=5]	1.103	0.631	3.059	1	0.080	3.013	0.875	10.369
	[ExpDynamix=6]	0.785	0.627	1.567	1	0.211	2.192	0.641	7.493
	[ExpDynamix=7]	0 ^b			0				
	[ExpVA=1]	-0.032	0.937	0.001	1	0.973	0.968	0.154	6.079
	[ExpVA=2]	-0.744	0.786	0.898	1	0.343	0.475	0.102	2.216
	[ExpVA=3]	-0.613	0.754	0.661	1	0.416	0.542	0.124	2.375
	[ExpVA=4]	-0.634	0.759	0.698	1	0.403	0.531	0.120	2.346
	[ExpVA=5]	-0.375	0.764	0.241	1	0.624	0.688	0.154	3.073
	[ExpVA=6]	-0.359	0.728	0.243	1	0.622	0.698	0.168	2.909
	[ExpVA=7]	0 ^b			0				
	[ExpCoppers tone=1]	-0.186	0.945	0.039	1	0.844	0.831	0.130	5.292
	[ExpCoppers tone=2]	0.116	0.607	0.037	1	0.848	1.123	0.342	3.691
	[ExpCoppers tone=3]	0.098	0.549	0.032	1	0.859	1.103	0.376	3.233
	[ExpCoppers tone=4]	1.260	0.694	3.298	1	0.069	3.527	0.905	13.744
	[ExpCoppers tone=5]	-0.166	0.567	0.086	1	0.769	0.847	0.279	2.573
	[ExpCoppers tone=6]	0.319	0.457	0.488	1	0.485	1.376	0.562	3.372
	[ExpCoppers tone=7]	0 ^b			0				
	[ExpMBSB=1]	-0.491	1.172	0.176	1	0.675	0.612	0.061	6.087
	[ExpMBSB=2]	-0.317	1.072	0.088	1	0.767	0.728	0.089	5.951
	[ExpMBSB=3]	0.299	1.097	0.075	1	0.785	1.349	0.157	11.577
	[ExpMBSB=4]	0.087	1.118	0.006	1	0.938	1.091	0.122	9.765
	[ExpMBSB=5]	-0.814	1.170	0.484	1	0.487	0.443	0.045	4.388
	[ExpMBSB=6]	-0.955	1.239	0.593	1	0.441	0.385	0.034	4.369
	[ExpMBSB=7]	0 ^b			0				
	[ExpD7=1]	1.634	1.052	2.415	1	0.120	5.127	0.653	40.278
	[ExpD7=2]	1.958	0.949	4.254	1	0.039	7.084	1.102	45.526
	[ExpD7=3]	1.504	0.979	2.361	1	0.124	4.501	0.661	30.656
	[ExpD7=4]	1.389	0.968	2.059	1	0.151	4.012	0.602	26.753
	[ExpD7=5]	1.489	0.963	2.391	1	0.122	4.434	0.671	29.292
	[ExpD7=6]	0.010	1.027	0.000	1	0.992	1.010	0.135	7.556
	[ExpD7=7]	0 ^b			0				
Watch	Intercept	-1.619	1.278	1.606	1	0.205			
	[ExpDynamix=1]	-0.109	1.287	0.007	1	0.932	0.897	0.072	11.179
	[ExpDynamix=2]	-0.336	0.686	0.240	1	0.624	0.715	0.186	2.740
	[ExpDynamix=3]	0.600	0.691	0.756	1	0.385	1.823	0.471	7.056
	[ExpDynamix=4]	-0.050	0.668	0.006	1	0.940	0.951	0.257	3.522
	[ExpDynamix=5]	0.528	0.610	0.750	1	0.386	1.696	0.513	5.609
	[ExpDynamix=6]	0.083	0.610	0.019	1	0.891	1.087	0.329	3.590
	[ExpDynamix=7]	0 ^b			0				
	[ExpVA=1]	-1.858	1.314	1.999	1	0.157	0.156	0.012	2.050
	[ExpVA=2]	-0.764	0.794	0.925	1	0.336	0.466	0.098	2.209
	[ExpVA=3]	-0.916	0.763	1.440	1	0.230	0.400	0.090	1.786
	[ExpVA=4]	-0.507	0.771	0.433	1	0.511	0.602	0.133	2.728
	[ExpVA=5]	-0.409	0.767	0.284	1	0.594	0.665	0.148	2.990
	[ExpVA=6]	-0.367	0.736	0.248	1	0.619	0.693	0.164	2.935
	[ExpVA=7]	0 ^b			0				
	[ExpCoppers tone=1]	-20.831	0.000		1		8.977E-10	8.977E-10	8.977E-10
	[ExpCoppers tone=2]	-0.166	0.634	0.069	1	0.793	0.847	0.245	2.931
	[ExpCoppers tone=3]	0.139	0.551	0.064	1	0.800	1.149	0.390	3.384
	[ExpCoppers tone=4]	2.095	0.664	9.967	1	0.002	8.129	2.213	29.854
	[ExpCoppers tone=5]	-0.024	0.556	0.002	1	0.966	0.977	0.328	2.905
	[ExpCoppers tone=6]	-0.295	0.488	0.365	1	0.546	0.745	0.286	1.938
	[ExpCoppers tone=7]	0 ^b			0				
	[ExpMBSB=1]	-0.298	1.265	0.056	1	0.814	0.742	0.062	8.849
	[ExpMBSB=2]	-0.036	1.153	0.001	1	0.975	0.965	0.101	9.250
	[ExpMBSB=3]	0.752	1.179	0.407	1	0.523	2.122	0.210	21.411
	[ExpMBSB=4]	-0.419	1.212	0.120	1	0.729	0.658	0.061	7.071
	[ExpMBSB=5]	-0.334	1.250	0.071	1	0.789	0.716	0.062	8.302
	[ExpMBSB=6]	-0.533	1.306	0.167	1	0.683	0.587	0.045	7.582
	[ExpMBSB=7]	0 ^b			0				
	[ExpD7=1]	2.807	1.044	7.237	1	0.007	16.566	2.143	128.092
	[ExpD7=2]	2.561	0.962	7.090	1	0.008	12.945	1.966	85.250
	[ExpD7=3]	1.994	1.001	3.966	1	0.046	7.341	1.032	52.225
	[ExpD7=4]	1.406	0.999	1.980	1	0.159	4.080	0.576	28.916
	[ExpD7=5]	1.233	1.011	1.487	1	0.223	3.431	0.473	24.885
	[ExpD7=6]	1.153	1.031	1.251	1	0.263	3.169	0.420	23.922
	[ExpD7=7]	0 ^b			0				

