THE MERE EXPOSURE EFFECT AND IN-GAME ADVERTISING

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Abstract

of

THE MERE EXPOSURE EFFECT AND IN-GAME ADVERTISING

by

Mary Helene Strand

This thesis explores the effectiveness of the use of in-game advertising for persuasion. The theory of Mere Exposure was used to develop the method and frame the data collection and analysis. For purposes of data collection, 143 participants (73 experimental, 70 control) played either a video game that was modified to expose them to an advertisement, or an unmodified version of the video game. Participants then completed questionnaires regarding recall, product liking, game liking, and video game experience. Statistical analysis showed that placing an advertisement within a video game generates recall of the product or brand embedded. The use of in-game ads, however, did not influence liking of the brand. In addition, there was no correlation between recall and level of experience of the participant. Finally, there was no conclusive evidence of a correlation between liking of the game itself, and liking of the product featured in the game.

_______________________, Committee Chair
Dr. Diego Bonilla

_______________________
Date

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A primary goal as an advertiser is to persuade people to purchase a product. To accomplish this goal, the advertiser must create product awareness. However, when newspapers, magazines, billboards, television, and radio are already full of competitors, it becomes difficult to get attention from the target audience. In fact, the target audience is increasingly spending its time using new media, as opposed to traditional. On average, an 18-34 year-old male spends 12.8 hours per week playing video games, versus 9.8 hours per week watching television (IGA Worldwide, 2007). The more drastic statistic is in the habits of an “extreme gamer.” For example, extreme gamers spend up to 45 hours a week playing video games (Riley, 2007, NPD; Riley, 2008, U.S.). These extreme gamers tend to be males ages 18-34, but the age and sex of heavy gamers is continually expanding to include most ages and females (Riley, 2007, Purchasing; Riley & Bogarty, 2006). This heavy-gamer group is also a heavy-spending group (Riley, 2007, Purchasing), which makes it very appealing to advertisers.

The significant amount of time this group spends in new media, and the level of their spending, indicate that it is important for marketers to turn their attention to video games as media for persuasion. Further, recent marketing studies indicate that video games’ unique attributes and ability to hold a person’s attention make them a successful vehicle for advertising (Loughrey, 2005). Many marketers have already seen the potential and have used games as draw for a product. Take, for example, Coke’s advertising campaign with World of Warcraft (WoW) in China. In this campaign, characters from the
massively multiplayer online role-playing game, WoW, were incorporated into soda-bottle labels (Beavis, 2007). The characters themselves represent the different races gamers can choose from when creating their own characters, and so on a greater level, are representative of a player’s involvement with the game. More recently, Mountain Dew ran a similar campaign using WoW: Mountain Dew: Game Fuel (Figure 1. PepsiCo, 2009).

Due to the highly lucrative possibilities opened up from advertising in and around video games, marketing ingenuity has developed the concept of “advergaming,” which has lead to the creation of organizations such as IGA Worldwide, Massive Incorporated, and Skyworks Technologies (to name a few) to promote the concept and earn profit (IGA Worldwide, 2007; Massive Incorporated, 2007.; Skyworks Technologies, 2006; Svahn, 2005).

The venue of this type of advertising is “games wholly, partially, or at least to some degree designed to carry a message designed to persuade a player to change a behavior in the world outside the magic circle of the game” (Svahn, 2005, p. 187). This
can mean either the game is created to carry a message or that it simply has had a message integrated into the experience of gameplay.

A game can be defined as “a goal-directed and competitive activity conducted within a framework of agreed rules” (Lindley, 2003, p. 2). This could be anything from a sport (football, basketball, etc), to video games, to gambling, or to two small children playing cops and robbers. For the purposes of this discussion, “game” and “gaming” is not to be confused with any of these activities, and instead is in reference to video games (console and PC) and “gamer” is in reference to those who play video games.

Different studies on advergaming have yielded varied results. However, as a whole, market spending indicates that advertising in games is the new future of advertising. In 2007 alone, marketers spent $500 million toward in-game advertising and that number is expected to reach one billion dollars worldwide by 2012 (Shields, 2008, U.S.). TNS Media Intelligence reports that in 2007, total U.S. advertising expenditures totaled just under $149 billion (Wells, 2008). According to GroupM Forecast, in 2008 the US spent over $167 billion. Worldwide in 2008, $440 billion was spent on advertising (Smith & Wolfe, 2009). In comparison to these numbers one billion dollars is small. However, the forecast given by Shields (2008, U.S.) indicates that this niche has the potential to grow quickly and makeup a large portion of advertising expenditures.

These same studies show that the target audience (male 18-34) spends more time playing video games than watching television, 12.8 hours playing video games versus 9.8 hours watching television (IGA Worldwide, 2007). Advergaming has the potential to hold attention for much longer than traditional television-based advertising. Games can
hold between 5 and 35 minutes of attention (Skyworks Technologies, 2006), creating a situation where games can generate one billion potential “eyeball hours” for advertising (IGA Worldwide, 2007). Further, a recent Nielsen Game study revealed that 36% of gamers who were exposed to an in-game ad actually purchased, discussed, or researched that item (Beirne, 2008).

While this phenomenon has clear relevance for marketing and video-gaming, it is important to understand that advertising in and around games is important to the communication discipline for a very clear reason: persuasion. Persuasion is an important topic in both the communication studies discipline and the marketing field. This communication goal has generated many models within both areas of study.

Sometimes, unfortunately, there is little crossover between the fields and avenues of research, even when sharing theories seems like a natural progression of study. In particular, there is one theory that is not mentioned within in-game advertising studies, but due to its influential findings in the marketing field and place in the communication studies discipline, should be. This is the Mere Exposure Effect. Because of the results of marketing studies on advertising utilizing mere exposure, and the suggestive results of studies on advertising ingames, the mere-exposure effect should be explored as a possible framework for describing the persuasiveness of advertising within video games.

Because there are so few studies available on advertising in video games, and those that exist are varied in their conclusions on the effectiveness of advertising in video games, it is important to find a theory that will help academics and marketers alike to better understand the effects of advertising in games. Further, it is important to review
thoroughly the studies involving in-game advertising and the vast numbers of advertising studies using the mere-exposure effect to predict, explain, and control the persuasiveness of advertising in video games. With this information, it will be possible to approach in-game advertising through the lens of the mere-exposure effect. That is, is mere exposure to an in-game advertisement enough to create a change in attitude toward a product?
Chapter 2

BACKGROUND OF THE STUDY

The World of Gaming

Gamers have created their own culture surrounding video games. This group has its own language, which has been developed around the use and discussion of video games. It even has its own understanding of games itself. Understanding the language and cultural concepts within this specific group is of great importance for any advertiser if they truly want to persuade its members.

Learning the different patterns within this specific cultural group is an activity that advertisers and researchers should consider. Knowing how a person or group of people interacts amongst themselves and how they react to situations is necessary for learning how to persuade. Further, the environment in which a culture is developed and customs are practiced must be understood before modification of that environment for the purposes of a study or influence can take place.

As such, a few moments will be designated to take a closer look at this environment to better understand its importance in the communication studies field. This section discusses video game ‘genres’ and the types of advertisements that can be found within these games.

Genre. There are only a few academic written works on game genres; therefore, for the following discussion on genre, it is appropriate to use those that exist in combination with various gamer sites that are available. After all, those who play video games influence how genres are shaped by software developers. It is the reactions and
choices of the gamers that ultimately become the data for those who study video games. Before defining genres, it is important to point out that the lines between some types can be confusing, and, depending on the author of the analysis, the numbers and types will differ. For example, in Apperley’s (2006) critical study of games, only four different genres are identified. However, Wolf (2001) identifies 25. The Gamer’s Hell website breaks down their information into eight genres, and Ted Stahl’s (2005) discussion, History of Computing Project, lists thirteen. Using a combination of these sources as a guide, 11 different genres are presented here.

**Figure 2.** First person shooter. A screenshot of the first person shooter, *Quake IV*. Screenshot taken from Gamers Hell Web site (2005).
The first common type of genre is action or first person shooter (FPS). Lindley (2003) defines this type of game as “shoot while being hit, strafe to hiding spot, and take health, repeat” (p. 2). Essentially, the goal is to complete levels under conditions of shooting and being shot at. Some examples of this type of game are Quake, Halo, Doom, Fall Out, Half Life, and Unreal Tournament (Hong, 2005; Largest, 2009). Figure 2 is a screenshot from Quake IV (Gamers Hell, 2005).

A second type of game is called a role-playing game (RPG). In these games, characters move about in the world with various goals to accomplish and enemies to defeat while exploring and adding strength to their character. Lindley (2003) defines this as, “character to lure enemy from group, all characters kill enemy, take health, repeat” (p. 2). These types of games evolved from the classic pen and paper games such as Dungeons and Dragons and War Hammer (Stahl, 2005). Examples of these games today

Figure 3. Role-playing game. A screenshot of the role-playing game, Final Fantasy 12. Screenshot taken from RPGamer (2006).
are the *Warcraft* and *Final Fantasy* series (Gamasutra, 2009; Largest, 2009). RPGs can also be found in the form of Massively Multiplayer Online Role-Playing Games (MMORPGs) such as *World of Warcraft*. Figure 3 is a screen shot from *Final Fantasy 12*, a popular RPG (RPGamer, 2009).

![Adventure game](image)

*Figure 4. Adventure game. A screenshot of the adventure game, *The Legend of Zelda*. Screenshot taken from Ganon’s Tower (1998).*

Adventure games are similar to RPGs in that they involve a character that explores while defeating enemies and adding to his or her strength. Wolf (2001) suggests that an adventure game can be defined as game with a more complex goal than escaping or killing (usually there are quests in addition to the main objective) and set in a created world that has multiple destinations that can be traveled to and from in a non-linear fashion. These games were primarily text based at their inception but have developed into games like the *Legend of Zelda* and the *Secret of Monkey Island* (Gamasutra, n.d.). Figure 4 is a screenshot from the *Legend of Zelda* (Gannon’s Tower, 1998).
A fourth type of game genre are avatar world games, which have no real goal except to interact with other avatar characters in a virtual world (Lindley, 2003). An avatar is a computer generated image of the character played representing the player in the world. During interaction, characters acquire goods representative of materialistic items in the real world. For example, these items and services can include jewelry, hairstyles, clothes, and shoes. They can even get jobs, attend concerts, and purchase homes. Figure 5 is an example of an avatar world: Second Life (Bellman, 2008).

A fifth genre is the sports games category. These video games can allow a player to create and customize a team for play (Stahl, 2005), play a single player in a team, or play solo (as in golf). These games can include basketball, baseball, soccer, hockey, tennis, golf, and football. Some examples are shown in Figure 6, *EA Sports Madden NFL* series (Sports Gamer, 2007), and Figure 7, *Tiger Woods PGA Tour* (EA Sports, 2008).

Figure 8. Turn-based strategy. A screen shot of the turn-based strategy game, *Civilization IV* (IGN, 2008)
Sixth, there are strategy games. These games are often turn based (but can be in real time) and give the player a sense of control over an event (Stahl, 2005). Players are often in control of an army and have various military goals or are in control of an entire civilization. Turn based limits a player to a certain number of moves per turn before the next player gets a chance to make their moves. Real-time strategy is a free-for-all in terms of how many actions players can engage in at any given time; game play occurs in real time. An example of a turn-based strategy game is shown in Figure 8, *Sid Meyer’s Civilization* (IGN, 2008). A real-time strategy game example is shown in Figure 9, the *Warcraft* series (Blizzard Entertainment, 2009). Other examples include *Command and Conquer*, and *Final Fantasy Tactics*.
A seventh genre is fighting games. These games usually pit one person against a second player or computer in a battle of button-pushing fighting skills and hand-eye coordination (Stahl, 2005). One example is shown in Figure 10, *Mortal Kombat* (IJan, 1998). Others include *Tekken, Fight Night, Street Fighter,* and *Soul Calibur*. Similar to fighting games are combat games (Wolf, 2001). These actually sit somewhere between FPS and fighting games. The differences between combat and fighting games is that in combat games the players are shooting at each other in combat. Fighting games are usually hand-to-hand. The differences between a first person shooter and a combat game is that a first person shooter is usually one player trying to get through sequential levels for an ultimate objective (one player against many non player characters) while the combat game involves characters fighting against each other with equal resources. Sometimes there are levels within a first person shooter that can be set to combat or “death matches.” For ease of understanding, combat games may be considered a part of both categories.
Figure 11. 2D platform game. A screenshot of *Yoshi’s Island* (Unicorn Lynx, 2007).

Figure 12. 3D platform game. A screenshot of *The Legend of Spyro – The Eternal Night* (GameSpot, 2008).

An eighth example of a genre is the platform game (Wolf, 2001; Stahl, 2005). These games involve a character moving through a series of linear levels. The character is viewed from the side, or more recently, a platform is set up so that the character can move in three dimensions instead of from left to right. Usually there is a fair amount of
running, jumping, and timing involved. The goal is to successfully complete each level while avoiding or terminating various enemies. Some examples are *Donkey Kong*, *Super Mario Bros*, *Yoshi’s Island* (Unicorn Lynx, 2007), and *Spyro the Dragon* (Game Spot, 2008).

![Figure 13. Simulation/racing game. A screenshot of *Burnout: Paradise* (IGN, 2008).](image)

Ninth is the simulation game genre (Apperley, 2006; Stahl, 2005). These involve the simulation of something like driving, racing, flying, or even building a city. The simulation most commonly seen in video game studies is the driving simulations or racing game. A racing game is played with the intent of covering more ground than one’s opponent (Wolf, 2001). Depending on the type of game, there can be more or less goals involved. For example, *Gran Turismo* allows you build up your car, win money, buy cars, and so forth. The objective is to win on the track, arcade style, but the goal is accomplished through a series of choices as a driver in terms of car building and driving
(Broady, 1998). *Burnout Paradise* (Figure 13), on the other hand, involves details such as having to repair a crashed car, replace tires, and get more gas. It is an open world play instead of an enclosed-circuit racing experience. There is “normal play,” during which one can race, explore, or simply crash into things. Then there is “showtime” mode, similar to “crash mode” found in other versions of the Burnout games, which is made to maximize gleeful destruction of cars and property utilizing outrageous stunts (Navarro, 2008). Figure 12 is a screenshot from *Burnout Paradise* (IGN, 2008).

![Figure 13. Burnout Paradise (IGN, 2008).](image)

*Tenth* is the group that Gamer’s Hell (n.d.) calls casual. It includes the genres of puzzle, shootemup, gambling, card games, board games, chase, collecting, and catching that Wolf (2001) delineates. These are simple games with no story or narrative. The goals involve solving puzzles or earning points. More and more often, modern puzzle games are evolving into their own genre, such as with games like the *Seventh Guest*, but for simplicity sake, puzzle games will be considered a casual game in this discussion. Figure 14 is an example of a casual game called *Diamond Fever* (Gamers Hell, 2008).

![Figure 14. Casual games. A screenshot of Diamond Fever (Gamers Hell, 2008).](image)
Finally, a new type of video has emerged over the last several years with the creation of games like Dance Dance Revolution, Guitar Hero, and Rock Band. This eleventh genre could be classified as “music” based games or rhythm games (Stahl, 2005). They allow multiple players to participate in a rhythm-matching exercise that allows players to dance or make music. Figure 15 is a screenshot of Rock Band (IGN, 2007).

As video games consoles develop and personal computing technologies become more advanced, game genres evolve, merge, and change. As such, the number and types of genres is a fluid thing. Even so, looking at these few genres of games one can begin to see the advertising potential. Each type of game attracts different players and different opportunities for in-game advertising or creating a game exclusively for advertising.
In-game advertising: Types and systems. The form of an advertisement is not limited to the type of video game in which they are embedded. Within video games, programmers can embed various types of advertisements. There are billboards/banners which simply place an ad on an environment feature (Chaney, Lin, & Chaney, 2004; Nicovich, 2005; Svahn, 2005) and there are advertisements in which the gamer directly interacts with the product, such as choosing a specific type of product to play, or as in the game Rock Band, the player uses a Fender Stratocaster guitar (Svahn, 2005), which can be considered product placement. There are also games developed for the sole purpose of carrying an advertisement, such as the bop a pop game at kids.icecream.com, or some of the Wonka games made by Left Brain Games. Figure 16 is an example of this type.

Figure 16. Advergame for Wonka Sweet Tarts, Sour City Dash. Figure shows character looking to collect Sweet Tarts.

Regardless of the type of advertisement, there are various ways in which advergaming is intended to work. Svahn (2005) gives examples of systems for
advergaming. These systems are associative, illustrative, and demonstrative. A game may have one or more of these systems (Svahn, 2005). A clear example of these systems at work together is seen in IGA Worldwide’s (2007) campaign for Ben Sherman clothing line. For example, what Svahn (2005) calls “associative” systems of advertising, create a situation in which products advertised in games are associated with the lifestyle portrayed in game. In IGA Worldwide’s (2007) campaign, gamers drive high-end vehicles and also choose clothing for their character to wear. The clothing was meant to be an association with a type of life style. This is simultaneously an example of “illustrative” systems (Svahn, 2005). Players somehow directly interact with the product. In the advergame, players were actively choosing their clothing. Finally, there is a system called “demonstrative” (Svahn, 2005). This same game had a demonstrative component, not related to clothing, but to the cars themselves. The outcome and the play of the race depend on the cars themselves and what the different types of cars bring to the game in terms of attributes of speed, handling, suspension, and so forth. This campaign is an example of how there are different ways to advertise within a game.

