Processing Pull-through Advertisements Screened During Sporting Telecasts: Effects of Advertisement Message Speed, Programme Context and Repetition Priming.

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Abstract

Exposing consumers to advertisements and communicating clear messages within advertisements is important for marketers in achieving desired outcomes such as generating brand awareness, creating favourable attitude toward a brand, or seeking product sales. Recent technological advancement in televised broadcasting has seen marketers introduce another advertising tool to gain exposure and communicate messages to potential consumers. Typically termed pull-through advertisements, these are executed at the same time viewers are watching a television programme. They must compete for processing attention among stimuli emanating from within the television programme.

Four studies examined pull-through advertisements as a stimulus that competed for processing attention within sport television broadcasts. These studies explored the effects of processing pull-through advertisements under conditions of different message speed, varied television programme context, and repeated brand exposure. Conclusions derived from results of these studies focused on explaining the manner in which advertisements compete for processing attention. These explanations were guided by two theories of information processing: feature integration theory—a cognitive information processing theory; and excitation transfer theory—an affective information processing theory.

Study One looked at establishing ecological validity for pull-through advertisements employed during sport television broadcasts. The study provided a content analysis that focused on characteristics and the use of pull-through advertisements as well as the television programme stimuli surrounding the pull-through advertisement at the time of execution.

Study Two examined effects of speed of pull-through advertisements on familiar and unfamiliar brand name recall, brand name recognition, and comprehension of advertisement messages. The study was conducted experimentally, with pull-through advertisements of various speeds being constructed for testing on a sample of Australians. It was also found that familiar brand names should only be used in pull-through advertisements, as all results for unfamiliar brand names were less favourable than that found for familiar brands.

Study Three explored effects of three different television programme contexts (dead, action, and excitement) on cognitive and affective processing of pull-through advertisements on levels of advertisement information processing, attitude toward the
advertisement ($A_{ad}$), and attitude toward the brand ($A_b$). This study also investigated whether people recalled seeing the advertisement. The study was performed experimentally and was informed by findings from Study Two.

Study Four investigated effects of repeated exposure of a brand name on attitude toward the brand ($A_b$) and purchase intent (PI). Pull-through advertisements were used in combination with advertisements in follow-up commercial breaks to repeatedly expose a brand name to consumers. This study was conducted experimentally and was informed by results of Studies Two and Three.

Overall, results of the experimental studies suggested the manner in which pull-through advertisements competed for processing attention among stimuli from sport television broadcasts was consistent with proposals made by information processing theories of cognition and affect, i.e., feature integration theory and excitation transfer theory. Pull-through advertisements were able to compete for processing attention within sport television broadcasts. Pull-through advertisements were able to break through the clutter of stimuli of a sport television broadcast and be processed through either cognitive or affective information processing systems. Processing of pull-through advertisements demonstrated that cognitive and affective processing systems are not mutually exclusive and that both cognition and affect can work in tandem to process information.

However, each system has its unique ways of allowing pull-through advertisement information to be processed. The use of both systems demonstrated that, even if deemed unwanted, words that made up a pull-through ad message were sufficiently distinguishable to allow processing to occur at a non-conscious level. It is here (at the non-conscious level) that stimuli surrounding the pull-through advertisement affect the advertisement message; particularly through the use of the affective information processing system. Whether pull-through advertisements were processed cognitively or affectively, or whether or not people recalled seeing words of the pull-through advertisement, just one exposure was sufficient to break through the clutter of sport television broadcast and achieves salient effects.
Statement of Originality

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

Brad Hill
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Yes Jackson, I can now come out and play!
CHAPTER 1

Introduction

Advertising is a tool used by marketers to communicate information to consumers about products or brands. This information is designed to either create awareness, stimulate interest, or to change people's attitudes toward a product or brand, with the ultimate intention of generating sales (Aaker & Day, 1974; Colman & Brown, 1983; D'Souza & Rao, 1995; Gibson, 1996). To generate awareness, interest, or attitude change, marketers understand they must communicate their product or brand “message” to a prospective market. To do so, they use a diverse array of communication channels: television; radio; print; Internet; roadside billboards; signage and logos displayed on motor vehicles; and at sporting arenas, almost anywhere or on anything that can reach consumers.