- The reference category is: Control Group
- This parameter is set to zero because it is redundant

Appendix 8

Parameter Estimates Gender

Parameter Estimates									
Group ^a		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
Play Group	Intercept	-1.659	1.217	1.858	1	0.173			
	[ExpDynamix=1]	0.309	1.248	0.061	1	0.804	1.362	0.118	15.725
	[ExpDynamix=2]	0.906	0.675	1.804	1	0.179	2.475	0.659	9.292
	[ExpDynamix=3]	1.215	0.710	2.928	1	0.087	3.371	0.838	13.563
	[ExpDynamix=4]	0.469	0.692	0.459	1	0.498	1.598	0.411	6.209
	[ExpDynamix=5]	1.103	0.631	3.059	1	0.080	3.013	0.875	10.369
	[ExpDynamix=6]	0.785	0.627	1.567	1	0.211	2.192	0.641	7.493
	[ExpDynamix=7]	0 ^b			0				
	[ExpVA=1]	-0.032	0.937	0.001	1	0.973	0.968	0.154	6.079
	[ExpVA=2]	-0.744	0.786	0.898	1	0.343	0.475	0.102	2.216
	[ExpVA=3]	-0.613	0.754	0.661	1	0.416	0.542	0.124	2.375
	[ExpVA=4]	-0.634	0.759	0.698	1	0.403	0.531	0.120	2.346
	[ExpVA=5]	-0.375	0.764	0.241	1	0.624	0.688	0.154	3.073
	[ExpVA=6]	-0.359	0.728	0.243	1	0.622	0.698	0.168	2.909
	[ExpVA=7]	0 ^b			0				
	[ExpCopperstone=1]	-0.186	0.945	0.039	1	0.844	0.831	0.130	5.292
	[ExpCopperstone=2]	0.116	0.607	0.037	1	0.848	1.123	0.342	3.691
	[ExpCopperstone=3]	0.098	0.549	0.032	1	0.859	1.103	0.376	3.233
	[ExpCopperstone=4]	1.260	0.694	3.298	1	0.069	3.527	0.905	13.744
	[ExpCopperstone=5]	-0.166	0.567	0.086	1	0.769	0.847	0.279	2.573
	[ExpCopperstone=6]	0.319	0.457	0.488	1	0.485	1.376	0.562	3.372
	[ExpCopperstone=7]	0 ^b			0				
	[ExpMBSB=1]	-0.491	1.172	0.176	1	0.675	0.612	0.061	6.087
	[ExpMBSB=2]	-0.317	1.072	0.088	1	0.767	0.728	0.089	5.951
	[ExpMBSB=3]	0.299	1.097	0.075	1	0.785	1.349	0.157	11.577
	[ExpMBSB=4]	0.087	1.118	0.006	1	0.938	1.091	0.122	9.765
	[ExpMBSB=5]	-0.814	1.170	0.484	1	0.487	0.443	0.045	4.388
	[ExpMBSB=6]	-0.955	1.239	0.593	1	0.441	0.385	0.034	4.369
	[ExpMBSB=7]	0 ^b			0				
	[ExpD7=1]	1.634	1.052	2.415	1	0.120	5.127	0.653	40.278
	[ExpD7=2]	1.958	0.949	4.254	1	0.039	7.084	1.102	45.526
	[ExpD7=3]	1.504	0.979	2.361	1	0.124	4.501	0.661	30.656
	[ExpD7=4]	1.389	0.968	2.059	1	0.151	4.012	0.602	26.753
	[ExpD7=5]	1.489	0.963	2.391	1	0.122	4.434	0.671	29.292
	[ExpD7=6]	0.010	1.027	0.000	1	0.992	1.010	0.135	7.556
	[ExpD7=7]	0 ^b			0				
Watch	Intercept	-1.619	1.278	1.606	1	0.205			
	[ExpDynamix=1]	-0.109	1.287	0.007	1	0.932	0.897	0.072	11.179
	[ExpDynamix=2]	-0.336	0.686	0.240	1	0.624	0.715	0.186	2.740
	[ExpDynamix=3]	0.600	0.691	0.756	1	0.385	1.823	0.471	7.056
	[ExpDynamix=4]	-0.050	0.668	0.006	1	0.940	0.951	0.257	3.522
	[ExpDynamix=5]	0.528	0.610	0.750	1	0.386	1.696	0.513	5.609