Jane Chen, from Ya Ya Media, clarified in an interview the difference between each system and gives examples of each one working independently (Afshar, Jones, & Banerjee, 2004). Using simple advergame examples, she described each system. Associative features a brand not a product. Chen’s example was Jack Daniel’s Real Pool. Not one player or non-player character is drinking whisky, nor is any bottles visible; however, the logos are integrated into the background.
Illustrative systems feature the actual product, not just the brand name. The player will somehow interact with the product, but the use of said product does not affect gameplay. For example, in the video game Rock Band, players can purchase specific clothing brands, such as Vans, or play a specific guitar, such as a Fender Stratocaster. While the player interacts with these brands, they in no way affect the outcome of the game. Chen suggests (Afshar et al, 2004) that true illustrative equates to the product being completely incidental to gameplay.

Finally, there is a demonstrative system, which means that the success of gameplay is related to the product being advertised. For example, in a racing game, a player may choose between different brands of cars to complete the race. In a game such as Honda Adventure Race, the Honda is clearly set up to be integral in completing the game. Chen suggests (Afshar et al, 2004), “Brands have the opportunity of making their products ‘heroes’ in the game” (p. 383).

A final venue for advertising is that of the “Easter Egg” (EEGG). While this element is not always used for advertising purposes, it has great potential and is occasionally used for exposure, even if as a humorous element. According to Wolf and Wolf (2009), an Eegg is a hidden feature that a programmer has embedded in software. These must be undocumented and nonobvious, reproducible, placed with intent and for a purpose, nonmalicious, and entertaining. Jonas (2009) describes EEGGs as obscure messages or features that are hidden within media. IBM's 2002 (Karger & Schell) security evaluation suggested that Easter Eggs are a 3"concealed piece of code that do humorous things when activated" and are primarily different from malicious code in that
the developer has a different intent, although still not usually authorized by the
development managers. Easter Eggs have both entertainment value and great potential for
advertising value.

These many systems of advertising within a game show just how diverse
advergaming can be; advergaming can vary with intent and venue.

**In-game advertising: A new business model.** In-game advertising has created a
market for companies to create small, arcade style video games with the intent of
persuasion. There are many companies around that make these games. Table 1 lists links
to a few of the sites that create advergames as a primary or secondary marketing tool; this
is not a comprehensive list, but it gives a basic idea of the number of sites available.
These companies create advergames as marketing solutions for many businesses. Not all
of the sites specialize in advergaming, but they have come to include it as a part of their
marketing services. Obviously, the list of sites that host advergames, or companies that
have used advergames would be much larger as each advergaming/marketing company
handles multiple clients.
Table 1

Advergaming Companies

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Website 1</th>
<th>Website 2</th>
<th>Website 3</th>
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The companies Table 1 tend to stick to specific brands, such as Wonka Candy or Coca Cola, often targeting children and their eating habits (Moore, 2006). Entertainment products, as in games made to advertise a movie, are also common. Beyond basic advertising, however, in-game advertising has grown into a prevalent way for not only marketers to create branding, but for people to build familiarity and send persuasive messages. For example, there are several instances in the last 15 years where a person or group has used a video game to build familiarity and a following. In 1996 a FPS called
Quake entered into the world. The rock band, *Nine Inch Nails* (NIN), created some of the music for that soundtrack. An added bonus to the exposure the video game credits afforded them, one of the EasterEggs within the game subliminally reinforced the band name. The ammunition (ammo) for a nail gun used as a weapon in the game was a box of nails with the band logo, NIN.

The NIN example shows the ability of a person or persons to embed a persuasive message within a video game. Since this time, people have realized the power of using new media in persuasion. Specifically, the use of video games to target specific age groups and audience types. Over time, video games are becoming recognized as a mass medium with the capability of reaching many people. For example, starting in the 2000s, politicians have seen the benefits video games offer.

In 2004, the GOP came out with a game called *John Kerry: Tax invaders*, and in 2008 McCain's presidential campaign came out with a simple Facebook application game called *Pork Invaders* (Vedrashko, 2008). Unlike *Quake*, these are simple arcade style games that were created in the style of a game called *Space Invaders*.

Moving more in the direction of more aesthetically pleasing and technically advanced scenarios, John Brennan (Good, 2008), an MFA student, created a cinematic version of the 2008 presidential candidates, John McCain and Barack Obama, in a FPS called *Half-Life 2*. So far, only a video has been created, but Brennan’s objective was to create an interactive debate program within the game; instead of watching a static video, information and issues could be updated. The goal was to create a space in *Half Life 2* that will operate much like political cartoons (Electronic Consumer Arts, 2008).
Finally, in a much more recent version of using video games for branding and persuasion, during his campaign for the 2008 Presidential Election, President Obama purchased advertising space in several Xbox 360 Life games, including *Burnout Paradise* (Barrett, 2008; Ingram, 2008). The interesting thing about this move is that Obama directly targeted the same 18-34 year olds that marketers have been targeting with their in-game ads. Purchasing advertising space in online games through the XBox 360 Live is revolutionary because "live" means that the XBox 360 is connected to the internet and these spaces can be updated with campaign messages. Figure 18 shows examples of Obama’s ads (Barrett, 2008). Clearly, games are gaining ground as a venue for persuasion for not only brands, but also campaigns.

*Figure 17. President Obama’s ad space on the Xbox 360 (Barrett, 2008).*
Why do the people behind these scenarios believe that their actions could make a difference in the promotion of their ideas or brands, aside from the fact that many prominent people, such as Obama, have begun to use this form of persuasion? The answer could lie in the numbers associated with advertising in and around games. In-game advertising has been around for at least 20 years (Acar, 2007; Fitzgerald, 1993). In that time revenue and spending in and around online games alone has steadily increased (Skyworks Technologies, 2006). In 2007, marketers spent 500 million dollars on videogame advertising (in-game ads and advergames) (Shields, 2008, Report), a giant leap from the 185 million spent in 2005 (McClellan, 2005), and this number is expected to be one billion dollars by 2012 (Shields, 2008, Report). These advertising dollars go straight into the hands of the video game companies, and the deals made between gaming companies and advertisers are often quite substantial. For example, a three-year deal that Sony made with an advertiser was worth 100 million dollars (Fields, 2008).

These advertisements will continue to grow in their reach, as the video game market is expected to increase ten percent by 2012. Spending is projected to jump from the 42 billion dollars spent in 2007 to 68 billion dollars in 2012 (Bond, 2008). In the U.S. alone, gamers shelled out over 18.8 billion dollars last year (Riley, 2008, U.S.). It is clear how prevalent this phenomenon has become.

In-Game Advertising Effectiveness: Market Perspective

Edery and Mollick (2008) make the assertion that video games and advergames are changing the business model. The utilization of games for marketing and employee relations changes how businesses interact with their customers and with their employees.
Advertising in games is claimed to be more engaging than a static thirty second television spot, and can hold attention for longer periods of time. Not only do these ads target the very desirable 18-34 year old male, but as more women play games, the population of exposure expands (Skyworks Technologies, 2006). In fact, 21% of the total number of gamers are female (Riley & Bogarty, 2006). Further, gaming is not just expanding across gender; it is becoming a family activity (Riley, 2007, Playing).

According to the NPD group, extreme gamers are playing 45 hours a week, and these extreme gamers are 18-34 years old (Riley, 2007, NPD; Riley, 2008, Extreme). The young children group is also growing. Children ages 12-17 play approximately 10 hours a week (Riley, 2007, Amount). These populations of gamers, the heavy gamers, are also heavy spenders in the video game market (Riley, 2007, Purchasing; Thorson, 2007). With the population of heavy gamers growing, and the spending on video games contributing to this growing market, it is no surprise that video games have become an attractive venue for advertising (Macarthur & Oser, 2006; Fitzgerald, 1993).

High success rates seem to be very common in the results recorded from advergaming companies (IGA Worldwide, 2007; Massive Incorporated, 2007; Skyworks Technologies, 2007) and advertising methods range in type of game and advertisement. Continental Research conducted 12 studies on in-game advertising and recorded an average recall of 54% (Green & Gitel, 2009). Overall, this area of marketing and persuasion has been expanding noticeably.

Gamers are aware of in-game advertising. However, the question is whether these advertisements are persuasive enough to cause them to make a purchase. For example,
will they buy from CompUSA because they saw a billboard ad placed by IGA Worldwide in “Burnout Paradise?” Researchers have begun to study the effectiveness of this communication.

According to various marketing agencies and marketing research agencies, in-game advertising is where “it” is at, “it” being the advertising revenue. It is possible that this belief is bias, but current research is very persuasive. According to an IGA-Nielson study on advertising in games, most consumers (82%) do not mind in-game ads, and even respond favorably to them. There was also a 61% increase in positive affect toward products advertised in games when the consumer was surveyed after play (Landmark, 2008; Martin, 2008). Further, Green and Gitel suggest that the consumers of the game, and thus the persuasive message, go on to influence their friends’ purchases (2009).

As long as the advertisements are relevant, do not show up in game environments that do not support ads, like sci-fi or fantasy games (e.g., An advertisement for a soda in the middle of a forest that is a central location in a medieval-based fantasy games), and do not interrupt game play, gamers for the most part, are not disturbed by ads (Shields, 2008, Massive). Some even agree that under the right circumstances, advertisements can make game play more realistic (Landmark, 2008).

Of course, not all commentary on the topic is favorable. Many gamers are against advertising in their haven and have been forthcoming with their frustration and opinions on the data that marketing companies provide (Hill, 2008).
In-game Advertising Effectiveness: Academic Perspective

This interesting phenomenon has peaked the interest of the academic community. Within this community the conversation has ranged from supporting in-game advertising, to arguing that certain approaches simply do not work. Scholars have looked at billboard advertising vs. product placement, ideas about interactivity, presence and other individual factors such as game-playing experience that affect the relationship between the user and the medium, participants’ attitudes toward in-game advertising and advertising in general, and factors that might improve advertising impact.

While results regarding the effectiveness of in-game advertising and its processes vary, the conclusions of academic research generally agree upon the fact that in-game advertising does affect gamers. Researchers point out the validity of advertising within an interactive environment or game. Grigorovici (2003), for example, suggests that virtual environments are better than classic environments because they induce affective processing. In other words, there is a lower recall of actual products advertised, but there is an overall more favorable attitude towards the product.

The interactive nature of the environment may allow for this type of effect. Recent research supports this idea. That is, the level of interactivity within an environment may affect the value of a particular cue. Interactivity can be considered as the interaction between the user and the medium (Sundar & Kim, 2005; Heeter, 2001). In a 2005 study, Sundar and Kim used the principles of the Elaboration Likelihood Model, which is the idea that as the user becomes more involved, the advertisement is moved from a peripheral route to a more central path of processing, and interactivity. Sundar and
Kim (2005) exposed 48 participants to various websites with different types of advertisements (varying in interactivity level) and had the participants rate their perceptions of those advertisements. It was found that interactivity is an important aid for persuasion in online advertisements, and both the content of the webpage and the advertising itself were important parts of this interactivity. Interactivity was positively linked with attitude toward a brand. Sicilia, Ruiz, and Munuera (2005) also found that interactivity increases elaboration of information processing. By conducting a similar study, it was found that interactivity increases cognition. Later, Sicilia and Ruiz (2007) suggest that flow, or the holistic sensation one feels while doing an activity, impacts affect.

Also in-line with interactivity, Chung and Zhao (2004) conducted a study looking at low involvement users versus high involvement users and their clicking activity on websites, as well as perceived interactivity and memory of the advertisements. The study used a 2 x 3 between subjects design (the factors were personal motivation – high or low – and hyperlinks – three categories). The study hypothesized that interactivity increases involvement which increases memory. Interactivity is thought of as not just interaction with the system, but the control over information flow by the user. This hypothesis was confirmed by the results. In addition, Sohn, Leckenby, and Jee (2003) suggest that expected interactivity will affect how a user feels about the medium, and in turn, the content of the medium. What can be taken from this information is that there is a relationship between the medium and a user’s affect toward the content in the medium. A medium such as a video game, in which the participant is interacting with their
environment, the computer (non-player characters), and opponents (player characters), is, by nature, interactive. An interactive environment will influence a user's reaction to the information embedded in that environment. Of course, the processes by which persuasion occurs are disputed by academics. Further, the actual effect of placing ads in video games varies from study to study.

While this study will propose a new lens through which to study in-game advertising, it is important to look at each academic work and explain their reasoning. Once an overview of the scholarly conversation has been established, it will be easier to understand the argument for the proposed framework. These segments of conversation will be organized into several groups for better understanding. The first section will discuss various studies in terms of their conclusions on recall and memory of advertisements within games. The second section considers differences among participants as a variable in advertising effectiveness. The third section will look at studies that address affect toward a product or advertisement versus (or instead of) recall.

**Recall as a measure of effectiveness.** First, the question of recall is important. Many studies approach the question of effectiveness with how well the players can recall embedded advertisements. Studies tend to look at type of ad placement, individual characteristics of the participants, and the experience of playing the game itself. Chaney et al (2004) asked about the impact of billboards in gaming environments. Their research questions included, “What is the level of unaided recall of products/brands? Does game experience have an impact on level of recall? Does the inclusion of billboards affect game experience? And, is there an association between response to billboards and
purchase intent?” (Paragraph 17.) While their research model is asking if billboard ads in games are effective, they are making the assumption that recall is the appropriate measure, indicating that the effectiveness of an advertising campaign can be judged by recall. This is an understandable framework from which to operate as Chaney et al are interested in mainly information processing.

In Chaney et al’s study, gamers played a game with embedded billboards and were surveyed about product recall. The players were also surveyed on gaming experience level, and also their personal experiences in the game. Players were then questioned in an internet-relay chat room (IRC). The study found that there was limited billboard recall, and experience of the gamer did not really have an effect. The players were “too busy killing” or were “in the zone.” When advertisements were remembered, it was because a specific meeting point in the game was named after a brand (such as the Red Bull Tower) or the players had used microphones to interact with each other, so the verbal repetition may have had an impact on information processing and recall. The researchers attribute this finding to limited information processing. That is, the gamers were too focused on the game play itself to have any meaningful processing of the advertisement. This is similar to the idea of “limited cognitive resources” (Baran & Davis, 2006), an idea in information processing that suggests that individuals have only a limited amount of cognitive resources to be allocated to different tasks. Essentially, it was found that advertising in games is not effective because players are too busy interacting with each other. They cannot remember an ad unless they have direct interaction with
that advertisement. So, if the advertisement is a central focus of the game, then the players ought to remember the advertisement.

Grigorovici and Constantin (2004) conducted a study addressing billboard ads versus product placement and high arousal versus low arousal. Part of this study was based in the idea that the videogame environment leads the player to affectively process information (process information based on liking). In terms of billboards versus product placement, it was hypothesized that billboards would effect a higher recall and recognition than product placement. By placing various brands within the game in either a billboard or product placement format and then testing for recall and recognition, the authors concluded that billboards did, in fact, create a situation in which recall and recognition of the brand was higher.

In another study on in-game advertising, Schneider and Cornwell (2005) used a simulation/racing game as their medium. The game was embedded with banner advertisements. The researchers chose to look at ad placement in recall and recognition, flow in recall and recognition, and finally, gamer experience in recall and recognition (which will be discussed below). They found that the more prominent the placement of an advertisement, the higher recall and recognition the participants elicited. When Schneider and Cornwell looked at their qualitative data, they found that players would remember a banner specifically because it was large and vibrant or because the brand was already known to them. While the researchers also looked at the concept of flow, hypothesizing that the more flow a player experienced, the higher recall and recognition would be, there was not enough support to make any conclusions.
Nelson (2002) examined recall with a delay as one of the manipulations. That is, participants engaged in game play and then were tested for recall directly after playing the game and then again after five months. The other manipulation dealt with the prominence of the advertisement and whether that advertisement was well-known or local. The results indicated that the players were able to recall around 1/4 of the advertisements directly after game play, and about 1/10 after the delay. Brands were more likely to be recalled if the advertisement was prominently displayed and if it was a lesser known brand.

Sharma, Mizerski, and Lee (2007) also examined recall of advertisements embedded within a game (and attitude change toward product, to be discussed below). The study used a racing game that gives the player the option to choose their vehicle. The researchers, using this to their benefit, instructed their participants to choose a type of vehicle the researcher previously decided upon. This created the test groups. The control group drove an Audi A4, and the two experimental groups drove a Holden Monaro. Data regarding the participants’ attitudes toward the Holden were recorded prior to game play. This data was used to subdivide further the experimental condition into two groups, either high positive attitude toward the Holden or low positive attitude toward the Holden. At the end of the study, it was found that the participants racing with the Holden (both groups) had a significantly higher outright average for recall of the car the participant used in the study than the control group (Audi). Further, the experimental group with the high pre-existing attitude had greater recall than the group with the low pre-existing attitude. However, there was a significantly uneven distribution of participants. That is,
the experimental condition had 61 participants and the control group had 38. The experimental group was subdivided further based on pre-existing attitudes, separating participants into the low attitude group, which included only 18 participants, and the high attitude group, which included 43 participants.