Of these media, television has the greatest audience reach (Wells, Burnett, & Moriarty, 1995; Yin, 2003). However, television offers a finite amount of available “air time” or commercial breaks in which marketers can communicate messages to viewers. Commercial breaks themselves, however, pose problems for marketers communicating messages to television viewers, as viewers use these breaks to get drinks, food, or go to the bathroom (Fowles, 1992). As a result, audience reach through advertisement messages contained within commercial breaks is greatly reduced. To overcome these problems, marketers search for ways to embed their messages within the programmes themselves. The notion of embedding advertising messages is not new and has been occurring in movies for some time (Higgins, 1985; Reitman, 1985; Weisberg, 1985). In addition, marketers are now able to display their brand names or have their products used during the film itself (Karrh, McKee, & Pardun, 2003; Sargent, Tickle, Beach, Dalton, Ahrens, & Heatherton, 2001; Nebenzhal & Secunda, 1993). This "product placement" is now a common practice in both movies and television programmes. Embedded advertisements also commonly appear in sport broadcasts.

The extent of embedded advertising found within a sport broadcast appears to be limited only by the technology available. Advertising and sponsor logos are displayed prominently on player uniforms, around the sides of playing fields and courts, and on scoreboards. More recently, advertisers have used increasingly unique placement of sponsor logos such as those placed on game balls and on time clocks.
situated on scorer’s tables (Pokrywczynski, 1994). Further, the quest for advertising space has resulted in advertisement placements within the broadcast itself. For example, sponsored statistics tables are screened during the broadcast, and sponsored game clocks can be embedded in the corner of the screen during play. Recently, the use of computer-generated advertisements emerged. Computer-generated advertisements display brand logos electronically placed on blank walls inside a sports arena or on the playing surface. Termed “virtual advertising”, these advertisements look like real stadium signage, but are visible only to television audiences (Doyle, 2000; Hey, 2002).

Technological advancement in television makes it possible to move words horizontally across the television screen during regular programming. This technology is typically used to provide television viewers with information such as news flashes, stock market share prices, and programming information. Advertisers and marketers have seized upon this technological advancement as yet another advertising tool, moving words horizontally across the television screen to form commercial advertisement messages. These moving words that form commercial advertisement messages are displayed during the television programme. Typically termed “pull-through advertisements” this new form of advertising appears to provide marketers added benefits in getting their advertising messages to consumers, though this has yet to be verified.

Sport broadcasts have become a particularly popular backdrop for the use of pull-through advertisements. To clarify, these advertisement messages are executed during the televised sport programme not during a commercial break. This means the messages are screened at the same time as television viewers are actually viewing the sport programme.

Pull-through advertisements typically appear along the bottom of a television screen, which allows television executives opportunities to sell extra advertising space by increasing the total amount of available advertising time, without decreasing the length of programmes. Consequently, pull-through advertisements provide an additional source of revenue for broadcasters.

Apart from providing an additional source of revenue for broadcasters, pull-through advertisements might also be of benefit to advertisers. In the broadcast media, advertisers face a number of problems in communicating messages to consumers. These problems include: having their message stand out and be noticed from the
clutter of other advertisements (Brown & Rothschild, 1993; Ha, 1996); preventing viewers from avoiding advertisements when they use their remote control to either "zap" advertisements by changing the television channel when a commercial break commences; allowing viewers to “zip” through commercial breaks of programmes previously recorded (Olney, Batra, & Holbrook, 1990; Zufryden, Pedrick, & Sankaalingam, 1993); or increasing the costs of producing and "airing" advertisements.

Pull-through advertisements could provide opportunities for marketers to overcome these problems as they are executed away from traditional commercial breaks, inserted into programmes, and are computer-generated. As pull-through advertisements are executed away from other commercial breaks, it is expected that they should stand out and be more readily noticed. Pull-through advertisements are also inserted into a programme, which should make viewers reluctant to “zap” or “zip” past the advertisement as they may do with traditional advertising. It is also impossible to “zap” or “zip” pull-through advertisements without missing programme content. The very nature of pull-through advertisements as computer-generated messages renders them inexpensive to produce. As such, pull-through advertisements offer marketers opportunities to overcome three problems of communicating messages through broadcast media: clutter, avoidance, and cost.

Perceived Advantages for use of Pull-through Advertisements

Clutter

Within the broadcast media advertisements are typically screened in groups (or “pods”) that form a commercial break. At times, up to six advertisements may be screened during a single commercial break. The high number of advertisements appearing in close proximity to one another is generally referred to as advertising clutter (Brown & Rothschild, 1993; Ha, 1996).