[ExpDynamix=6]	0.083	0.610	0.019	1	0.891	1.087	0.329	3.590
[ExpDynamix=7]	0 ^b			0				
[ExpVA=1]	-1.858	1.314	1.999	1	0.157	0.156	0.012	2.050
[ExpVA=2]	-0.764	0.794	0.925	1	0.336	0.466	0.098	2.209
[ExpVA=3]	-0.916	0.763	1.440	1	0.230	0.400	0.090	1.786
[ExpVA=4]	-0.507	0.771	0.433	1	0.511	0.602	0.133	2.728
[ExpVA=5]	-0.409	0.767	0.284	1	0.594	0.665	0.148	2.990
[ExpVA=6]	-0.367	0.736	0.248	1	0.619	0.693	0.164	2.935
[ExpVA=7]	0 ^b			0				
[ExpCopperstone=1]	-20.831	0.000		1		8.977E-10	8.977E-10	8.977E-10
[ExpCopperstone=2]	-0.166	0.634	0.069	1	0.793	0.847	0.245	2.931
[ExpCopperstone=3]	0.139	0.551	0.064	1	0.800	1.149	0.390	3.384
[ExpCopperstone=4]	2.095	0.664	9.967	1	0.002	8.129	2.213	29.854
[ExpCopperstone=5]	-0.024	0.556	0.002	1	0.966	0.977	0.328	2.905
[ExpCopperstone=6]	-0.295	0.488	0.365	1	0.546	0.745	0.286	1.938
[ExpCopperstone=7]	0 ^b			0				
[ExpMBSB=1]	-0.298	1.265	0.056	1	0.814	0.742	0.062	8.849
[ExpMBSB=2]	-0.036	1.153	0.001	1	0.975	0.965	0.101	9.250
[ExpMBSB=3]	0.752	1.179	0.407	1	0.523	2.122	0.210	21.411
[ExpMBSB=4]	-0.419	1.212	0.120	1	0.729	0.658	0.061	7.071
[ExpMBSB=5]	-0.334	1.250	0.071	1	0.789	0.716	0.062	8.302
[ExpMBSB=6]	-0.533	1.306	0.167	1	0.683	0.587	0.045	7.582
[ExpMBSB=7]	0 ^b			0				
[ExpD7=1]	2.807	1.044	7.237	1	0.007	16.566	2.143	128.092
[ExpD7=2]	2.561	0.962	7.090	1	0.008	12.945	1.966	85.250
[ExpD7=3]	1.994	1.001	3.966	1	0.046	7.341	1.032	52.225
[ExpD7=4]	1.406	0.999	1.980	1	0.159	4.080	0.576	28.916
[ExpD7=5]	1.233	1.011	1.487	1	0.223	3.431	0.473	24.885
[ExpD7=6]	1.153	1.031	1.251	1	0.263	3.169	0.420	23.922
[ExpD7=7]	0 ^b			0				

a. The reference category is: Control Group.

b. This parameter is set to zero because it is redundant.