In another way to consider recall, Nelson, Keum, and Yaros (2006) looked at recall differences between participants playing a video game and participants watching someone else play a video game, as well as perceived persuasion, and telepresence. This study used a racing game that was embedded with advertisements that were either (a) real brands or (b) fake brands. In this particular case, the researchers used Coca-Cola and Gap Jeans in one condition, and Crank-Cola and Gem Jeans in the other condition. It was found that overall, more real-brands were recalled than fictitious and that spectators recalled both more fictitious and real brand advertisements. The authors suggest that advertisers might consider embedding advertisements in the cinematic portions of the video game (short interludes to introduce levels or storyline) during which the player is watching. Telepresence (or involvement with game) was positively correlated to the perceived persuasion, but had no influence on recall. This finding directly contradicts the studies on interactivity, which state that interactivity should increase recall and liking (Chung & Zhao, 2004; Sicilia et al., 2005; Sicilia & Ruiz; 2007).

Finally, Yang, Roskos-Ewoldsen, Dinu, and Arpan (2006) examined different types of recall within two different types of video games. They embedded ads within a racing game and a sports game. In this study, researchers embedded brand logos within the two types of games, and then tested recall through implicit and explicit means. That is,
participants filled out a word fragment questionnaire and then were tested on outright recall. Recall was found to be significantly higher than chance (i.e., the score a participant would have received if they guessed). However, the study does mention the possibility that the participants were primed to be able to recall the in-game ads because they completed a questionnaire testing implicit recall before the free recall, meaning they could have remembered the brands because of the questionnaire and not necessarily the game. Between implicit recall and explicit recall, implicit was found to be higher.

These studies vary not only in their overall findings (in-game advertising effectiveness), but also in their reasoning behind the results. Overall, however, these studies suggest players have a significant possibility of recalling having seen an advertisement that was displayed in a video game, and maybe even recalling the details of an advertisement placed within a videogame. They also suggest that there are various factors that may affect recall and recognition. One of these factors that is suggested to affect recall is the experience of the player.

**Gamer experience as a factor in recall effectiveness.** Several studies mentioned above also state that gamer characteristics, such as experience in gaming, might affect recognition and recall of advertisements placed in a video game. The results, however, vary amongst the studies. This is not entirely surprising considering the varied results already noted in the above three studies. The basic argument, however, is that the more experienced a player is, the better he or she will recall advertisements.

Chaney et al (2004) studied the effect of billboards within the gaming environment and whether player experience is a potential variable. They surveyed their
players as to their age, years spent playing games, and how often they play. The researchers then compared this information with their results. Their assertion was that the more experienced gamer would have more cognitive resources available to notice environmental details. However, the results indicated that the attention given to the game itself as opposed to the information not directly associated with the game (billboard ads) was equal across all levels of gaming experience.

It has also been found that gamer experience is a factor that interacts with other elements. Lee and Faber (2007) examined gamer how experience interacts with proximity (location of the ad), congruency of the advertisement, and game involvement to affect memory. It was found that in the case of experienced players, while they could remember advertisements that were more centrally located than advertisements that were peripherally located, the level of involvement affects recall. That is, the more involved an experienced gamer was, the fewer advertisements they would recall. This effect did not occur in the case of a less experienced gamer, although they too were more likely to remember a brand more centrally placed. In the case of brands that were either congruent (made sense in the context of the game) or incongruent, it was found that less experienced gamers tended to remember the highly incongruent advertisements. The researchers suggest that this is because the newer gamers are uncertain of what elements in the game are necessary to focus on, leaving them more open to noticing peculiar environment elements.

Schneider and Cornwell (2005) also dedicated a portion of their study to the idea that gamer experience will influence memory of advertisements. The researchers looked
at both recall and recognition of advertisements and compared the averages of those results amongst the groups of experienced and novice players. Unlike Chaney et al (2004), Schneider and Cornwell (2005) found that the more experienced players had both higher recall and higher recognition of advertisements than did the novice players.

Similar to the studies that address straight recall outside of gamer characteristics, the results for studies that address individual characteristics vary. There is neither a theory that seems to be a best fit for looking at the problem of in-game advertising, nor a theory that can generalize to all of the varied experimental elements. Researchers are in disagreement on whether more experienced gamers will recall more (Schneider & Cornwell, 2005), novice players will remember more (Lee & Faber, 2007), or both groups will recall the same number of advertisements (Chaney et al., 2004). Even though the results are not consistent, these studies do share the argument being tested: the more experienced player has more cognitive resources available to devote to things other than learning how to navigate the game.

**Positive affect as a measure of recall effectiveness.** In 2003, Grigorovici suggested that virtual environments are a better vehicle for advertising than classic television or print advertising environments. The assertion is that because virtual environments are more interactive, affective processing will take place. That is, users will process information with greater depth, making them more aware of the product, but less aware of the fact there is a persuasive message. Because of this, advertisements in video games should be better able to persuade users.
In a simple experimental design, Sharma et al (2007) examined affect toward products in a game to determine if advertising in games is an effective method for introducing consumers to brands they had previously been unfamiliar with. This experiment looked at the influence of attitude toward a brand on attitude change. The researchers gathered participants and had them play a racing game that featured one of two car brands. The participants completed a questionnaire to determine their attitude toward their car at the outset of the study. They were then assigned to a high or low attitude group for the purposes of comparing data. Participants were either in a group driving an Audi (control), driving a Holden with a positive attitude, or driving a Holden with a low attitude toward the car. The study found that participants with a low attitude toward the Holden had a significant increase in attitude, while the players who already had high esteem for the car decreased in attitude toward the car. The distribution of participants in the three groups, however, was extremely uneven (control = 38, low attitude = 18; high attitude = 43), making it difficult to generalize.

Sharma et al (2007) showed that when a brand is already well-liked, exposure reduces liking, whereas with a lesser-known brand, liking increases. Mau, Silberer, and Constien (2008) found a similar result in their study. Participants played an online FPS embedded with advertisements, both familiar and unfamiliar. They were questioned on recall of advertisements, liking of advertisements, and liking of the game. It was found that the more familiar a brand was, the better participants were able to recall having seen it. However, the more familiar brand’s liking score was reduced with exposure, while the unfamiliar brand’s liking score increased with exposure. It was also found that attitude
toward the game, itself, and toward the brand influence the overall attitude toward the advertisement. Placing advertisements in the game at all was found to decrease liking for the game itself.

Other studies also tend to agree that predisposed attitude toward advertising and toward advertising in games will affect the attitudes toward the products advertised in games (Nelson, Keum, & Yaros, 2004; Winkler & Buckler, 2006) such that if the attitude is positive toward advertising, so will the attitude toward the product advertised. Nelson et al (2004) conducted an empirical survey on gamers’ perceptions about advertisements and their perceived buying habits as a result of those advertisements. The surveys were collected during a “netnography.” A netnography is an ethnography conducted on the internet (paragraph 8). Their findings were that the attitude toward those ads, and about their effectiveness, were partially mediated by attitudes in general about product placement. Those gamers who had more positive feelings toward product placement in games rated more positively the effects of those advertisements on their purchasing habits. Some players actually appreciated the advertisements, and reportedly conducted product research after exposure.

Winkler and Buckner (2006) did a study similar to Nelson et al’s (2004) in which they also asked about attitudes toward product placement in games. Some of their findings challenge those of Nelson et al (2004). Winkler and Buckner (2006) asked about product/brand recall and whether or not the attitude towards product placement was related toward the attitudes towards advertising in general. The survey employed a sample of 80 gamers who played an advergame and then filled out a questionnaire. They
found that gamers are actually more receptive to advertisements, or at least brands of products already known to them. They also found that those gamers who were positive about advertising in general were not necessarily positive about advertising in games, which is contradictory to the findings of Nelson et al (2004).

These differences in gamers' receptiveness toward in-game advertising may be explained by another set of research. In this set, it is suggested that the advertisements need to match, or be relevant to, the game that they are advertised within or that the video game itself is considered to be an acceptable vehicle for the advertising. While Nelson (2002), as previously mentioned, showed that when a brand was unfamiliar, it was easier to recall than familiar brands, and Lee and Faber (2007) demonstrated that in some cases, a brand that stands out as being incongruent to the game was more likely to be noticed, there are some compelling studies that suggest congruency is important. In 2002, Nelson found that gamers tended to agree that the practice of in-game advertising was not particularly deceptive. In fact, as long as the game was sports or racing related, the advertisements are considered acceptable and actually enhance the gaming experience. That is, as mentioned previously, it is acceptable to see a soda or food advertisement in a racing game or maybe a modern city, but it is not acceptable to see an advertisement in a game set in a medieval era or a world that is not conducive to advertisements, for example, *Super Mario Bros*.

Wise, Bolls, Kim, Venkataraman, and Meyer (2008) supported Nelson's (2002) finding by explaining that advertisements need to thematically match the video game. Specifically, they suggest that when designing an advergame, the product and game be
thematically congruent. The study used a travel company as their product and used
advergames that were considered to be either highly relevant to travel (*Find Your Hotel*
or *Gondeliero*) or incongruent to travel (*Paper Football* or *Sink the Putt*). The researchers
instructed their participants to play the game assigned to them. They were either in a
group playing a low-congruency game or high-congruency game. The product advertised
was Orbitz. Wise et al (2008) hypothesized that the attitude toward the game would
impact attitude toward the brand more when the brand was congruent to the theme of the
game. It was found that the attitude toward the game influenced the attitude toward the
brand only when there is a strong connection between the brand advertised and the
theme of the game itself. Clearly, the connection between the brand and the game
influences affect toward the brand advertised.

Grigorovici and Constantin (2004) touched on presence, or feeling “present” in a
game, as a factor for in-game advertising. They also, however, looked at the
environment's ability to stimulate the player. The study found that the level of the
environment's arousal had no significant influence on recall, no influence on recognition,
and only partial influence on preference. In terms of presence, it was found that the more
realistic the game, the higher the recall of advertisements. Grigorovici and Constantin
(2004) also found that a higher level of engagement meant less recall. Similar to Nelson
et al (2006), it was found that the level of presence seems to affect persuasion more than
recall. This indicates that recall might not be necessary for persuasion.

In another study on presence, conducted by Nicovich (2005), a game, called
*Morrowind*, was modified to incorporate advertisements. The participants were asked to
play the game, and then were questioned on the experience. The purpose was to see how the factor of feeling present in a game affected judgment of advertisements. Two factors of presence were measured: spatial and psychological. These factors were tested against ethos and pathos of advertising judgment. It was found that the more involved a person is with the game, and the more presence they experience, the more impact the advertisement will have. Both the psychological and spatial features of presence have an influence on advertising judgment. Nicovich’s study has significance in pointing out that individual characteristics (such as their level of presence) mediate the effects of advertising.

Nelson et al (2006) looked at whether or not liking of a game and telepresence influence the persuasion element of an advertisement within a game (the other elements of this study were previously mentioned). Telepresence is the measure of how involved a player felt in the game, and liking was the attitude the gamer felt toward the game. The advertisements in the games were either real or ficticious. It was found that the more telepresence and liking toward the game a participant feels, the higher the perceived persuasion. That is, these items were positively correlated. Nelson et al (2006) also found that telepresence actually mediated the liking's affect on percieved persuasion, but only for real brands (which can also be translated to brands that are familiar). It was also found that telepresence had no significant affect on recall.

These studies on presence seem to indicate that the level of involvement will affect persuasion, but not necessarily recall. This is interesting as many of the advertising studies covered thus far indicated that recall is the important measure of advertising
effectiveness. These results, however, seem to suggest otherwise. Glass (2007) and Acar (2007) do not use recall as the prominent measure. Instead, they have participants compare products, measuring intent to purchase through product ratings and positive affect.

In a study on product placement in games and liking versus recall, Glass (2007) argued that the gamers do not really have to remember the advertisement to still rate the product as “good.” In a study that used product placement in a fight genre game, it was found that positive responses to the in-game product happened more quickly than to out-of-game products and that the gamers had no explicit recall of the ad. Glass used product placement in a game called "Fight Night 3." The product was either on the character or on a billboard in the arena where the fights took place. Before play, the participants completed a survey in which they rated different brands. Some of these brands would appear in the game, and some would not. After the players completed their allotted time for play, they did a categorizing exercise again. These exercises were timed. The participants took longer to categorize in-game brands than equally rated out of game brands as "bad." Similarly, they placed in-game brands into a "good" category faster than they categorized equally rated out-of-game brands. Finally, participants could not recall which brands they had seen in the game. Therefore, Glass concluded that the advertisements within the game help to facilitate decision-making, whether or not the advertisement, itself, is remembered.

Finally, there is the suggestion that familiarity influences intent to purchase. Acar (2007) completed a study using incidental ad exposure as the main theory. That is, the
placement of the ad itself is important, such that the closer to sight an advertisement is,
the better chance of the ad being effective in terms of comparing the advertised product
to another product. This tested proximity and text versus picture. It was found that the
closer the message is to the proximity of sight, the more likely a participant would be to
favor that product over another. The point is that there was an increase in product
familiarity, so when asked which beverage the participants wanted (the advertised
product, lemonade or the other cranberry juice), the participants were more likely to favor
lemonade if they were in the group that had high proximity exposure to text.

Studies that have been completed in the past dealing with in-game advertising
indeed have varied results and varied approaches. The combination of these studies,
however, helps to create a framework for studying advertising in video games. The
studies show that exposure to an advertisement is important. They also show that attitude
toward the brand may or may not change. They show that recall varies depending upon
various elements. Affective processing, exposure, memory, recall, and persuasion are all
important concepts in the studies covered here. The objective that remains is to find a
framework that explains these concepts with relation to in-game advertising.

Clearly, there is a need to tie these ideas together in a framework that will address
the findings in video game advertising studies and those in advertising. This paper argues
that mere exposure effect theory will allow researchers to consolidate and build on the
studies in the field of in-game advertising. From this information, it may be possible to
discover a method for describing in-game advertising that is reliable and valid.
The Mere Exposure Effect: A New Perspective

Edery and Mollick (2009) suggest that advertising in video games is more suited to be understood from the subconscious processing level. Specifically, Edery and Mollick suggest mere exposure and affective priming as a way to support their assertion that advertising in video games is a subconscious phenomenon. However, the assertion was never clarified nor was mere exposure fully described. The authors also never fully explored the idea that mere exposure could be a valid framework for advertising in video games.

Research on mere exposure over the last 40 years indicates that this theory may be a valid framework for studying the effectiveness of advertising. Essentially, mere exposure, as stated by Edery and Mollick (2009), argues that by simply exposing a person to a stimuli (making available an object to a person's senses), their attitude toward the stimuli, and possibly even actions toward that stimuli (for example, choosing it over another), can be influenced. Exposure to the stimuli need not be explicit (Zajonc, 2001) and can be considered an automatic and unconscious process (Jacoby, 1991; Jacoby, 1981; Jacoby, Lindsay, & Toth, 1992; Janiszewski, 1988; Krugman, 1986; Janiszewski, 1990, The influence of print; Janiszewski, 1990, The influence of non attentive; Shapiro & Krishnan, 2001; Shapiro, MacInnis, & Heckler, 1997; Zajonc, 2001).

Considering the complexities of measuring advertising effects, it is not surprising that mere exposure studies fall in to several different categories. These categories are based on what researchers determine to be important measurements for effective advertising, persuasion, and/or attitude change. The major items addressed in this paper
are common subjects found in mere exposure studies. They are repeated exposure’s influence on recall, liking, subliminal processing, and intent to purchase, and ideal exposure conditions. While many of these topics blatantly seemed to overlap with in-game advertising studies, no postulates can be made regarding in-game advertising and mere exposure before the area of study is thoroughly expoused.

**Mere exposure, recall, and recognition.** A common theme in mere exposure studies regarding the effect of repeated exposure deals with recall and/or recognition. That is, advertising, and thus mere exposure, is often judged as being effective depending upon how well participants recall the stimuli. Essentially, being exposed to a stimuli is considered effective if the participant can recall the item to which they were exposed. Further, it is expected that repeated exposure increases the ability to recall the item.

Moreland and Zajonc (1977) indicated that recognition is a reliable result from mere exposure, depending upon the level of exposure, and that recognition and liking are correlated. That is, the higher the recall, the higher the liking. Recognition, however, is not necessarily needed. Birnbaum and Mellers (1979) conducted a study that suggests recognition, in fact, mediates mere exposure effects. That is, recognition is much more important than other research had let on. Specifically, their article states that recall is an indicator for affect; more repetition increases recall, which is a predictor of affect.

In a study on television advertising, Rethans, Swasy, and Marks (1986) found that increased repetition increased aided recall of sales points from the advertisement. Rethans et al (1986) found no support for the inverted-U relationship (high and low levels
of exposure lead to low levels of recall or affect) discussed in many studies, but did find that participants were less likely to want to view a commercial if they had already seen it.

Craig, Sternthal, and Leavitt (1976) devised an experiment to test the influence of high levels of exposure to print ads on recall; wearout, or the attrition of an advertising effect, was a part of this experiment. There were two studies in this experimental design. The researchers found that wearout occurs, but if inattention to the advertisement and repetition are controlled, the wearout does not occur. Also, higher levels of repetition reduced wearout and created higher levels of recall.