By avoiding advertising clutter, pull-through advertisements may stand out and be more readily noticed than advertisements appearing in commercial pods. It could be expected that viewers are more likely to attend to pull-through advertisements, thus making these more readily recalled and recognised than advertisements appearing during a commercial break. Having advertisement messages more readily recalled and recognised could lead to increased awareness and sales for the advertised product or brand.

Avoidance

Commercial breaks effectively disrupt transmission of the television programme. Intuitively, it would seem that permitting programme disruptions to allow the screening of advertisements would be a boon for marketers. However, television viewers make use of these disruptions to a programme to get drinks, food, or to go to the bathroom (Fowles, 1992). Research has shown that up to 50% of people viewing a programme avoid commercial breaks when screened (Krugman & Shamp, 1992). As a result marketers are faced with the challenge of retaining viewers during commercial breaks and decreasing the likelihood of viewers avoiding advertisements.

Furthermore, as remote controls and digital (DVD) and videocassette recorders (VCRs) provide opportunities for television viewers to avoid advertisements, pull-through advertisements could assist marketers to overcome this problem. As pull-through advertisements are aired within television programmes more people would be exposed to the advertisement messages. This increased exposure to pull-through advertisements is due to the difficulty of avoiding them. To avoid a pull-through advertisement viewers would either have to look away from the screen or skip past the pull-through advertisement resulting in their missing part of the programme. Pull-through advertisements thus appear less susceptible to viewer avoidance practices as people are compelled to view the advertisement.

Costs

Advertisers and television executives face high costs for the production and "airing" of commercial advertisements. Pull-through advertisements, however, can provide advertisers and television executives with a potentially cheaper advertising alternative. Pull-through advertisements typically consist of only computer-generated words and a brand logo. Unlike advertisements within commercial breaks, pull-
through advertisements do not require the use of celebrities, actors, or camera crews to produce the advertisement, which makes for an inexpensive alternative in terms of production costs.

The cost for airing commercial break advertisements is expensive. Traditionally, advertisements within a commercial break are of 30-seconds duration. Perhaps, in response to high costs for airing advertisements, 15-second advertisements are being used more frequently. Research has suggested there is little increased benefit from screening a 30-second advertisement when compared with one of 15-seconds duration (Singh & Cole, 1993; Stanton & Burke, 1998). In fact, as Shoebridge (1998) contended, some advertisers believe that one-second “blink” advertisements shown during a commercial break achieve benefits similar to those obtained through a 30-second advertisement. Notwithstanding this practice, although advertisers have sought to implement one-second “blink” advertisements, television executives have been reticent to approve their use (Shoebridge, 1998). Marketers may thus be attracted to pull-through advertisements as they provide opportunities for shorter advertisements at a reduced cost. Pull-through advertisements are typically executed for five to ten seconds and, unlike blink advertisements, are permitted by television executives.

The brevity of pull-through advertisements and their reduced cost also provide opportunities for marketers to increase the frequency of brand name exposure to consumers. Marketers might see advantages to repeat exposures of a brand name by combining pull-through advertisements with commercial break advertisements. In this case a pull-through advertisement could be executed prior to a commercial break. The commercial break would contain a 30-second advertisement for the same brand promoted by the pull-through advertisement. Combining the use of pull-through advertisements and commercial break advertisements provides marketers with opportunities to increase the frequency of exposure of a brand name within a short period of time. Advantages seen by advertisers for repeated exposure of brand names could include increased brand name recall, recognition, message comprehension, a promotion of positive brand attitude, and increased purchase intent.

In summary, pull-through advertisements have emerged as a viable component of the advertising mix. Pull-through advertisements are executed during a television programme and it appears that marketers may be able to use these to avoid advertisement clutter, decrease advertisement avoidance by viewers, and to reduce
advertisement costs per exposure. Thus, gaining an insight into their effectiveness as a method of advertising communication would be important for marketers.

The Problem

This preliminary analysis of pull-through advertisements suggests they solve many of the traditional problems facing advertisers including clutter, ad avoidance, and cost. It is still not clear whether pull-through advertisements are an effective form of advertising in terms of product and brand awareness, let alone intent to purchase. Pull-through advertisements also bring their own unique challenges.

Even though pull-through advertisements are typically executed away from the clutter of traditional advertisements, they do not appear in isolation. Programme content is present at the time a pull-through advertisement is executed. Thus, programme content may interfere with a viewer's ability to process the pull-through advertisement. While pull-through advertisements are removed from competing against commercial break advertisements and avoidance activities, they now compete against programme content. In the case of pull-through advertisements, it therefore appears that programme content is substituted for advertising clutter.