If repetition increases the chance that a person will remember the stimulus, the hope then is obviously that the memory of the item will influence choice or liking. Holden and Vanhuele (1999) conducted a study that revealed an auditory exposure to a fictitious name creates a belief that the stimuli is real. Further, the participants did not remember the actual exposure. The study showed that brand judgments are indeed based upon familiarity from exposure. When a participant recognizes a brand, they make judgements about it. So, recall is expected to be an important and real effect of mere exposure. However, only if there was direct attention to the name, not incidental exposure.

More recently, Wang and Chang (2004) used classical music as a stimulus, and found that recognition and recall are helpful for increasing liking scores. Melodies that were remembered as opposed to known had lower liking ratings. Importantly, for recall from mere exposure, the number of exposures impacted the "known" and "remembered" responses. Again, recall is an important part of mere exposure and varies with repetitions.
In a recent study regarding online advertising and recall (Yaveroglu & Donthu, 2008), it was found that repetition of advertisements on a website led to not only greater recall, but greater intention to further investigate that product. This is all supported by previous studies on the matter. However, Yaveroglu and Donthu looked specifically at online environments, which is an environment similar to the study at hand. There were six findings that are directly relevant to the formation of hypothesis for this thesis. First, repetition leads to recall. Second, varied ad repetition (repeating different ads for the same product) is more productive in a non competitive environment (no similar ads competing). Third, same ad repetition is better for recall in a competitive environment. Fourth, when the advertisement is relevant to the webpage, recall is better. Fifth, same ad repetition works slightly better than a varied ad repetition strategy in a content relevant website. Sixth, and finally, when the ad is placed on a website that is not content relevent, varied ad repetition is more beneficial.

Recall and recognition are important indicators of the effectiveness of the mere exposure effect. Many studies indicate that recognition is so important that it will impact intent to purchase and liking (Laroche, Kim, & Zhao, 1996; Holden & Vanhuele, 1999; D’Sauza & Rao, 1995; Rindfleisch & Inman, 1998; Ray & Sawyer, 1971; Birnbaum & Mellers, 1979; Wang & Chang, 2004; Newell & Shanks, 2007). While many studies indicate that recognition and recall are not necessary (see next section), it is still a basic measure for advertising. In addition, many of the video game advertising studies circulating do use recall as a measure (Chaney et al., 2004; Grigorovici & Constantin, 2004; Schneider & Cornwell, 2005; Nelson, 2002; Sharma et al., 2007; Nelson et al.,
If recall is to be correlated to anything or discussed, it must be measured. Based on what these studies suggest and what studies from the previous sections in this thesis suggest, several iterations of a hypothesis are offered. Video game studies generally agree that exposure to an advertisement will increase the possibility of recall, and mere exposure theory states the same. Therefore,

H1A: Participants in the experimental condition will have higher recall than participants in the control condition.

Taking into consideration the studies covered thus far, H1A is a straightforward hypothesis. However, the studies on videogame advertising suggest that there are factors that mediate free recall (Schneider & Cornwell, 2005; Chaney et al., 2004; Lee & Faber, 2007). This means that if mere exposure is occurring, it might be overlooked because of another factor. In this case, the idea that an individual’s previous experience may impact recall. Specifically, video-game studies (as previously mentioned) suggest that more experienced players have more cognitive resources available to them outside of attempting learn how to navigate the game. This explanation has roots in information processing theory, but has failed to produce conclusive results in the world of gaming. However, this study allows for testing this theory, and if conclusive, has impact for Mere Exposure. Therefore,

H1B: The more weekly hours of game play participants in the experimental condition report, the higher their recall scores will be.

H1C: The more years of game play participants in the experimental condition report, the higher their recall score will be.
H1D: The more weekly hours of first person shooter game play
participants in the experimental condition report, the higher their recall
scores will be.

H1E: The more years of first person shooter game play participants in the
experimental condition report, the higher their recall score will be.

These hypotheses were broken down into two different measures (hours
and years) for a very specific reason. These two measures are subject to recency
issues. That is, it is the analysis of these two numbers that will shed light on any
correlation between frequency of playing and recall. For example, a participant
who has played a total of five years, but has not played much in the last year may
score differently than a person who has played only two years, but plays forty
hours a week. It is important to analyze these numbers as a whole while looking
for trends.

**Mere exposure and positive affect (liking).** “An inadequate
understanding of the role of affect in advertising has probably been the cause of
more wasted advertisement money than any other single reason” (Ray & Batra,
1983, p. 543). Achieving affective processing is a strong concept in advertising
and is a cornerstone of the mere exposure theory.

A prominent relationship in mere exposure theory is the exposure - affect
relationship. That is, the idea that being exposed to a stimulus multiple times will
increase a participant's positive affect toward an object. The basic premise is that if a
person sees a picture or hears a song several times and, as a result, their feelings toward
that thing increase positively. This is generally measured in terms of liking or preference for an object. That is, positive affect is measured as liking and operationalized in those terms (Birnbaum & Mellers, 1979; Bornstein & D’Agostino, 1992; Moreland & Zajonc, 1979; Kunst-Wilson & Zajonc, 1980; Zajonc, 1980; Moreland & Zajonc, 1977; Seamon, Brody, & Kauf, 1983; Seamon et al, 1983, Affective; Seamon et al, 1984; Bornstein, Leone, & Galley, 1987; Brooks & Watkins, 1989; Bornstein & D’Agostino, 1992; Janiszewski, 1993; Holden & Vanhuele, 1999; Monahan, Murphy, & Zajonc, 2000; Zajonc, 2001; Ishii, 2005; Grimes & Kitchen, 2007; Shapiro et al., 1997; Yoo, 2008).

In 1968, Robert Zajonc conducted a study using repeated exposure to words, faces, and music. The study revealed that repetition increased liking toward the stimuli. Zajonc's became the basis for many more studies using exposure to stimuli as a framework for increasing liking. Harrison (1968) conducted a study around the same time frame showing that mere exposure works with people, not just objects. That is, exposure to a person will increase your liking for that person.

In 1973, Sawyer took a closer look at repetition and affect change, but modified the type of advertisement as well. The results concluded that increased exposure increases attitude but more so with exposure to ads that are supportive of a product and not refuting the claims of another contender. The results are also affected by what brands a person usually buys and what brands they avoid. The basic finding is that more exposure will lead to more positive feelings toward the product, especially if the exposure itself is positive.
Later, in 1975, Smith and Dorfman found that the uncertainty or certainty surrounding a stimuli would affect what impact mere exposure would have on liking. Stimuli that are new, or cause high "uncertainty," are liked more as the frequency of exposure increases. However, when stimuli are known, or cause low "uncertainty," the affect toward the stimuli decreased as frequency of exposure increased. Also in 1975, Stang found that learning and affect are similar and both are a function of exposure duration and frequency. So, by the end of 1975 it was concluded, at the very least, affect changes depending upon exposure to a stimuli, and the type of stimuli.

Miller's (1976) study on mere exposure supported the theory that increased exposure to a stimulus increases positive attitude toward that stimulus. The study also showed that there can be too much exposure (discussed in more detail later). Also in 1976, Grush demonstrated that mere exposure can influence attitude depending upon the feelings produced by the stimulus. That is, repeated exposure to postive words made participants feel more strongly about those words' positive meaning. Repeated exposure to words with negative meaning, however, increases the negativity of those words. Increased exposure changes the feeling toward stimuli.

Zajonc and Moreland (1977) found that repeated exposure to stimuli causes both liking of the stimuli and recognition of the stimuli to increase. They did not, at this time, make a determination as to whether or not one causes the other. Later, in 1979 and 1993 they make more assertions as to possible relationships, which will be discussed in the section regarding subliminal exposure.
Two years later, Bukoff and Elman (1979) also looked at the mere exposure effect. Bukoff and Elman state that mere exposure enhances affect toward an object simply by making it available to a participant for processing. This change in attitude is indiscriminate as it influences attitude toward negative, neutral, and positive stimuli.

As with Zajonc and Moreland's (1977) study discovering that liking and recognition are positively correlated, Seamon et al (1983a) find also that the two are correlated, but only when the stimuli are optimal (visible for long enough to be processed). When not visible, the two functions are unrelated, although liking still increases. Gordon and Holyoak (1983) found that exposure to a stimuli can increase liking for a completely new stimuli that is not repeatedly exposed, if they are similar in nature.

Bornstein et al (1987) successfully replicated the effects of mere exposure. Their study, like the other studies conducted up through this time (Zajonc & Moreland, 1977; Seamon et al, 1983a; Stang, 1975; Miller, 1976; Bukoff & Elman, 1979), revealed that mere exposure and liking were positively correlated. They find, however, that remembering having seen the stimuli was not necessary. Tellis (1988) also showed that repetition increases liking, with restrictions. Tellis states that repetition will increase liking for already known brands, creating a situation where repetition only reinforces liking and does not help consumers make a decision to switch products. Much like several of the studies discussed thus far, repetition increases liking but often can depend upon the stimuli, itself.
In an experiment using both known and unknown brands, Machleit and Wilson (1988) tested the effects of emotional feelings of participants during ad exposure and their attitude toward the brand. The experiment exposed participants to advertisements that were either familiar or unfamiliar and elicited either a "warm" or "sexually suggestive" emotional response. The study found that the attitude toward the brand is influenced by the emotional response elicited by the advertisement. However, whether the brand was familiar moderated this effect. That is, attitude toward the brand was more affected by emotional response to the advertisement when the brand was unfamiliar than when familiar. Both effects were significant. The brands that were unfamiliar had a higher affect transfer than brands that were familiar. The authors suggest that an unfamiliar brand allows simple emotional changes more than the known brands because participants would have already been exposed to the known brands multiple times. This is unlike Tellis' (1988) study from the same year, stating that repetition only reinforces attitude and will only increase liking for known brands.

While Machliet and Wilson (1988) suggest in their article that affect transfer is moderated by familiarity of the brand, Anand and Sternthal (1990) conducted a study showing that the difficulty level of processing that advertisement is a moderator for the mere exposure effect. By level of processing, the researchers mean only the ability of the participants to understand and remember the information presented to them. Therefore, the “easy” to process level would be the simplest form of the ad from which the participant would remember the most information. The study used an audio advertisement for the soft drink, Mountain Dew. To vary the difficulty of processing, the
researchers manipulated the advertisement so that it would be presented in three different ways that were considered either easy, medium, or hard for the participant to process. Each condition was repeated three, five, or eight times. When the advertisement was “easy” to process, the results indicated that the brand was most positively evaluated at three and eight repetitions, but least positively rated at five repetitions. This is considered a U-graph, which is illustrated in Figure 18. When the advertisement was a “medium” difficulty of processing level, the results indicated that brand evaluation was the highest at five repetitions, but lowest at three and eight repetitions. As demonstrated in Figure 19, this is considered an inverted-U. When the advertisements were considered “difficult” for the participants to process, the results indicated a positive correlation between number of repetitions and positive brand evaluation, which is illustrated by Figure 20. The authors suggest that, because of how ease-of-message-processing affects brand evaluations, advertisers should pay attention to the complexity of the advertisement. These results suggest that an advertisement that is slightly more difficult to process is the best choice if it is repeated enough.
Figure 18. Brand evaluation for easy-to-process advertisement. Figure demonstrates that for easy-to-process advertisements, the highest levels of brand evaluation occur with low and high repetitions, whereas the medium number of repetitions is consistent with the lowest brand evaluation. Modified from Anand and Sternthal (1990).

Figure 19. Brand evaluation for medium-to-process advertisement. Figure demonstrates that at a medium number of repetitions, brand evaluation is the highest, whereas the low and high repetitions show a lower brand evaluation. Modified from Anand and Sternthal (1990).
Figure 20. Brand evaluation for difficult-to-process advertisement. Figure demonstrates that for difficult-to-process ads, brand evaluation increases with the number of repetitions. Modified from Anand and Sternthal (1990).

In 1989, Bornstein conducted a metaanalysis of the 20 years of research on the mere exposure effect regarding the mere exposure-affect relationship. The meta analysis found that many things can influence the mere exposure effect: stimulus type, complexity, duration, presentation, recognition, and age of subject. Among other things, the articles reviewed reveal the conditions for optimal exposure (which will be discussed in a later section), the relationship between affect and the complexity of stimuli, the relationship between recognition and affect (recognition is not needed), and that the relationship between mere exposure and affect is a clear and replicable phenomenon.

Familiarity and message processing are argued to impact mere exposure effect's influence on affect. Kruglanski, Freund, and Bar-Tal (1996) further suggest that evaluation aprehension and time pressure may influence brand evaluation. Participants were shown paintings at varying numbers of exposures and then recording their liking for
the stimuli. Time pressure was manipulated by telling the participants that their 20 seconds to judge a stimuli was either a sufficient amount of time, or that it was very brief. To manipulate evaluation apprehension, the researchers told the participants that their judgments of the paintings would be compared with professional critics. The study found that the effects of mere exposure are negated when the participants judge a stimuli and are told they will be evaluated on their performance. Time pressure moderates mere exposure but does not completely negate the effects. The researchers do suggest that mere exposure tests to imply a certain amount to time pressure and evaluation apprehension. However, if it is not clear to the participants that they will be tested at the end or are told only that they will be asked about the experience, even this slight effect would be eliminated. One can assume that the average person watching a commercial would feel neither evaluation apprehension nor the time pressure introduced in this experiment.

In a slightly different angle toward mere exposure and affect, Kirmani (1997) approached mere exposure by looking specifically at perceived quality of a product and how that changes with repeated exposure. The results showed that the more times a person was exposed to a product, the lower their perception of the quality of that product became. Further investigation found that the lower quality perceptions were not related to boredom from repetition, but instead the lower quality perceptions were related to confidence in manufacturers' perceptions of quality. That is, the more times a manufacturer exposes a person to a product, the more the consumer feels that the quality of a product is to be questioned.
Also in 1997, Tucker and Ware found that mere exposure works for ficticious people and places. When participants were exposed to the name of a ficticious person or place and then asked later to rate their affect toward that name or place, affect was found to increase substantially from the first exposure/control group. Although the stimuli names held no actual historical significance, repeated exposure influenced liking. Simply the exposure to something can increase liking; the stimuli need not hold actual relevence.

In addition to mere exposure's impact on brand evaluation being moderated by familiarity, message processing, and apprehension, the number of other ads competing with the brand will impact brand judgment (Malaviya, Meyers-Levy, & Sternthal, 1999). In an environment where there are many advertisements competing for attention, repetition has little impact on brand judgment. However, when those ads are in direct competition with the product, itself, there is a negative change in affect.

In an experiment that combined the ideas of competition and familiarity, Baker (1999) learned that familiarity of a brand has an important impact. Using mere exposure for unknown brands has no impact when the product is competing with a well known brand. However, when two unknown brands of comparable price and quality are competing, and there is no pressure for the consumer to make a choice, mere exposure can be used to increase positive feelings toward one of the brands. Baker (1999) suggests that advertisers increase the availability of the brand logo and make it more prominent in the consumer's mind so that mere exposure might work more efficiently.

In 2000, Ehrenberg wrote an article about mere exposure's place in advertising. The job of mere exposure is to reinforce buying habits. Sometimes, a person can be
convincing to purchase a new product through mere exposure; however, a buying habit can only be truly changed through reinforcement. Shortly after Ehrenberg’s article, Crandall (2001) conducted a study with the participation of cannery workers in Alaska. Research showed that exposure can change habits of choice, not just reinforce existing feelings. Each morning at breakfast, doughnuts, a not-commonly consumed breakfast item for the participants, were laid on the table as a breakfast option. Over time, more doughnuts were consumed at each sitting. The article states that to the extent eating more doughnuts means more liking, exposure to the food during meals increased affect toward that product. In support of the affect-mere exposure model, the study found that repeated exposure to stimuli increases positive affective reactions to those stimuli.

In examination of the role of affect in the mere exposure model, Jones-Harmon and Allen (2001) used physiological responses as a measure to determine if repeated exposure increased liking. The researchers showed photographs of women to participants. Then, those same photos were shown again and mixed with new photos. Participants facial muscle reactions were measured. It was found that repeated exposure increased affect toward those photographs.

In 2003, Pashupati suggested that mere exposure has a greater influence on affect when the stimuli was previously thought of as negative, or was disliked. Specifically, in a study on mere exposure using the advertisement itself as a stimulus, it was shown that advertisements that were disliked became more tolerable. However, when advertisements were rated as neutral or positive by the participants, there was no significant change in liking.
Coates, Butler, and Berry (2004) suggest that mere exposure does not necessarily
convince a person to purchase a product. While the stimuli in question may make it into
the consideration set for purchases, having been exposed to the product does not usually
entice them to purchase a different product. It is suggested (Percy, 2006) that mere
exposure is most effective in the absence of a stimuli that is familiar. That is, as Coates et
al (2004) suggested, only mere exposure does not convince a person to buy a new
product, especially if there is another, more familiar brand available. Unless, Percy
(2006) suggests, that item can be linked to a context and consciously attended to. So, if
there is an ad for a product embedded in a hobby magazine or game, one might positively
associate that product to that thing and consciously attend to it.

Malaviya (2007) suggests, similar to prior studies, that mere exposure
experiments do not always find the repetition effect because of the influence of context
and the attention given to a particular advertisement. In 2007, Tom, Nelson, Szrentic, and
King conducted a study that showed mere exposure increases affect, but not object
valuation (assigning more value to the object).