As programme content is substituted for advertising clutter, the effectiveness of pull-through advertisements and the ability to process information contained within these advertisements needs to be questioned. Advertising clutter has been previously found to decrease advertisement effectiveness (Brown & Rothschild, 1993; Elliot & Speck, 1998; Ha, 1996; Kaikati & Kaikati, 2004; Webb & Ray, 1979) or decrease attention, recall, and cognitive responses (Webb & Ray, 1979); and to lead to less favourable attitudes toward the advertisement ($A_{\text{ad}}$) being formed (Elliot & Speck, 1998). If programme content is substituted for advertising clutter, then similar effects could be found when pull-through advertisements compete for processing attention against programme content. Due to these possible deleterious effects it would be important for marketers to understand likely effects and effectiveness of pull-through advertisements as a method of communicating advertisement information.

Furthermore, as pull-through advertisements compete against programme content for processing attention, they also compete against programme context. Programme content is the quantity of stimuli found within the television programme at the time of execution of a pull-through advertisement. As pull-through advertisements are typically executed during sport broadcasts, programme content
would include: arena signage; logos on playing surfaces; player names on uniforms; score and time clocks; and the sporting contest itself. Programme context is the imagery displayed from the sport broadcast and the mood of the sporting contest at the time of execution of a pull-through advertisement. Programme context could include exciting or dull moments in the sporting contest, feats of high achievement or failure, and acts of good sportsmanship or violence.

The programme context in which a commercial break advertisement was placed was previously found to affect the advertisement’s attention-getting capacity (Lord & Burnkrant, 1993); the processing of advertisement information (Lord & Burnkrant, 1993); likeability and clarity of the advertisement (De Pelsmacker, Geuens, & Anckaert, 2002); memory of the advertisement (Furnham, Gunter, & Richardson, 2002); and attitude toward the advertisement ($A_{ad}$) (Aylesworth & MacKenzie, 1998). It appears the processing of pull-through advertisement information is also likely to be affected by programme context; however, this remains to be investigated.

Programme context is almost never considered when pull-through advertisements are executed (Brady, personal communication, October 8, 1999). Indeed, the timing of execution of a pull-through advertisement within a sport programme is typically at the discretion of the programming director. The director’s decision to execute a pull-through advertisement is based upon the contractual agreement between the television station’s sales department and the advertiser. As a result, broadcasters are concerned only with executing the pull-through advertisement the required number of times, as negotiated within a set period during the programme, rather than at specific contexts within the programme.

Many different types of contexts occur throughout the course of a television sport programme. A sport programme can depict contexts including: triumph; despair; anguish; controversy; excitement; replays; injuries; protests; anger; frustration; brilliant plays; and poor plays. With so many varied contexts possible within a sport programme questions are raised as to the effects these contexts might have on audience/viewer processing of pull-through advertisements.

Context effects could further complicate ad processing for the same pull-through advertisement executed a number of times during a sport programme. With the many varied contexts found within a sport programme, contexts for the same pull-through advertisement could vary. Therefore, it is unclear as to how the repeated
execution of a pull-through advertisement might be processed under conditions of varied programme context.

In addition to the unknown impact of context effects on pull-through advertisements, the effects of the speed at which messages move across the screen are unclear. Execution of pull-through advertisements requires viewers to read and process advertisement information. However, the speed at which text messages move across the screen could affect processing of advertising information. Studies have found that relationships exist between speed of reading and information processing (Just & Carpenter, 1987; Eysenck & Keane, 1990; Smith, 1978). People were found to process less information if the speed of reading was either too slow (Just & Carpenter, 1987; Smith, 1978) or too fast (Just & Carpenter, 1987; Smith, 1978). As pull-through advertisements are dynamic, questions remain as to whether the speed of advertisement messages also plays an important role in processing advertisement information. If so, the optimal speed of pull-through advertisement messages would be critical knowledge for marketers.

Apart from the possibility that processing pull-through advertisement information could be affected by message speed, the brevity that pull-through advertisements are aired could also affect processing of advertisement information. Even though it is suggested that one-second blink advertisements are able to achieve benefits similar to those obtained through a 30-second advertisement (cf. Shoebridge, 1998), it is unclear that processing of information contained from within a five to ten-second pull-through advertisement will achieve similar benefits.

The brevity of pull-through advertisements could also be attractive to marketers in allowing them to increase frequency of brand exposure to consumers at little added cost by using pull-through advertisements in combination with advertisements in commercial breaks. Not only could using pull-through advertisements in combination with advertisements during commercial breaks increase the frequency of brand exposure for viewers, but also the length of time between brand exposures would be shortened. Pull-through advertisements (when used in conjunction with commercial break advertisements) thus provide opportunities to increase frequency of brand exposures.

It is possible that “priming” effects for the advertised brand may result from increasing frequency of brand exposure. Priming is the use of a stimulus exposed before a target (Bruce, Carson, Burton, & Kelly, 1998; Eysenck & Keane, 2000). It is
a phenomenon that permits recently activated and frequently activated ideas to come into mind more readily than ideas that have not previously been activated (Fiske & Taylor, 1984). While this has advantages (such as top of mind awareness), priming effects were found to have conflicting effects on information processing.

Murphy, Monahan, and Zajonc (1995) found participants believed repeat exposures of a prime and target stimulus would lead to boredom and decreased liking for that stimulus. However, showing subjects Chinese ideographs at varied durations of exposure that promoted either conscious or non-conscious information processing, then asking participants to make two judgements about each ideograph in terms of liking and recognition, Murphy et al. discovered these beliefs by participants occurred at a conscious level, whereas contrary results were found at a non-conscious level. At the non-conscious level, repeat exposures of a prime and target stimulus led to increased liking for that stimulus. Murphy et al. found that at non-conscious levels, affective priming and repeat exposure had a combined effect on information processing.

Thus, pull-through advertisements used as primers could lend themselves to conditions in which conscious and non-conscious information processing may raise contradictory effects in consumers. As pull-through advertisements lend themselves to conditions in which non-conscious processing and affective priming are possible, further investigation appears warranted to determine whether outcomes similar to those found by Murphy et al. are found for processing pull-through advertisements.

**Summary**

Potentially, programme content and context, speed of advertisement message, and priming may place extra load on attentional demands when attempting to process pull-through advertisements. Thus, pull-through advertisements compete for processing attention amongst all other information present from a television programme at the time a pull-through advertisement is executed. As this competition for processing advertisement and television information is occurring simultaneously, it also indicates that competition for processing attention is taking place within the same communication channel. A communication channel is a vehicle or medium through which signals or information is sent (DeVito, 1986). It is a route that carries messages or information (Watson & Hill, 1997). As pull-through advertisements are screened in conjunction with a television programme, both advertisement and
programme information are carried through the same route. Attentional capacity is said to be “limited” (Cowan, 1995, p. 8.); hence, both pull-through advertisements and television programme information compete for processing attention.

To gain a deeper understanding for how pull-through advertisements compete for processing attention within a communication channel, it would be useful to refer to models of communication. Furthermore, to facilitate this deeper understanding of competition for processing information within a communication channel, it is useful to explore theories of information processing. Chapter Two focuses on models of communication to aid the discussion of theories of information processing. From this discussion, research questions are drawn to provide a basis for further investigation and to determine likely effects of processing pull-through advertisement information when competition among information for processing attention is high. Chapter Three provides an ecological validity study of pull-through advertisements. This chapter provides a qualitative study that provides background information on the characteristics and use of pull-through advertisements. From this study, three (3) major concepts emerge that warrant further investigation. Chapters Four, Five, and Six subsequently detail quantitative experiments on each of the three major concepts emerging from the ecological validity study in Chapter Three. Separate literature reviews, methods, results, and discussion sections appear within each chapter. Finally, Chapter Seven provides an overall discussion and conclusions of the themes emerging from the work undertaken within this thesis.
CHAPTER 2

Literature Review

In this chapter, two theories of information processing will be discussed – feature integration theory and excitation transfer theory. This provides a framework for understanding the manner in which, and possible effects of, a stimulus that competes for processing attention among stimuli. To aid this discussion, reference is made to elements found within models of communication and factors that affect information processing within communication channels. Discussion focuses upon information processed through cognition and affect, as understanding cognitive and affective information processing can provide insight into the types of “mental events or feelings of decision-makers”. In turn this helps explain “actions of consumers [or their] intent to act prior to a performance of a particular behavior” (Bagozzi, 1982, p. 562).

Focus on cognitive and affective information processing is key, as responses to information processed through cognition or affect “are important indicants of overall message effectiveness” (Lutz, 1985, p. 45). Thus, links for cognitive and affective information processing are then made to processing advertisement information. The chapter commences with a discussion of competition among stimuli within a communication channel.