Although these studies seem to vary as to whether mere exposure is positive or
negative, the overwhelming majority agree, that at the very least, repeated exposure to a
product affects how a person views the product. Each study addresses mere exposure and
how to measure its affect on the participants in slightly different ways. In this case, the
current study is addressing specifically the influence on a video game player. Because the
the studies mentioned above (Zajonc, 1968; Harrison, 1968; Sawyer, 1971; Miller, 1976;
Bukoff & Elman, 1979; Zajonc & Moreland, 1977; Bornstein et al., 1987; Seamon et al.,
1983a; Gordon & Holyoak, 1983; Tellis, 1988; Machleit & Wilson, 1988; Bornstein, 1989; Kruglanski et al., 1996, Kirmani, 1997; Baker, 1999; Tucker & Ware, 1997; Malaviya et al., 1999; Crandall, 2001; Pashupati, 2003; Coates et al., 2004; Percey, 2006; Malaviya, 2007) agree that repeated exposure will positively influence a person's perception of a brand, product, or person (even in the study that was conducted on an electronic environment), the following hypotheses are asserted:

H2A: The experimental liking score will be higher than the control liking score for the Hershey’s brand.

H2B: The experimental liking score will be higher than the control liking score for the Rockstar brand.

H2C: The experimental condition liking score for Hershey’s will be higher after exposure for the Hershey’s brand.

H2D: The experimental condition liking score for Rockstar will be higher after exposure for the Rockstar brand.

Another common relationship in mere exposure is the idea that priming will impact that mere exposure-affect relationship or that framing the experience positively will influence judgment of the stimulus. That is, if the advertisement is positive or creates positive responses from the participants, then those positive feelings will be associated with the product advertised. Or, in some cases, if a subliminal positive message is flashed prior to exposure, positive affect will increase.

For example, Murphy and Zajonc (1993) worked with affective primacy and mere exposure. In the experiment, the researchers flashed suboptimal priming cues before
exposing participants to a stimuli. Suboptimal priming means that the stimulus is flashed so quickly that the participant does not consciously see it. Instead, the item is subconsciously processed. Suboptimal exposure can be thought of as subliminal messages. What was found was that flashing facial expressions (i.e., smiling face) before the stimulus, the emotional response diffused and impacted affect toward the stimulus. That is, positive suboptimal priming increased affect. However, when the priming was based on cognitive effect and not emotion, meaning that the priming did not use smiling or frowning faces but instead a relevant but “bland” picture (p. 730), suboptimal exposure did not work. Cognitive priming was most effective in when the exposure was visible. Affective priming works suboptimally.

In another study, Murphy, Monahan, and Zajonc (1995) tested to see if the effects of suboptimal affective priming were additive. In four studies, participants were exposed to Chinese ideographs that were primed positively, negatively, or had no priming. Exposure varied 0, 1, or 3 times. The studies found that when affective priming was suboptimal, the effect was additive. However, when the source of the priming was visible, the effect was more restricted. When emotional responses are illicited from a non-visible or non-apparant source during or before exposure to a stimulus, the response is subconsciously associated with the stimulus.

Baker (1999) also conducted a study looking at affective conditioning and mere exposure. Instead of limiting the study to liking, however, it looked at brand choice (comparing between brands based on liking). The study employed tactics that applied affective conditioning and mere exposure advertising strategies to two unknown brands.
The study found that, when used against well known brands, neither affective conditioning nor mere exposure were effective. However, when paired with similarly known brands, the brand used in the study was liked better. Mere exposure, Baker claims in the report, can be just as effective as using affective priming, but it is easier to execute. While the study does support the claims of other studies in that affective priming can influence liking, these findings suggest that mere exposure is useful and easier to execute.

Priming repetition with positive images helps to increase liking, especially when the priming is done at the sub optimal level. It is also argued that not only suboptimal affective priming can influence affective perceptions, but also framing the message or stimuli itself in a positive manner (Chang, 2008). A positively framed advertisement leads to more positive ratings on believability, liking, and attitude. Chang's (2008) study showed that positive framing led to a higher level of attentiveness from the participants, which possibly led to a higher level of "elaboration" on that message. While not exactly the same as priming, it does suggest that putting the participant in a positive frame of mind will influence attitude toward the product. Instead of flashing an image before the experience, however, the experience itself is made to be positive.

From this, it can be seen that how the repeated message is delivered can influence the mere exposure effect. Perhaps if the activity that a participant is engaged in illicites specific feelings, a difference in mere exposure would occur. Several studies within in-game advertising suggest a similar idea. Nicovich (2005) suggested that the gamers’ overall reactions to interacting with the game would influence presence and thus liking.
Nelson et al. (2006) suggested that liking toward the game influenced products advertised within the game. Therefore, 

**H2E**: Players who rate the activity of playing the video game more favorably will have a more favorable attitude toward the brands featured in the game.

**Other factors in mere exposure not tested in study.** There were several factors mentioned frequently in the research on mere exposure that were not tested in this study, but should be mentioned. These include intent to purchase; the relationship between recognition, recall, and positive affect; recognition’s influence on mere exposure; and the optimum levels of exposure.

**Intent to purchase: Familiarity breeds trust.** The studies addressed in this section beyond the idea that merely exposing a person to an object will increase their liking for it. They also suggest that repeated exposure will have an impact on intent to purchase. Generally, exposure increases intent to purchase because a person will be familiar with a product. They will then remember that product during the point of sale and choose it.

Holden and Vanhuele (1999) suggest that people make their brand choices based largely on familiarity. Repeated exposure increases familiarity and increases the chance a person will remember that item at a point of sale. This appears to work even when a person only thinks that they have heard of a brand before (Rindfleisch & Inman, 1998). Specifically, a study in which the researchers applied fictitious names to various root beer products found that the stimuli attached to a name that people thought they had heard of before were chosen over the other rootbeers.
Intent to purchase can also be increased due to mere exposure because familiarity can help establish confidence in a brand (Laroche et al, 1996). This particular study showed that brand attitude also had an influence, and, while not directly based on mere exposure, familiarity was established by repeated exposure.

D’Sauza and Rao (1995) suggest that repetition can influence brand choice for several reasons. In a study that carefully attended to repetition in an environment with competition, they found that repetition can increase market share. The study also found that repetition, again, even in the face of competitive advertisements, can increase the value and utility of a brand name. In short, repetition increases utility and awareness of a brand, thus influencing the decision to choose one brand over another.

Ray and Sawyer (1971) found that repetition increased intent to purchase in some circumstances. Specifically, common and/or inexpensive items were most affected. For example, shampoo or toothpaste would be a low priced good.

Intent to purchase is, of course, much more complicated than any one factor can indicate. Laroche, Cleveland, and Maravelakis (2002) conducted a study that examined the attitude-behavior relationship. They found that a product’s brand share could influence how repetition affects intent to purchase. Looking closely at repetition, attitude accessibility (the quickness of a response from a participant), attitude certainty, competitive and non competitive environments (other advertisements of competing brands), and intent to purchase, several things were discovered. First, attitude certainty (confidence in decision) is more likely to influence intent to purchase than attitude accessibility (quickness of decision/recognition). Second, brand share (this brand’s share
of the total market for this type of product) has a greater influence than repetition. Third, there are significant interactions between environment and attitude accessibility. Fourth, attitude accessibility is a function of familiarity, but repetition is more helpful for a low-share brand in increasing attitude accessibility than for a high-share brand. There are many interesting interactions in Laroche et al’s (2002) study, but the main finding, for the purpose of this thesis, is that attitude certainty correlates to intent to purchase and high brand share items have a higher brand certainty. Repetition, the researchers suggest, works better for already-known brands to reinforce decision making. In a non-competitive environment, high repetition can help low brand share products increase in their probability of being selected by a consumer.

In general, studies show that brand familiarity increases intent to purchase. However, brand share has more of an influence than does repetition. Interestingly, D'Sauza and Rao (1995) suggest that repetition can increase brand share.

More recently, in 2006, Laroche, Cleveland, and Maravelakis conducted another study in the same vein of thought. In terms of intent to purchase, they found that (again) brand share has a great influence on intent to purchase. That is, across repetition and competitive conditions, intent to purchase remained stable, although low-brand share products received a lower intent to purchase score than did high-brand share.

However, Malaviya et al (1999) suggest that in a "cluttered" environment, repetition will have no affect on persuasion at all.

These studies suggest that mere exposure can increase familiarity, which will in turn influence buying habits. However, these studies further suggest that more influential
factors include price of the item, brand share of the item, and the environment of the advertisement. In 2008, Berger and Fitzimons conducted six experiments/field studies that revealed the influence of exposure to perceptually and conceptually related stimuli. That is, being exposed to a cue in the surrounding environment that has similar features or similar concepts will influence real world choices. For example, in one of the studies, participants were asked to complete a survey asking what types of food they were at the grocery store to purchase. They were given a pen with colored ink with which to write. Those with the orange pen wrote more items that were orange; those with the green pen wrote more products that were green. Other experiments used holidays as cues, slogans as cues, and other outside environmental cues.

**Recognition, recall, and positive affect.** The final area of discussion related to this specific research project is the question of the recognition-affect relationship.

A common question is whether or not a person has to recognize a stimulus before their liking can be influenced. Birnbaum and Mellers (1979); Wang and Chang (2004); and Newell and Shanks (2007) suggest that recall and recognition influence liking and mediate the relationship between repetition and liking. However, many scholars disagree with this sentiment (Moreland & Zajonc, 1979; Kunst-Wilson & Zajonc, 1980; Zajonc, 1980; Moreland & Zajonc, 1977; Seamon et al., 1983a, 1983b, 1984; Bornstein et al., 1987; Brooks & Watkins, 1989; Bornstein & D’Agostino, 1992; Janiszewski, 1993; Holden & Vanhuele, 1999; Monahan et al., 2000; Zajonc, 2001; Ishii, 2005; Grimes & Kitchen, 2007; Shapiro et al., 1997; Yoo, 2008). The argument is that while recall/recognition and affect are positively correlated when recall is measured, when
recall/recognition does not occur because of subliminal exposure (or any other reason for that matter), affect is still affected by the exposure.

**Recognition as a necessary component for mere exposure effects.** In 1979, Birnbaum and Mellers conducted a study that tested the results of Moreland and Zajonc's (1977) study regarding mere exposure and recognition. The researchers essentially argued that Moreland and Zajonc's overall finding that recognition is not necessary for mere exposure effects to take place could not be supported. They conducted a study that supported, instead, the idea that recognition is necessary for an increase in liking to occur. That is, the participant must remember the item to like it more. They presented their data as a direct response to Moreland and Zajonc's (1977). While, Moreland and Zajonc immediately presented their argument, refuting such a claim, Birnbaum and Mellers did pose an interesting argument, which caused much conversation in the academic community.

Later, Wang and Chang (2004) suggested a conclusion similar to that of Birnbaum and Mellers. The researchers used classical and Russian music that is esoteric in nature. The researchers exposed participants to the music and then tested them for both liking and recognition. The two types of recognition were either "remembered," which meant the participant knew they had heard the song before, or "known," which meant the participant had merely felt the melody was familiar. The liking ratings were higher for the music that was "remembered" than for that which was "known." They repeated the experiment but administered a liking rating questionnaire prior to the recognition test.
The findings were the same. Essentially, the researchers argued that in increase liking, the item must actually be recognizable.

Newell and Shanks (2007) conducted a study in response to Bornstein and D'Agostino (1992) study that stated when recognition was significant, liking actually decreased. That particular study had based its prediction off of a Bornstein’s (1989) metaanalysis. Newell and Shanks (2007) tested the prediction using pictures of faces and polygons. As with other studies, they exposed participants to those pictures and then tested recognition and liking. It was found that significant levels of mere exposure only occurred when recognition ratings were high.

There is a substantial argument that recognition is necessary for mere exposure effects to work. However, there is another argument entirely. This argument claims not only that recognition is not necessary, but it inhibits mere exposure when participants recognize where they saw the stimulus before.

**Recognition as an unnecessary component for mere exposure effects.** Fairly early on in the life of mere exposure studies it was asserted that liking and recall are separate factors. That is, participants do not necessarily need to recognize a stimulus for an increase in affect to occur (Moreland & Zajonc, 1979; Kurnst-Wilson & Zajonc, 1980). In fact, cognition and liking may be considered completely separate factors (Zajone, 1980). From these arguments stemmed many projects that looked at the relationships between mere exposure, recall, and affect.

In 1977, Moreland and Zajonc asserted that recognition was not a necessary factor in mere exposure effects. While positively correlated, recognition is not necessary
condition for liking, they wrote. Birnbaum and Mellers (1979) argued against this theory. Immediately, Moreland and Zajonc (1979) refuted Birnbaum and Mellers' argument and suggested that their model, used to disprove Moreland and Zajonc, actually further supported their original conclusion that recognition is not a necessary condition for liking.

Kunst-Wilson and Zajonc (1980) strengthened Moreland and Zajonc's (1977; 1979) work in a study that used octagons as a stimulus. The octagons were presented to participants in varying lengths of time. Some presentations were so quick that the participant could not even identify what was being presented. The study showed that subjects develop liking for objects that are familiar due to repeated exposure. However, when the exposures were so brief that recognition did not occur, the subjects still had increased in affect toward those objects.

Why does this occur? Zajonc (1980) hypothesized that feeling and thinking are two separate things, and that while most lines of thought believed that liking could only occur after much thought, liking can occur outside of cognitive effort (purposeful focus). Liking and cognition are controlled by two independent systems, but can influence each other in many ways.

One of the ways these systems influence each other is that if recognition occurs, then liking and recognition are related. When recognition is not a condition, liking and recognition are not related (Seamon et al., 1983a). Among other things (i.e., finding that recall was better when an image was flashed in the left visual field and affect when in the right visual field), the researchers found that when they briefly presented stimuli to a
participant as either a masked pattern for a longer period of time, or an unmasked pattern for a brief period of time, liking through familiarity was increased without increasing recognition of the stimulus. In part two of the same study (Seamon, Brody, & Kauff, 1983 b), the researchers furthered their finding that liking can operate outside of recognition. In fact, the finding was that affect can remain undiminished over a week long delay, and recognition occurred with very low frequency while affect was statistically significant. In 1984, Seamon, Brody, and Kauff added more to their studies on recognition and affect. Once again, the results indicate that when a stimuli is presented to a subject in varying lengths of time, recognition is not necessary for affect. Recognition improved with increased durations of exposure. Affect without recall was found to be a stable finding, but only occurs during certain exposure times (the exposure times that are too brief for recognition).

Bornstein et al (1987) successfully replicated the mere exposure effect using both shapes and photographs of people as the stimulus. They further replicated that subliminal exposure can increase liking of a stimulus. They did this with both photographs of people, and then with actualy people encountered in the "natural" environment. That is, they subliminally exposed participants to photographs of people and then rating their liking of those photographs or the people of whom the photographs were taken.

Brooks and Watkins (1989) also examine the relationship between the increase in liking of a stimuli that has been repeatedly exposed to participants and recognition. They suggest that, beyond recognition being unnecessary for liking, liking cannot be used as a basis for determining prior exposure. Liking and recognition are positively correlated, but
liking is less influenced by prior exposure than recognition. Further, liking and recognition are not causally related. Also Bornstein (1989), in a meta analysis of the research done on mere exposure, showed that level of recognition of stimuli does vary from study to study. It is not necessarily needed to increase liking (see section on subliminal), but there is a definite effect. Specifically, recognition is not needed for liking and may actually inhibit increases in affect. That is, stimuli that were recognized at an at-chance level or below, saw higher effects for liking. Bornstein and D’Agostino (1992) followed up on this. The experiment revealed, as hypothesized from the meta analysis that when recognition is at higher than chance levels, liking decreases.

Janiszewski (1993) furthered this finding by providing evidence that suggests liking increases outside of recognition and even when exposure to a brand is incidental, or unintentional. In one experiment, the brand name was offset from the pictorial or verbal advertisement. Recognition of the incidental material did not allow participants to explain their familiarity with it. Despite this, mere exposure effects did occur. In another experiment, when participants were exposed to advertisements in which the text was displayed in a non-central location, participants skimmed the message and processed it. In one condition the verbal processing load was increased, so that that processing would be more active. In the other conditions, the verbal processing load was the same so the only way the researchers could increase evaluation of the target brand, they predicted, would be to increase preattentive resources. The results supported these hypotheses. A third experiment also manipulated processing resources. All three experiments together suggest that "access to a stored representation of an incidentally viewed brand name is
sensitive to the hemispheric resources available for storing the outputs of preattentive processing of the name." (Janiszweski, 1993, p. 389.) Essentially, preattentive or incidental exposure does influence learning. Memory of an exposure is not required for someone to gain familiarity and thus liking toward a stimulus.

In 1999, Holden and Vanhuele exposed participants to an auditory recording of a ficticious brand name. They found that participants believed, a day later, that those names existed. Further, the participants could not remember where they had heard of the brand. Unlike Janiszweski’s (1993) findings, this result was obtained only when the exposure was intentional (as opposed to incidental). Subjects can become familiar with a brand without ever remembering the advertisement or remembering having ever seen/heard the advertisement to which they were exposed.