Communication Channels and Information Processing

Competition among stimuli for processing attention occurs within a communication channel (de Cheveigne, 2003; Gorea & Papathomas, 1989; Kotchoubey, Wascher, & Verleger, 1997; Zeef & Kok, 1993). The stimuli found within a communication channel are either target stimuli intended for processing or other outside influences and unwanted matter not intended for processing (Hiebert, Ungurait, & Bohn, 1991; Oden, Rueckl, & Sanocki, 1991; Shannon & Weaver, 1948).

Target stimuli intended for processing could be stimuli relevant to a message; for example, advertisers want to send consistent messages to consumers about products or brands. Television advertisements are typically structured so stimuli such as text, music, colour, brand names, and other sounds and visual images are relevant and consistent with messages about the product or brand. These stimuli are exposed to consumers simultaneously, and as a result, communication channels can have large
volumes of relevant stimuli that require processing. Hence, within a communication channel, a stimulus intended for processing must compete with other relevant target stimuli for processing attention.

Alternatively, within a communication channel, there could be unwanted matter that is not intended for processing; for example, while viewing a television advertisement a telephone or doorbell could ring or viewers might talk to one another. Here, advertisers would deem the telephone, doorbell, and people talking as unwanted matter within the communication channel. Thus, within a communication channel, a stimulus intended for processing must also compete for processing attention among unwanted or irrelevant stimuli.

Models of communication show that irrelevant or unwanted stimuli existing within a communication channel are typically termed “noise” (Hiebert, Ungurait, & Bohn, 1991; Shannon & Weaver, 1948). Noise existing within a communication channel can also be processed (cf. Shelepin, Kharauzov, Krasil’-nikov, & Pronin, 1999) and can “diminish or corrupt the integrity of the [intended] communication and possibly distort the message for the receiver” (Stirzinger & Mishna, 1994, p.333). Communication models indicate certain problems for processing messages when noise is present within the communication channel. Hence, noise is an important influence on message processing.

Noise within a communication channel can take the form of audible (Shannon & Weaver, 1948; Stirzinger & Mishna, 1994) or visual stimuli (Pelli & Farrell, 1999; Stirzinger & Mishna, 1994). Research on noise represented as sound has included studies investigating the impact of a telephone ringing or a baby crying while people listened to a television programme (Hiebert et al., 1991), background music when people performed complex cognitive tasks (Furnham & Strbac, 2002), or building construction noise that interfered with conversation and television watching (Ng, 2000).

Noise represented as visual stimuli can include motion (Reisbeck & Gegenfurtner, 1999), colour (Allen, Weber, & May, 1993), and clarity (Hiebert et al., 1991). Reisbeck and Gegenfurtner (1999, p.3267) found that “despite excellent sensitivity to direction of motion” the human colour vision system could become impaired when attempting to code the speed of a stimulus. Hence, the speed at which a stimulus appears within a communication channel can become noise itself and affect processing of that stimulus.
Allen, Weber, and May (1993) found that colour could also become visual noise and affect processing of information. They found that noise would greatly increase for older people than younger people when coloured information was presented. Allen et al. suggest that the effect of this increased noise could affect selective attention for older people when processing coloured information.

Clarity of visual stimuli also played a role in determining the quantity of noise found within a communication channel. For example, noise within a communication channel was found to increase if newspapers were poorly printed or motion pictures were out of focus (Hiebert et al., 1991). Further, the quantity of visual noise itself within a communication channel poses problems for the communication of messages. An increased quantity of visual noise emanating from a number of irrelevant or unwanted stimuli can increase the load on processing capacity. When the load on processing capacity is increased (particularly through visual noise), advertisement message distortion increases (Volke, Dettmar, Richter, Rudolph, & Buhss, 1999).

Noise is an important concept for the processing of pull-through advertisements as it raises issues of how effectively the advertisements may be processed. As pull-through advertisements are aired in conjunction with television programmes, the content from the programme acts as both visual and auditory noise within the pull-through advertisement communication channel. Accurate processing of the advertisement message is likely to be diminished due to this noise.

On the other hand, pull-through advertisements themselves could be deemed as visual noise, particularly as television viewers might see pull-through advertisements as unwanted stimuli that intrude into the television programme. Research shows that noise itself can be processed (Shelepin, Kharauzov, Krasil’nikov, & Pronin, 1999), but at the cost of diminished processing of stimuli contained within the television programme. These alternative perspectives of processing pull-through advertisements raise questions as to how this stimulus is likely to compete for processing attention among stimuli from the programme content.