To further the argument that an increase in liking from mere exposure is subliminal, the results of Monahan’s et al (2000) study on specific, general, and diffuse effects. In the first study, Chinese ideographs were exposed to participants either singularly or multiple times. In the condition of multiple subliminal exposures, participants rated their mood as better and novel-repeated stimuli were liked better than novel single-exposure stimuli. In the second study, subliminal exposures increased liking for the original stimuli, similar but not previously seen stimuli, and unrelated stimuli. Liking is increased even though the exposure was "degraded" to the point of unrecognizeablity. The participants were put in a good mood, and the good feeling was associated with other sources. In fact, increase in liking, may depend in part on not being
aware of the source of liking, further support that recognition is not necessary for liking to increase.

Ishii (2005) conducted a study on mere exposure effects across cultures. Japanese and American participants were exposed to that native Filipino language, Tagalog. As in other mere exposure studies, the participants were exposed to the stimulus and then asked to rate their liking and recognition of a series of stimuli, including the previously exposed items. The study revealed that that liking resulted from only exposure frequency and was not a function of recognition. The findings of Ishii’s study support the idea that mere exposure is more of an automatic and subliminal function.

Zajonc (2001) continues this discussion on the subliminal effects in mere exposure and discusses how repeated exposure leads to establishing preferences. The stimuli need only be available to the participants senses, and the exposure need not be noticeable. Increase in affect relies only on repeated exposures and not the memory of those exposures. There need not be memory because, as Zajonc (1980) pointed out affect and cognition are controlled independently. Zajonc suggests in the article that mere exposure be viewed as classical conditioning. It is a simple and effective way to influence behavior, and Zajonc adds, has been a part of social organization. That is, mere exposures allows organisms to distinguish good and bad elements in their enviroment and also form primitive social attachments.

In 2007, Matthes, Schemer, and Wirth conducted a study with television advertisements and mere exposure. Their study was driven by the idea that visual brand placements do not need to be remembered to have and affect on affect toward brands.
The researchers considered frequency of exposure, persuasion knowledge, and involvement in the program. Interestingly, the researchers found that a mere exposure effect exists in television advertising. Specifically, when a person is extremely involved or engaged with the main programming and unaware of targeted persuasion. However, if a participant is not engaged with the programming and is well aware of the persuasion at work, ad placed with high frequency cause a negative affect toward that brand. Essentially, if the advertisement is too prominent, the target audience is too focused on the advertisement, or too aware of the advertisement, there will be no increase in liking. Instead, a deterioration of liking will occur.

Grimes and Kitchen (2007) considered mere exposure as a whole, with respect to advertising. In an article that primarily addresses theory and method, the authors look at low attention processing. Specifically, they consider the idea that stimuli that are not the focal point of attention can still be processed and called upon during decision making times (Shapiro et al., 1997).

In a study slightly closer to the premise and conditions of the engagement at hand, Yoo (2008) looked at web advertising and consideration sets. This study recorded consideration and memory of brands advertised on a webpage. The results are of great importance for both online advertising and this study. Simply being on a website is a type of exposure, that creates a more favorable attitude toward the product advertised whether or not the product is consciously realized. Those who unconsciously process and advertisement cannot remember having seen that ad, yet the particular brand advertised is more likely to be considered in a purchasing choice. Overall, in an online environment,
participants build more favorable attitudes toward advertised brands whether or not they could remember having seen the brand advertised.

These findings in Mere Exposure research have also been found to occur in studies looking at the effectiveness of in-game advertising. For example, Glass (2007) found that participants still rated brands portrayed in the game as favorable, even if they could not explicitly recall having seen it in the game. While Klaassen (2007) suggests that advertisements should be in direct line-of-sight and noticeable, these studies suggest otherwise.

**Optimum exposure.** As noted in several studies listed above, it may be the case that the number of exposures will influence whether or not affect in positively or negatively influenced. It is better to address this information sooner than later. A number of studies on mere exposure specifically looked at the optimal conditions under which mere exposure will work.

According to studies that focused at least in part on the element of ideal exposure (Miller, 1976; Greenberg & Suttoni, 1979; Bornstein, 1989; Cacioppo and Petty, 1979; Campbell & Keller, 2003; Craig et al., 1976; Grimes & Kitchen, 2007; Tellis, 1988; Bornstein & D'Agostino, 1992), overexposure to a stimulus can adversely influence the desired results. Sometimes this result is described as an inverted-U effect (i.e., Cacippo & Petty, 1970; Laroche et al., 2002; Campbell & Keller, 2003). That is, exposure positively increases attitude toward a stimuli. However, after a certain point, exposure begins to decrease affect. There are variables that influence the inverted U, such as Campbell and Keller's (2003) report that found familiar brands are not affected by this. In addition to
the idea of the inverted-U, Miller (1976) found through a study on mere exposure that over-exposure can stunt the increase in attitude gained from exposure. To fix this problem, a break from the stimulus is necessary. Although Miller (1976) stated that the problem can be rectified, Craig et al (1976) state that the wearout occurs because of boredom and is generally bad. However, Greenberg and Suttoni (1979) agree that overexposure is side effect of mere exposure, but that it is not necessarily a bad thing. Overexposure occurs because the advertisement has already served its purpose.

Some studies claim that there is a specific number of exposures that will result in optimal effects. In 1988, Tellis claimed that 2-3 exposures is the best amount of exposures for when the brand is already known. Bornstein (1989), however, in a metaanalysis, found that 10 exposures is the most times a person should be exposed to a stimulus, but the doesn't necessarily show that two to three times is the best. However, the shorter the exposure time, the better the results. In 1992, Bornstein and D'Agostino showed that awareness of a stimuli may, in fact, inhibit the results of mere exposure. They specifically suggest that a five millisecond (ms) exposure is better than a 500ms exposure. In 2007, Grimes and Kitchen agreed with Bornstein's (1989) and Bornstein and D'Agostino's (1992) conclusion that the duration of exposure should be limited. Specifically, that the focus be not directly on the advertisement.

Because these studies agree, at least in part, that a limited exposure is the best, and that an inverted-U may be a danger, although not in the case of familiar brands, the methodology was designed with these things in mind.
Chapter 3

METHODOLOGY

Materials

This study employed the use of a campus computer lab. The software used in the study was a modification of the popular game, *Unreal Tournament*. The game was modified using a map editor program. A particular zone in the game was edited to contain no ads, or three each of the two different ads. An electronic survey created in the program Google Docs was used before and after the study to gather information about the participants, their game play habits, liking of various candy and energy drink brands, eating habits, and liking of the game used in the study.

**Creation of materials.** The game used in this study was a modification of a First Person Shooter called *Unreal Tournament*. Several meetings were held with an experienced programmer to make this possible. The meetings held included discussions of which ads would be most feasible to embed in the game, how to embed them, where to embed them, and how to ensure that players would be exposed to these advertisements. The spots chosen for the logos were areas in which ammunition (ammo) could be found or a player may spawn/respawn. While this does not ensure exposure, it greatly increases the possibility of exposure to the advertisements.

The game was embedded with two different logos: Hershey’s and Rockstar. It is possible that these items may not be congruent with the environment, or may seem out of place, which may or may not influence the memory and affect scores of the participants (Lee & Faber, 2007; Shields, 2008, Massive). However, due to studies showing that
knowing the brand versus not knowing the brand influences the change in affect toward the product and recall (Schneider & Cornwell, 2005; Tellis, 1988; Nelson, 2002; Sharma, Mizerski et al., 2007), and that brand share affects mere exposure effects (Laroche et al., 2002), it was decided that to control for this, the advertisements embedded in the game should be well-known. According to the company website (“The Hershey Company,” 2009), Hershey’s chocolate is North America’s largest producer of chocolate and a leader for global productions of chocolate and confections. According to Consumer Search, (“Energy drink review,” 2009), Rockstar outperforms Redbull in how well it is regarded by reviewers on blogs. A report put out by Energy Fiend (“The top 15,” 2007) listed Rockstar energy drinks in the top three for market share of the energy drink market. According to Sicher (2009) of Beverage Digest, Rockstar energy is in the top ten carbonated soft drink companies.

![Figure 21. Map editor. This screenshot is of the program used to edit game levels to include brand logos.](image-url)
The game editor used to modify *Unreal Tournament* is shown in Figure 21. This software is used for players to make their own maps on various games. For the purposes of this study, it was used to embed simple logos into various locations in the virtual environment. Figure 21 also shows one of the logos embedded in the game, Rockstar Energy drink.

![Rockstar Energy Drink Logo](image)

*Figure 22. In-game Hershey’s advertisement.*

The graphic in Figure 22 shows the other advertisement used in this game. In this picture, the Hershey’s chocolate label is shown on one of the walls in the chosen *Unreal Tournament* level.

Figures 23, 24, and 25 show before and after shots of several locations used in *Unreal Tournament.*
Figure 23. Before and after in-game Hershey’s advertisement. This image shows the level before and after insertion of the Hershey’s chocolate logo. Please note that the torches are residual from the map editor program and were not actually seen by the players.
Figure 24. Before and after in-game Rockstar advertisement. This image shows the level before and after insertion of the Rockstar brand logo. Please note that the torches are residual from the map editor program and were not actually seen by the players.
Figure 25. Before and after in-game Rockstar and Hershey’s advertisements. This image shows the uppermost portion of the level and the before and after images of the brand logos. Please note that the torches are residual from the map editor program and were not actually seen by the players.

Participants

Participants were 143 students from a large western university. They were informed that they would be participating in a study involving communication processes and video games. They were asked to participate for extra credit for specific Communication Studies courses in which they were enrolled. They selected date and time via an online registration form, which is shown in Appendix A.
Cybersickness. Participants faced the possibility of being afflicted with cybersickness. To avoid these side effects, participants were informed about cybersickness and their risks for falling ill.

Cybersickness is similar to motion sickness (Potel, 1998; LaViola, 2000; Frey, Hartig, Ketzel, Zinkernagel, & Moosbrugger, 2007), but is caused by visual cues. A prevalent theory is that when visual cues do not corroborate physical cues, headaches, nausea, and other symptoms similar to motion sickness can occur (LaViola, 2000). Cybersickness is a form of simulator sickness, which affects military personnel during training. Because the impact of sickness is so well known, some air force bases have a 12-24 hour grounding period, during which personnel may not fly after simulation training (LaViola, 2000).

Potel’s (1998) study indicated that 10-60% of the population was afflicted by cybersickness. Green and Bavelier (2006) referred to studies that suggest as much as an 80% rate of affliction. In a more recent study (Frey et al, 2007), it was found that 10% of the participants reported cybersickness or discomfort. Further investigation found that this 10% consisted of either inexperienced or nonplayers, were over the age of 31, and female. To reduce the likelihood of encountering cybersickness in this study, the participants were asked to stop playing if they began to feel nauseous or dizzy.

Questionnaires

The pre-study questionnaire included questions related to age, sex, experience with playing video games, diet, and liking of chocolate and energy drinks. Post-study questions involved a five-point Likert scale measuring affect toward various snack and
beverage products as well as toward the game used. The questions, shown in Appendix B, also involved free recall of advertisements.

Procedure

Participants were randomly divided into two groups: Group B (GB) and Group C (GC). GC was the control group and GB was the experimental. The study took place on a university campus computer lab that was reserved and set up before the students arrived.

Every station had a sheet of paper with the game controls, the survey URLs, and a randomly assigned participant number. Each station also had a disc lying on the desk. Directions were projected on the front of the computer lab. Appendix C contains a copy of those instructions.

As participants entered, they were told to sign-in, sign a consent form (shown in Appendix D), and find the desk that matched their participant number given upon check-in. Students were told nothing about the study outside of a general topic notated only as “Video Games and Communication Processes.”

Students went to their computers. They were instructed to begin the first survey then to wait until everyone had finished the first survey. At that point, the group inserted the disc and loaded the game at the same time. This was due to very specific set-up parameters that needed to be followed.

The first survey contained questions about age, sex, hours of game play, and product preference.

The participants were told to set their games to the map that matched their group number (Map B or Map C). They unchecked the box that would allow them to move to
other levels to ensure that they would remain on their assigned level and then set the time limit to 15 minutes, the number of Frags to 999 (to ensure play lasted the 15 minutes), and set their bots to five. These instructions were repeated with the actual game menu projected up front. The researcher set up the game with them so that the participants would have visual cues as well as verbal instructions.

The students were informed that after their time was up, the game would flash a message stating that they had reached 15 minutes. At that point they could exit the game by pressing the escape key (ESC), which would return them to the main game menu. They could then click “Game” and “Exit” from the game menu, eject their discs, and begin the second survey. The students were told to look at the game controls first and the researcher explained the controls. When the students were comfortable, they could begin the gaming session.

Because of Kruglanski et al’s (1996) study on evaluation apprehension, stating that the participants should not be made to feel pressure regarding their performance, the participants were told that they were not being evaluated in any way. They were reminded that if they were killed, they would immediately resurrect elsewhere in the game. They were not playing against each other, only against bots. Finally, they were told their scores had no bearing on the study and would not be recorded. They were simply to play the game and have fun.

During the session, the researcher and one assistant walked around the lab to help students with questions and to see if the experimental group was, in fact, exposed to the products written into the game.
After the session ended, students moved onto the second questionnaire. The second questionnaire answered the same liking question as the first questionnaire. Additional questions included free recall of advertisements in the game and Likert-type scale to measure liking of game. All of these are similar to studies on both in-game advertising and mere exposure effects.

Measurements

**Gamer experience.** Gamer experience was operationalized by hours spent playing video games per week, how many years the participants had been playing videogames, hours spent playing first person shooters per week, and how many years the participant has been playing first person shooters. The distinction between years and hours was made because neither one alone necessarily indicates experience level. That is, a participant who plays 30 hours a week, but has been playing games for less than one year, still may be less experienced than someone who has been playing video games for 15 years but plays only five hours per week. The same could be said for years. A person may have played video games for 15 years but not played at all in the last five. This participant might be less experienced than a participant who has played for only five years, but played for the last five years. These separate measurements were analyzed to get an overall idea of the experience of each participant.

**Rated experience with game used in study.** To operationalize the gamers’ experience of playing the game used in the study, a five-point Likert-type scale was used. A mean game-liking variable was created from this information. This scale is the same that Nelson et al (2006) used in their study, which considered game liking a variable. The
four questions involved scales of were bad/good, boring/fun, like/dislike, and desirable/undesirable.

**Affect (liking).** Other studies in mere exposure measure affect by treating it as a liking or preference variable (Birnbaum & Mellers, 1979; Bornstein & D’Agostino, 1992; Moreland & Zajonc, 1979; Kunst-Wilson & Zajonc, 1980; Zajonc, 1980; Moreland & Zajonc, 1977; Seamon et al, 1983a, 1983b, 1984; Bornstein et al., 1987; Brooks & Watkins, 1989; Bornstein & D’Agostino, 1992; Janiszweski, 1993; Holden & Vanhuele, 1999; Monahan et al., 2000; Zajonc, 2001; Ishii, 2005; Grimes & Kitchen, 2007; Shapiro et al., 1997; Yoo, 2008). In this study, change in affect is also operationalized in terms of liking and preference. Using terms such as desirable, satisfying, refreshing, value, and liking, affect was measured with a five-point Likert-type scale. Usually, these are measured on words such as “attractive” or “appealing,” but are often modified to more directly address the situation being measured. Appendix E has a copy of an e-mail from Dr. Richard L. Moreland in which he briefly explains this process.

It is common to find that the number of these questions varies. Because the participants repeated this scale for five brands (to ensure equal exposure) of each type, the questions were kept to a minimum to keep from creating a situation of boredom and thus non-participation.

Bornstein’s meta-analysis (1989) pointed out that most studies do use the bi-polar ratings and that results are the most consistent when this method is employed. Videogame studies have used several methods of rating brands in ads, sometimes as straightforward as rating a particular brand on a scale from one to ten (Glass, 2006). To combine these
scales for something that is more relevant to this study, each brand was rated on five items in a five-point Likert-type scale. The mean score for the item was considered the dependent liking variable. The questionnaires for this study can be found in Appendix D.

Recall. From survey of past studies with mere exposure, and from an e-mail correspondence with Dr. Richard L. Moreland, it is clear that the method for establishing recognition is to show different stimuli and ask the participant if they are familiar with that item (after the study). However, the items used in this study are familiar and so the item would, of course, be recognized. Instead, this study used the method several video game studies have used, which is free recall. Each answer to the recall questions was given a score. The recall scores were used to create total recall score. If the participant recalled seeing ad, that was one point. If not, zero. An additional one point was given for each correct brand name given. The sum of these scores was the total recall score; Appendix B has a copy of all of the questions used.
Chapter 4

DATA COLLECTION AND ANALYSIS

Descriptive Statistics

The participants consisted of 80 females, 62 males, and one non-response. There were 73 participants in Group B (the experimental condition) and 70 participants in Group C (the control group). Out of 143 participants, 28 were on a diet, 1 person did not respond, and the rest were not on a diet. No one was diabetic. Only 13 responded “no” when asked if they eat chocolate. When asked about energy drink consumption, 69 said they do not drink energy drinks, 71 said they did, and three did not respond. As shown in Table 2, participants varied between not playing video games at all and playing up to 40 hours per week. As illustrated in Table 3, some participants had been playing video games for as long as 30 years while others had never played before. All were between the ages of 19 and 56, as shown in Table 4.

Table 2

*Hours per week of video game play (n=143)*

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<th>Hours</th>
<th>All Video Games</th>
<th>First Person Shooters</th>
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<td>≤1</td>
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<td>15</td>
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<tr>
<td>2-5</td>
<td>32</td>
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<tr>
<td>6-15</td>
<td>17</td>
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<td>2</td>
<td>0</td>
</tr>
<tr>
<td>No Response</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 3

*Years of Video Game play (n=143)*

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<th>First Person Shooters (n)</th>
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<td>16-20</td>
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<td>21-25</td>
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<td>0</td>
</tr>
<tr>
<td>No Response</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4

*Age Distribution of Participants (n=143)*

<table>
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</tr>
</thead>
<tbody>
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<tr>
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<td>27-30</td>
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<td>31-34</td>
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<tr>
<td>35-38</td>
<td>4</td>
</tr>
<tr>
<td>40-43</td>
<td>4</td>
</tr>
<tr>
<td>51</td>
<td>1</td>
</tr>
<tr>
<td>56</td>
<td>1</td>
</tr>
</tbody>
</table>

Reliability of Scales

This study used a five-point Likert-type scale to capture the participants’ feelings toward the game used in the study. A Cronbach’s $\alpha$ test was run on the questions after the collection of data to test reliability of the scale. Cronbach’s $\alpha = 0.946$. 
Reliability of Scales

To test the liking of each brand in the game, a five-point Likert-type scale was used. A Cronbach’s $\alpha$ was used to test reliability of the scales. It was run eight separate times, which are shown as follows:

- For the Hershey’s Scale experimental pre test: .935
- For the Hershey’s Scale experimental post test: .935
- For the Hershey’s Scale control pre test: .959
- For the Hershey’s Scale Control post test: .911
- For the Rockstar Scale experimental pre test: .968
- For the Rockstar Scale experimental post test: .965
- For the Rockstar Scale control pre test: .936
- For the Rockstar Scale Control post test: .944

Hypotheses

**Hypothesis 1A.** Hypothesis 1A predicted, “Participants in the experimental condition will have higher recall than participants in the control condition.”

Each participant has a recall score that was derived from their answers to questions regarding recall of in-game advertisements. The score was based on a summation of the following:

1) Recalling having seen ads (1 point for yes, 0 points for no)
2) Recalling how many different ads (1 point for each, up to two; 0 points for no ads or above two ads)
3) Recalling specific brands (1 point for Hershey, 1 point for Rockstar)
The recall score could not exceed five or fall below zero. The recall score for the experimental group was compared to the recall score for the control group to see if there was a significant difference between the two scores. Using an independent samples t-test, the following results were found.

There was a significant difference in the scores for the experimental group (M=4.14, SD = 1.484) and the scores for the control group (M=.37, SD= 1.010); t(127.317)=17.8, p=.000. These numbers are shown in Table 5. As such, the null hypothesis is rejected for H1A.

Cohens d = 3.1556; Effect size = .8446

Table 5

<table>
<thead>
<tr>
<th>T-test for Difference in Recall Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Control</strong></td>
</tr>
<tr>
<td>M</td>
</tr>
<tr>
<td>M</td>
</tr>
<tr>
<td>Recall</td>
</tr>
</tbody>
</table>

**Hypothesis 1B.** H1B predicted that, “The more weekly hours of gameplay participants in the experimental condition report, the higher their recall scores will be.” When correlated, there was a slight negative correlation (the more hours reported, the lower the recall), which was statistically insignificant; r(70)= -.103, p=.391. These results are displayed in Table 6. The null hypothesis for H1B must be accepted, as the numbers are not statistically significant. Controlling for age, sex, consumption of chocolate, and consumption of energy drinks did not affect the recall scores or correlation.
Table 6

*Correlation between Video Game Hours Played Per Week (HPW) and Recall (n=72)*

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. HPW</td>
<td>—</td>
<td>-.103</td>
</tr>
<tr>
<td>2. Recall</td>
<td>-.103</td>
<td>—</td>
</tr>
</tbody>
</table>

**Hypothesis 1C.** H1C predicted, “The more years of game play participants in the experimental condition report, the higher their recall score will be.” As shown in Table 7, when correlated, there was a slight, positive, and statistically insignificant correlation; $r(73) = .039$, $p=.741$. As such, the null hypothesis is accepted for H1C.

Table 7

*Correlation between Years of Video Games Played (Y) and Recall (n=73)*

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Years</td>
<td>—</td>
<td>.039</td>
</tr>
<tr>
<td>2. Recall</td>
<td>.039</td>
<td>—</td>
</tr>
</tbody>
</table>

**Hypothesis 1D.** H1D predicted, “The more weekly hours of first person shooter game play hours participants in the experimental condition report, the higher their recall score will be.” As shown in Table 8, when correlated, a slight, statistically insignificant, and positive correlation was found; $r(72) = .018$, $p = .881$. As such, the null hypothesis for H1D was accepted. Controlling for age, sex, consumption of chocolate, and consumption of energy drinks did not affect the correlation.
Table 8

Correlation for Weekly Hours of First Person Shooter Game Play (FPS HPW) and Recall (n=72)

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. FPS HPW</td>
<td>—</td>
<td>.018</td>
</tr>
<tr>
<td>2. Recall</td>
<td>.018</td>
<td>—</td>
</tr>
</tbody>
</table>

Hypothesis 1E. H1E predicted, “The more years of first person shooter game play the participants in the experimental condition report, the higher their recall scores will be. When analyzed, there was a slight, negative, and statistically insignificant correlation; r (72) = -0.021, p = .862. This is shown in Table 9. As such, the null hypothesis for H1E was accepted. When controlling for age, sex, consumption of chocolate, and consumption of energy drinks, the correlation was not affected.

Table 9

Correlation for First Person Shooter (FPS) Years of Game Play and Recall (n=72)

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. FPS Years</td>
<td>—</td>
<td>-.021</td>
</tr>
<tr>
<td>2. Recall</td>
<td>-.021</td>
<td>—</td>
</tr>
</tbody>
</table>

Correlations were run for the control group as well. Nothing of significance was found for relationships between the control group and the frequency of videogame play. For hours per week and recall, r (70) = .025, p = .837. For years of game play,
For weekly hours of first person shooter game play, $r(70) = .008$, $p = .945$. For years of first person shooter game play, $r(70) = .038$, $p = .753$.

**Hypothesis 2A.** H2A predicted, “The experimental liking score will be higher than the control liking score for the Hershey’s brand.” As shown in Table 10, An independent samples t-test indicate that there was no significant difference in the scores for the experimental group ($M=3.78$ $SD = .926$) and the scores for the control group ($M=3.77$, $SD= .887$); $t(141) =.082$, $p=.935$, Cohen’s $d = .0134$, effect size = .007. The null hypothesis for H2A was accepted.

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Experimental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hershey’s</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Liking</td>
<td>3.77</td>
<td>.887</td>
</tr>
<tr>
<td></td>
<td>$t(141)$</td>
<td>$p$</td>
</tr>
<tr>
<td></td>
<td>.082</td>
<td>.935</td>
</tr>
</tbody>
</table>

**Hypothesis 2B.** H2B predicted, “The experimental liking score will be higher than the control liking score for the Rockstar brand.” An independent samples t-test, shown in Table 11, indicated that there was no significant difference in the scores for the experimental group ($M=3.101$ $SD = 1.152$) and the scores for the control group ($M=2.76$, $SD= 1.135$); $t(141) =.076$, $p=.076$, Cohen’s $d = .013$, effect size = .006. The null hypothesis for H2B was accepted.
Table 11

*T-test of Differences in Liking Scores for Rockstar Brand*

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th></th>
<th>Experimental</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rockstar</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>t(141)</td>
<td>p</td>
<td>Cohen’s d</td>
</tr>
<tr>
<td>Liking</td>
<td>0.276</td>
<td>1.135</td>
<td>3.101</td>
<td>1.152</td>
<td>0.076</td>
<td>0.076</td>
<td>0.013</td>
</tr>
</tbody>
</table>

**Hypothesis 2C and Hypothesis 2D.** H2C predicted that, “The experimental conditions liking score for Hershey’s will be higher after exposure for the Hershey’s brand.” H2D predicted that, “The experimental condition liking score for Rockstar will be higher after exposure for the Rockstar brand.” A paired samples t-test, shown in Table 12, indicated that the data showed that the average liking score for the Hersheys brand decreased, and the average liking score for the Rockstar brand increased. However, there was no statistical significance; Hersheys: t(72)=1.261, p=.211, Cohen’s d = .2972, Effect size = .14699; Rockstar: t(72) = -1.411, p= .162, Cohen’s d = -0.33257, Effect size = 0.1640354. The null hypothesis for H2C and H2D was accepted.
Table 12

*Paired Samples T-test for Hershey’s and Rockstar*

<table>
<thead>
<tr>
<th></th>
<th>Hershey’s</th>
<th></th>
<th>Rockstar</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>1</td>
<td>3.93</td>
<td>.73</td>
<td>2.87</td>
<td>1.19</td>
</tr>
<tr>
<td>2</td>
<td>3.78</td>
<td>.93</td>
<td>3.10</td>
<td>1.15</td>
</tr>
<tr>
<td>t(72)</td>
<td>1.261</td>
<td>-1.411</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p</td>
<td>.211</td>
<td>.162</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cohen’s d</td>
<td>.2972</td>
<td>-0.33257</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Hypothesis 2E.** H2E predicted that, “Players who rate the activity of playing the video game more favorably will have a more favorable attitude toward the brands featured in the game.” Upon running a correlation between liking for the Hershey’s brand and game liking, shown in Table 13, a slight, statically significant positive correlation was found; \( r(73) = .283, p = .015 \). However, there was no statistical significance to the slight positive correlation that was found between liking scores for the Rockstar brand and liking scores for the game, as illustrated in Table 14; \( r(73) = .212, P = .071 \). Thus, H2E was only partially supported.
Table 13

*Correlation between Game Liking and Hershey’s Liking (n=73)*

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Game Liking</td>
<td>—</td>
<td>.283</td>
</tr>
<tr>
<td>2. Hershey’s Liking</td>
<td>.283</td>
<td>—</td>
</tr>
</tbody>
</table>

Table 14

*Correlation between Game Liking and Rockstar Liking (n=73)*

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Game Liking</td>
<td>—</td>
<td>.212</td>
</tr>
<tr>
<td>2. Rockstar Liking</td>
<td>.212</td>
<td>—</td>
</tr>
</tbody>
</table>
Chapter 5

FINDINGS AND INTERPRETATIONS

Discussion

An advertiser’s primary goal is to persuade people to purchase a product. While a straight-forward goal, the problem lies in how to achieve persuasion, especially when many traditional modes of advertising are already saturated. Currently, a new venue of advertising is that of the in-game advertisement. Marketing studies suggest that this is an effective avenue of persuasion (IGA Worldwide, 2007; Massive Incorporated, 2007, Skyworks Technologies, 2007; Green & Gitel, 2009; Martin, 2008; Landmark, 2008), while academics are still uncertain as to the true effectiveness of this type of advertising (Chaney et al., 2004; Grigorovici & Constantin, 2004; Schneider & Cornwell, 2005; Nelson, 2002; Sharma et al., 2007; Nelson et al., 2006; Yang et al., 2006, Lee & Faber, 2007; Winkler & Buckler, 2006; Nelson et al., 2004; Mau et al., 2008; Nelson, 2002; Wise et al., 2008; Glass, 2007; Acar, 2007). The goal of this thesis was to explore the effectiveness of this type of advertising from a new perspective and bring it into the field of Communication Studies.

In an attempt to create a new way to study this phenomenon, this thesis used the mere exposure effect to frame the problem in an attempt to predict, explain, and control the persuasiveness of this form of advertising. According to mere exposure, as mentioned in this study, simply exposing a person to a product enough times will increase recall and positive affect. The results of this thesis, however, suggest that while placing an ad in a game is enough to generate recall and brand awareness on a short-term basis, it may not
be enough to influence perceptions of that product. Table 15 shows a summary of this study’s hypotheses and the correlating finding.

Table 15

Findings

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Posit</th>
<th>Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1A</td>
<td>Participants in the experimental condition will have higher recall than participants in the control condition.</td>
<td>Supported</td>
</tr>
<tr>
<td>H1B</td>
<td>The more weekly hours of game play participants in the experimental condition report, the higher their recall scores will be.</td>
<td>Not supported</td>
</tr>
<tr>
<td>H1C</td>
<td>The more years of game play participants in the experimental condition report, the higher their recall scores will be.</td>
<td>Not supported</td>
</tr>
<tr>
<td>H1D</td>
<td>The more weekly hours of first person shooter game play participants in the experimental condition report, the higher their recall scores will be.</td>
<td>Not supported</td>
</tr>
<tr>
<td>H1E</td>
<td>The more years of first person shooter game play participants in the experimental condition report, the higher their recall scores will be.</td>
<td>Not supported</td>
</tr>
<tr>
<td>H2A</td>
<td>The experimental liking score will be higher than the control liking score for the Hershey’s brand.</td>
<td>Not supported</td>
</tr>
<tr>
<td>H2B</td>
<td>The experimental liking score will be higher than the control liking score for the Rockstar brand.</td>
<td>Not supported</td>
</tr>
<tr>
<td>H2C</td>
<td>The experimental condition liking score for Hershey’s will be higher after exposure to the Hershey’s brand.</td>
<td>Not supported</td>
</tr>
<tr>
<td>H2D</td>
<td>The experimental condition liking score for Rockstar will be higher after exposure to the Rockstar brand.</td>
<td>Not supported</td>
</tr>
<tr>
<td>H2E</td>
<td>Players who rate the activity of playing the video game more favorably will have a more favorable attitude toward the brands featured in the game.</td>
<td>Supported for only one brand</td>
</tr>
</tbody>
</table>
The first hypothesis in this thesis was substantially supported from the data collected. That is, placing ads within a game significantly increases participants’ recollection of having seen an advertisement and the type of advertisement seen. The remaining hypotheses, however, were not supported. These unsupported hypotheses looked primarily at changes in attitude toward the product from before and after playing the game (H2C and H2D), liking differences between the experimental and control groups (H2B), and correlations between attitude toward the game used for advertising and liking toward the products in the game (H2E). Overall, this would suggest that while in-game advertising is effective in creating recall, as far as this study shows, it might not be entirely effective in influencing attitude.

Taking a closer look at the first set of hypotheses, it is shown that placing an advertisement within a game increases recall. This is one standard assumption of mere exposure (Moreland & Zajonc, 1977; Craig et al., 1976, Birnbaum & Mellers, 1979; Rethans et al., 1986; Holden & Vanhuele, 1999; Wang & Chang, 2004; Yaveroglu & Donthu, 2008; Laroche et al., 1996; D’Sauza & Rao, 1995; Rindfleisch & Inman, 1998; Ray & Sawyer, 1971). When mere exposure has effectively occurred, the participant will recall the brand, even if they cannot recall exactly how or where. According to the analysis of the data from this experiment, such an effect will occur on a short-term basis equally across age groups and experience level. This means that an advertiser can place a brand or product in a game and that a consumer with recall having seen the advertisement and/or the specific product.
The second set of hypotheses dealt with attitude change. That is, according to mere exposure, if an effective exposure has taken place, then attitude toward the item to which a participant was exposed will increase positively (also referred to as positive affect). This is another core assumption for mere exposure (Birnbaum & Mellers, 1979; Bornstein & D’Agostino, 1992; Moreland & Zajonc, 1979; Kunst-Wilson & Zajonc, 1980; Zajonc, 1980; Moreland & Zajonc, 1977; Seamon et al., 1983a, 1983b, 1984; Bornstein, et al., 1987; Brooks & Watkins, 1989; Bornstein & D’Agostino, 1992; Janiszewski, 1993; Holden & Vanhuele, 1999; Monahan, Murphy, & Zajonc, 2000; Zajonc, 2001; Ishii, 2005; Grimes & Kitchen, 2007; Shapiro et al., 1997; Yoo, 2008; Zajonc, 1968; Harrison, 1968; Sawyer, 1973; Smith & Dorfman, 1975; Stang, 1975; Miller, 1976; Bukoff & Elman, 1979; Tellis, 1988; Machleit & Wilson, 1988; Anand & Sternthal , 1990; Kruglanski et al., 1996; Pashupati, 2003; Coates et al., 2004; Percy, 2006; Malaviya, 2007)

Only one of these hypotheses was partially supported, and the rest were not supported. That is, there was no change in attitude toward the Hershey’s or Rockstar brand from before playing the game to after playing the game and there was no difference in attitude toward the Hershey’s brand and Rockstar brand between the control group and the experimental group. When liking of the game itself was correlated to liking of the brand (for the experimental group), it was found that there was no correlation between liking of the game and liking of the Rockstar brand. However, there was a positive correlation between liking the game and liking Hershey’s. This finding is interesting because there was no change in liking score for the Hershey’s brand after playing the
game. The correlation was only that participants who liked the game more liked Hershey’s more. This finding could be a random anomaly, as no such correlation existed for Rockstar, or it could suggest that certain games are better for certain products because people who use a product are more likely to play that game or vice versa. However, there is no way to know whether this is a true connection or how the connection works from this data set.