Wickens (1976) established that noise competes with a target stimulus within a communication channel for processing attention. This competition for processing attention between noise and stimulus affects the capacity of the communication channel (Cohen, 1975; Dosher, & Lu, 2000; Hutt, 1975). Two theories have been put forward to explain how competing stimuli impact on the communication channel: parallel information processing, and sequential or serial information processing. These
two theories are based on a model of information processing developed by Broadbent (1958).

Broadbent’s model shows that all incoming information progressed through a two-stage procedure in order for the information to be processed. In this model, all information initially passed through Stage One, which resulted in all information being processed simultaneously. Information that needed to be scrutinised was then processed again in Stage Two. In this second stage, unwanted or irrelevant (noise) information was eliminated from processing, so focus of attention could occur toward a more relevant piece of information. Hence, Stage One of Broadbent’s (1958) model indicated that information processing occurred in parallel, while Stage Two suggested information was processed sequentially. A deeper discussion of Broadbent’s (1958) model and its impacts on information processing theory development occurs later in this chapter).

The two theories based on Broadbent’s (1958) two-stage model suggest parallel information processing results in a communication channel that would actually be unlimited in capacity. This ability for unlimited capacity within a communication channel was due to memory recognition effects and the ability to process stimuli simultaneously (Townsend & Nozawa, 1995; Wenger & Townsend, 2000). On the other hand, sequential information processing would result in a communication channel becoming limited in its capacity to process the various stimuli. Limitation of a communication channel was due to overload and the need to focus on and process relevant pieces of information more deeply (Bjork & Murray, 1977; Finkelman, Zeitlin, Filippi, & Friend, 1977; Sperling, 1986). We will now explore these two theories in more detail.

Parallel Information Processing

Parallel information processing is when a quantity of stimuli is processed simultaneously (Kotchoubey & Lang, 2003; Liu, 1997; Maekelae, Rovamo, & Whittaker, 1997). Processing stimuli in parallel (or simultaneously) occurs automatically and without conscious attention (Brown, Roos, & Carr, 1995; Han, Humphreys, & Chen, 1999; Knosche, Lattner, Maess, Schauer, & Friederici, 2002). Automatic processing of stimuli without conscious attention is possible, as stimuli have become “distinguishable” within a memory set (Schneider & Shiffrin, 1977), as these stimuli have been practiced over many years (Wright, 1998). For example,
words, letters, and numbers are stimuli found to become automatically processed (Jackson & Coney, 2005; Noldy, Stelmack, & Campbell, 1990; Rayner & Sereno, 1994; Schneider & Shiffrin, 1977).

When stimuli are readily distinguishable, processing of these stimuli places little (Nikolic, 1999), if any (Eysenk & Keane, 2000), demand on processing capacity and stimuli are processed with minimal effort (Haber, 1981; Nikolic, 1999). The automatic processing of stimuli occurs with such minimal effort that stimuli are processed without conscious attention (Haber, 1981; Holtzman, 1983; Wingfield, Goodglass, & Lindfield, 1997). Processing of readily distinguishable stimuli occurs with such minimal effort that a communication channel is said to be unlimited in its capacity to process such stimuli (Monnier, 2001).

Processing stimuli within a communication channel of unlimited capacity permits all stimuli to be attended (Monnier), thus increasing the quantity of stimuli processed. As the communication channel is said to be unlimited in its processing capacity, large quantities of readily distinguishable stimuli (whether relevant or irrelevant) could be processed in conjunction with a stimulus. This theory suggests if noise within the communication channel is readily distinguishable, it is likely that this noise could also be processed, albeit at a non-conscious level. As words and letters have been deemed as readily distinguishable, it could be that pull-through advertisements, even when deemed to be noise, could be processed. Processing of pull-through advertisements would occur at a non-conscious level, and would occur simultaneously with competing stimuli.

Sequential Information Processing

Sequential information processing within a communication channel transpires when processing of stimuli occurs one stimulus at a time (Fiske & Taylor, 1984; Matlin, 1998; Townsend & Nozawa, 1995, Wenger & Townsend, 2000). When using the sequential information processing, the focus for processing attention remains on a stimulus until that stimulus has been fully processed, with all other stimuli present at that time being ignored. Typically, when sequential information processing is used, the focus of processing attention is toward a relevant stimulus. Thus, noise in a communication channel would be ignored.