It is possible that no change in attitude was found because participants could not give enough attention to the advertisement or because the context was unfavorable to the advertisement (Malaviya, 2007). That is, participants may not have been able to focus enough on the advertisements themselves to have a change in attitude. Further, many could not recall the correct advertisement or any at all. For example, 10 of the 78 participants, while recalling having seen advertisements, incorrectly listed at least one brand; some listed Rockstar and Nestle (instead of Hershey’s) or Redbull instead of Rockstar and so on. Those who listed brands not featured in the game listed brands featured in the survey. Seven of the 73 participants recalled no advertisements at all or could not list any.

Participants may have also found the video game, itself, or the testing environment unfavorable for change in attitude. For example, as mentioned above in the case of H2E, which was only partially supported, the type of game or the type of product may influence the effectiveness of in-game advertising.

In addition to the possibility that the context or advertisements could not generate a change in attitude, exposure itself could have posed an issue. For example, there may
have been not enough or too much exposure to the advertisement. Many video games hold the attention of gamers for hours on end. In-line with the experimental process of mere exposure, the more times a person is exposed to the product, the greater the increases in positive affect. It is possible that there was no statistical significance in liking increases toward the experimental brands because each participant only played one session of the game. However, it should be noted that the participants were exposed to each brand multiple times while playing the game. Without further testing, it is hard to tell exactly how many times each participant was exposed to the brand.

While marketing research suggests that this quickly expanding market is an effective route for persuasion (IGA Worldwide, 2007; Massive Incorporated, 2007, Skyworks Technologies, 2007; Green & Gitel, 2009; Martin, 2008; Landmark, 2008), academics are right to continue to study this venue of persuasion. Past studies have shown that the effectiveness of in-game advertising is far more complicated than working or not. That is, not all studies find the same level of recall or persuasiveness (Chaney et al., 2004; Grigorovic & Constantin, 2004; Schneider & Cornwell, 2005; Nelson, 2002; Sharma et al., 2007; Nelson et al., 2006; Yang et al., 2006, Lee & Faber, 2007; Winkler & Buckler, 2006; Nelson et al., 2004; Mau et al., 2008; Nelson, 2002; Wise et al., 2008; Glass, 2007; Acar, 2007). The results of this study alone reveal that there are factors that must be considered beyond whether or not the target audience recalls a brand. It is possible that games may not be the fertile advertising grounds that market researchers claim. There are variables to be accounted for, which have yet to be studied.
Future Directions

There are many possible avenues of research to pursue with this topic, specifically in two major lines of questioning. The first relates to methodology. This study used a the mere exposure in a way that has not been used before, in the application of video games and advertising, and a stimulus and method were created solely for the purpose of this study. For this reason, upon completion of the experiment, it became apparent that there were multiple changes and corrections that could be made to the methodology that might affect the outcome. The second major line of questioning relates to the actual findings of this study. That is, with relation to the results, new questions arose.

**Methodology directions.** There are several ways that this methodology could be developed to get results that are more accurate or to address slight changes in questions. For example, with eye-tracking technology, it is possible in further studies to physically track whether participants were looking at advertisements, how many times, and for how long. Another way to study this phenomenon would be to include data on the parts of the brain that are activated when participants are playing the video game using magnetic resonance images (MRI). In addition, capturing video during game play would add to data regarding how many times the participants actually pass the advertisements. Further, it would be beneficial to add the aspect of interaction, as many games with advertisements are played online and gamers have the ability to speak with others. Perhaps the added variable of conversation would influence the impact of advertisements in videogames.
In addition, another study could be created that changes the methodology in a way that incorporates decay. That is, the participants could be questions at times later than directly after the experiment. This could have been easily achieved by emailing them a link a week, two weeks, and three weeks later, that sent participants to a survey that asked questions of liking and recall.

**Hypotheses directions.** While any result, whether the null hypothesis was accepted, is a result, and each presents additional questions. The first hypothesis that presents an interesting question was Hypothesis 2E. This hypothesis revealed that brand type and game type might also have an impact on the effectiveness of advertising. A future study could address this by adding variables of game genre and product type to see if the correlations found between brand and game liking are replicable. That is, if the game type were different or the brands/products were different, would correlations between liking for the game and the product become apparent. Further, elements such as brand share, familiarity with the product, and competing brands could be manipulated.

The hypotheses regarding attitude change present an opportunity for future study. That is, there was no increase in liking in this study but if a study were to address the problem of attitude change over time, there might be a different result. For example, this study found that there was no change in attitude from time one to time two for either brand. If the question of whether liking changes over time for in-game advertising were asked, then there may have been new results. Further, liking between different brands could be addressed. That is, would liking change over time for different brands. This
study asked only if liking change from time one to time two for the two different brands, but did not compare those brands to each other.

The fact that recall was so high between groups but there was no change in liking also raises questions. While not tested in this study, mere exposure does indicate that sub-optimal exposure affects recall and liking. It would be reasonable to assume that another study could address the question of recall and the connection to liking beyond a simple correlation. If the exposure to brands were manipulated in such a way that the participant has no recollection of seeing the brand, would liking be affected?

Possible Limitations

There were several possible influential limitations to this study. The first being that it is difficult to determine whether any participants were actually exposed to any of the advertisements placed within the game. There are technologies that allow for recording computer activities in real time, such as FRAPS. However, due to the scope of this particular study and the equipment available for use, it was not feasible to incorporate it into the design.

Another limitation involved some conversation that occurred between students during the experiment. It was not made clear to them that they were not supposed to talk to each other during the game play, and some would exclaim that they had seen an advertisement. It is possible that this could have polluted some of the results.

Another problem was that some students had signed up multiple times for the study because extra credit was offered for certain courses. Luckily, the researcher caught
it when cross-referencing lists as students signed up, and told them that they could sign up only once. However, this could have potentially limited the results.

In addition, students were all in courses together. It is possible, that because the study occurred over three-day five-session span, students may have talked amongst themselves between the study sessions, thus informing other students what the study would entail.

Another limitation dealt with the actual design of the study. As this was a design that involved creating new scales and new measures for in-game advertising using mere exposure, the scales, although very reliable when running a statistical analysis, they were created from nothing, using only other studies as a guide. These surveys had never been used before. Further, because of the newness of this method, there were problems with the execution of the study. For example, actually giving the students directions was at times difficult because there was not one specific way to do it, nor was there a study using the same methodology that could be used as a guideline for how to direct students. As such, there was some trial and error in giving instructions to the students. This means that not every student may have had the same experience. It was kept somewhat consistent, in that directions were projected at the front of the classroom and thus were the same for every session. Students also did not always listen to the researcher in the sense that they did not always wait to start the game or had to stop and ask questions, thus taking more time to set up the game and then rushing the questionnaire at the end of the study.
In addition to contamination issues, some students failed to answer all questions. Further, around 30 were on a diet and almost half did not drink energy drinks. This may have affected the results of the study because the products featured were high-calorie items and one was an energy drink. Perhaps no change in liking occurred because students avoided those products when choosing consumer products. Further, the female (80) to male (62) ratio was not even, which may have influenced results.

Conclusions

In an age when our media are permeated with advertisements and messages of varying persuasiveness, it is necessary to become aware of the condition of modern media. The breadth and depth of this phenomenon can be seen in many very public places. For example, Google is launching technology that uses its search engine capabilities to customize in-game ads as you play (Gamboi, 2007, Google; Takahashi, 2008). Further, companies are teaming to create better and more dynamic in-game advertisements. For example, Microsoft created a company called Massive Inc., to create in-game ads, and most recently teamed up with EA games to launch ad campaigns (Gamboi, 2007, The devil; Microsoft, 2008; Shields, 2008, Massive).

Whether this avenue of persuasion is ever fully proven as a useful form of advertising, it appears to be gaining ground. Such an occurrence is a symptom of a larger condition: a society that is faced with the ubiquitous quality of advertising embedded within communication media. While studying the niche of in-game advertising is a small step toward understanding this condition, it is a step in the right direction.
APPENDICES
APPENDIX A

Registration Form

Registration for Video Game Testing

Please make note of your chosen date/time/room. This study will take up to one hour of your time. Plan on arriving 5 minutes early.

* Required

Name (Last Name, First Name) *

Please Select One of the Following Dates *
Monday, October 28, 6:00 PM in MND 2003

Please type your email address. *
Be sure it is correct so I can contact you if necessary.

In which course did you hear about this study? *
ComS106 (Dr. Bonilla)

Submit

Powered by Google Docs

Report Abuse - Terms of Service - Additional Terms
Registration for Video Game Testing

Please make note of your chosen date/time/room. This study will take up to one hour of your time. Plan on arriving 5 minutes early.

* Required

Name (Last Name, First Name)

Please Select One of the Following Dates *
- Monday, October 28, 6:00 PM in MND 2003
- Monday, October 28, 6:00 PM in MND 2003
- Monday, October 28, 7:00 PM in MND 2003
- Tuesday, October 29, 4:30 PM in MND 2007
- Tuesday, October 27, 6:00 PM in MND 2007
- Wednesday, October 29, 5:30 PM in MND 2003

In which course did you hear about this study? *
- ComS106 (Dr. Bonilla)

Submit

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Report Abuse - Terms of Service - Additional Terms
Registration for Video Game Testing

Please make note of your chosen date/time/room. This study will take up to one hour of your time. Plan on arriving 5 minutes early.

* Required

Name (Last Name, First Name) *

Please Select One of the Following Dates *
Monday, October 26, 6:00 PM in MND 2003

Please type your email address. *
Be sure it is correct so I can contact you if necessary.

In which course did you hear about this study? *

CamS106 (Dr. Bonilla)  
CamS114 (Dr. Bonilla)  
CamS190 (Dr. Bonilla)  
CamS100A (Dr. LeFevre)  
CamS 110 (Dr. LeFevre)  
CamS 174 (Dr. Zuckerman)  
CamS 116 (Dr. Zuckerman)
APPENDIX B

Questionnaires

Survey 1

* Required

What is your assigned number for this exercise? *

Which group are you in? *
Please select from options below

What is your age? *

What is your Sex? *
Please select from options below

If you were to imagine your average week, including the weekend, and considered how often you play video games, how many hours would you say you played video games per week? *
Please report in hours

If you were to imagine your average week, including the weekend, and considered how often you play first person shooters, how many hours would you say you played First Person Shooters per week? *
Please report in hours

Think about when you started playing video games, excluding periods during which you did not play games. Overall, how many years would you say you have been playing video games?
Please report in years
How many years have you been playing First Person Shooters? *
Please report in years

Are you on a Diet? *
Please select from options below

Are you Diabetic? *
Please select from options below

Do you eat chocolate? *
Please select from options below

Tasty
Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree
-----------------|---------|---------|-------|--------

Desirable
Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree
-----------------|---------|---------|-------|--------

Good Value
Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree
-----------------|---------|---------|-------|--------

Satisfying
Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree
-----------------|---------|---------|-------|--------

I like this Brand
Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree
-----------------|---------|---------|-------|--------

Howdy's *
Please rate this brand on the following scales

Tasty
Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree
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Desirable
Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree
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Good Value
Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree
-----------------|---------|---------|-------|--------

Satisfying
Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree
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I like this brand
Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree
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Mozzis *
Please rate this brand on the following scales

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Desirable
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Good Value
Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree
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Satisfying
Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree
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I like this brand
Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree
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### Nestlé
Please rate this brand on the following scales:

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### Ghirardelli
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Do you drink energy drinks?

Rockstar energy drinks
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Desirable

Good Value

Refreshing

I like this brand

Monster
Please rate this brand on the following scale:

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Desirable

Good Value

Refreshing

I like this brand

Redbull energy drinks
Please rate this brand on the following scale:

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Desirable

Good Value

Refreshing

I like this brand
### Bookoo Energy Drinks

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### Sobe Energy Drinks

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Survey 2

* Required

What group were you in? *
- Please select an option below

What number were you assigned? *

Rate the experience of playing this game on the following scale *

1 2 3 4 5
Bad ☐ ☐ ☐ ☐ ☐ Good

How fun was this game? *

1 2 3 4 5
Boring ☐ ☐ ☐ ☐ ☐ Fun

Did you like the game? *

1 2 3 4 5
Dislike ☐ ☐ ☐ ☐ ☐ Like

Was the game desirable? *

1 2 3 4 5
Undesirable ☐ ☐ ☐ ☐ ☐ Desirable
### Mars
Please rate this brand on the following scale:

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<th></th>
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### Hershey's
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### Nestle
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### Ghirardelli
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### Monster Energy Drinks
Please rate this brand on the following scale.

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### Redbull Energy Drinks
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<tr>
<td>Refreshing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I like this brand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Bookoo Energy Drinks
Please rate this brand on the following scale.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tasty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desirable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good Value</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refreshing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I like this brand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Sobe energy drinks
Please rate this brand on the following scale.

<table>
<thead>
<tr>
<th>Tasty</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Desirable</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Good Value</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Refreshing</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>I like this brand</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

Do you recall seeing any brands embedded in this game? *
Please select from options below

If so, how many different brands do you recall seeing? *

What brands were advertised? *

Submit
APPENDIX C

Controls and Group Assignments

Group Number

Move Forward
Jump: Spacebar
Look around:
Mouse
Fire: Left Click

Mouse

Move Sideways

Move Backward

Move Sideways

Survey 1: http://tinyurl.com/y8otevl
Survey 2: http://tinyurl.com/ye7lzmd

Instructions Projected at the Front of the Classroom

Screen One

Once you have signed in and signed your consent form with the corresponding number, please be seated at the desk with the same number.

Do not put the disc in your computer yet.

Log into your computer and begin the first survey http://tinyurl.com/y8otevl

(Address is also located on your instruction card)
When you finish the survey, please wait. You may surf until everyone has arrived and the study begins. We will load the game together.
Please do not start Survey 2 until we ask you to.

Screen Two

When the time limit is up, the game will inform you that you have reached the 15-minute limit. At that point, please exit out of your game. Do this by hitting escape. Click on “game” from the main menu and select “quit.” Eject the disc and place on your desk.

You may now proceed to survey two, listed on your instruction card.
http://tinyurl.com/ye7lzmd
APPENDIX D

Consent to Participate in Research

You are being asked to participate in research which will be conducted by Mary Strand in the Communication Studies Department at California State University, Sacramento. The purpose of this study is to investigate the impact of video games on communication processes. This information is important because of its implications for establishing a connection between the communication field and the phenomenon of gaming.

You will be asked to play a specific video game for approximately 15 minutes. You will then be asked to complete a questionnaire regarding the experience. The risks associated with this experiment are limited. Specifically, some participants have reported a feeling of nausea and dizziness due the to nature of the virtual environment. However, if you have experience playing video games, and have never experienced this sensation before, the risk of the feeling is substantially less.

There will be no personal benefit from participating in this experiment aside from the contribution you will add to the field. This study will help us to better understand communication processes in video games.

Your participation in the study will be kept confidential, and there will be no way to track your identity to your responses.

There will be no compensation for participation.

If you have any questions about this research, you may contact Mary Strand at (916) 949–5734, or by email at sirenchica@gmail.com

You may decline to be a participant in this study without any consequences. Your signature below indicates that you have read this page and agree to participate in the research.

________________________________________  _____________________
Signature of Participant                                                                      Date
Hi: For liking, we would use Likert scales (1 to 7 ratings) on such dimensions as “attractive,” “beautiful,” “appealing,” “symmetrical,” and so on. It shouldn’t really matter much which particular adjectives you use, so long as you use several of them (and try to form the responses into a scale, after checking coefficient alpha) and each of them has face validity (seems to obviously be measuring liking in some sense). As for recognition, we would usually present two or more stimuli in an array, some of the stimuli being “old” and others “new” in an objective sense (ie. Were shown to the participants before, or were not), and then ask participants which ones they had seen before. A weaker alternative would be to collect Likert-scale ratings, on a 1 to 7 scale, on such dimensions as “familiar.”

If you haven’t already seen it, then you ought to take a look at Bornstein’s meta-analysis of mere exposure research. I think he would argue that the impact of familiarity on liking for a produce would be greater insofar as people were not aware that the produce was being shown to them repeatedly. There is also an issue of whether a “massed” presentation of a produce (e.g., seeing a coca-cola can on the screen for a full five minutes) has the same impact as a “spaced” presentation (e.g., seeing the can presented five separate times, for one minute each time). I believe there is evidence showing that the latter presentation mode would have much stronger effects.

Good luck with your project.

-dick moreland-

From: Moreland, Richard L
Sent: Monday, June 01, 2009 11:40 AM
To: Moreland, Richard L
Subject: FW: Graduate Student Inquiry

From: Mary_Strand@doioig.gov [mailto:Mary_Strand@doioig.gov]
Sent: Monday, June 01, 2009 11:34 AM
To: Moreland, Richard L
Subject: Graduate Student Inquiry

Mr. Richard L. Moreland,

Hello. I am a graduate student at California State University, Sacramento. Currently, I am writing my thesis in the Communication Studies discipline. I am writing to you because my thesis is using mere exposure as its driving theory. I was hoping for some help.

For some background, I am looking specifically at the phenomenon of advertisements embedded within videogames. I am using mere exposure as a way to measure effectiveness (does being exposed to advertisements during gameplay increase liking/intent to purchase, etc?).

I wanted to know exactly what scales you used to measure liking and to measure recognition. Any help would be greatly appreciated.

Thank you for your time.

Mary H. Strand
916-949-5734
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http://www.jiad.org/vol5/no1/nelson/index.htm


Refutes common assumption that serious gaming is focused mainly on 18-34 year old males to the exclusion of kids and females. *NPD Group Press Releases.*