The nature of sequential information processing indicates competition for processing attention among stimuli can lead to a communication channel becoming
limited in processing capacity. When this happens, the communication channel limits the quantity of stimuli it processes by reducing resources available for processing stimuli (Cohen, 1975). Reduced availability of resources leads to allocation of resources to focus or “narrow” attention to process a relevant stimulus, rather than sharing processing attention among other stimuli or noise (Sanders, 1997). As available processing resources are focused on a relevant stimulus, stimuli that do not receive attention are not processed. Thus, attentional overload can limit processing performance of stimuli (Thomas, 1997; Dosher & Lu, 2000). Sequential information processing, therefore, increases competition among stimuli and limits the processing capacity available within a communication channel. As a result, noise and other less relevant stimuli are unlikely to receive processing attention even though they serve to narrow processing attention toward a relevant stimulus.

Introducing a pull-through advertisement into the mix of stimuli already present within a program would serve to increase attentional load. Which stimuli from within the mix are to be processed is at the discretion of the receiver, or in this case, the television viewer. If viewers thus focus their attention toward the program to reduce the quantity of stimuli competing for attention, and as such reduce attentional load, a pull-through advertisement could be ignored.

It is unclear, however, whether the addition of a stimulus such as a pull-through advertisement in a broadcast television environment where many stimuli exist will lead to attentional overload. It is also unclear whether viewers, through the use of sequential processing, will limit the communication channel so attention remains focused on programming content or upon the pull-through advertisement. Furthermore, if sequential processing is used, it is unclear which stimuli are likely to be ignored.

In summary, the human information processing system contained within communication channels can be characterised by two processing systems: (1) a non-conscious, parallel processing and almost unlimited capacity system; and (2) a conscious, serial processing and capacity-limited system (Bargh, 1982; Callaway & Naghdi, 1982; Monnier, 2001). The first system allows readily distinguishable stimuli to be processed simultaneously. Here, readily distinguishable stimuli present within the communication channel (which would include noise) can be processed (Nikolic, 1999). Hence, readily distinguishable noise within this communication channel is less likely to be ignored as noise can be processed along with other stimuli, albeit at a non-
conscious level. The second processing system allows for more elaborate processing of a stimulus. Here it is possible that noise within the communication channel can be consciously ignored so that focus is toward a relevant stimulus. To facilitate understanding of the manner in which a stimulus is likely to be processed among competing stimuli, and to explore the effects (if any) of the processing of a stimulus among competing stimuli, theories of information processing is now discussed.

Theories of Information Processing

According to Driver (2001) theories to explain processing stimuli through attention have been based upon analogies drawn between attentional limits of people and limits of central processing units in many computers. Broadbent (1958) used these analogies within computer science to describe the manner in which people were likely to process information. These analogies are useful in describing information processing, as computer operations require inputs of information to be processed and analysed before outputs can be achieved. Similarly, people are also required to input, process, and analyse information before outputs can be achieved. Thus, people are also seen as information processors, with similar limitations and systems for processing information. Hence, theories of information processing are generally based upon the paradigm of people being information processors.

Two alternative but specific theories of human information processing will now be investigated. The first is feature integration theory (Treisman & Gelade, 1980) evolved from the field of cognition (Posner, 1989). The second, excitation transfer theory (Zillman, 1978), emerged from the field of affective information processing. These two theories were selected to represent cognitive and affective information processing. Both theories address how information might be processed within environments where large quantities of stimuli could be present, such as the environment in which pull-through advertisements are most often used. Together, cognitive and affective information processing theories (of advertisements) have generated much discussion within the advertising literature (Buck, Anderson, Chaudhuri, & Ray, 2004). By drawing on these two alternative theories, the present research furthers this debate.
Feature Integration Theory

One of the most influential theories of information processing was Broadbent's filter theory (Broadbent, 1958). Broadbent's filter theory was based on his two-stage model of information processing. Broadbent's model indicated that in Stage One, all incoming stimuli were initially processed in parallel, while more complex information was processed in a serial manner in Stage Two. Processing in Stage Two is regarded as being of limited capacity, hence all stimuli from Stage One could not be processed. Broadbent theorised that a selective filter between Stages One and Two reduced the quantity of stimuli to be processed to a more manageable level and protected Stage Two from overload. This meant some stimuli would not pass from Stage One to Stage Two, leaving some stimuli "unattended" in terms of processing (Broadbent, 1958).

Broadbent's filter theory was concerned mainly with selective attention of audio stimuli. However, this theory remains the basis for research on selective attention in vision as well (Driver, 2001). One theory of attentional processing of visual stimuli to emerge from Broadbent’s filter theory is feature integration theory. This theory was specifically designed for visual information processing (Allport, 1989, Treisman, 1988; Tresiman & Gelade, 1980), emerging from the area of cognitive science (see Posner, 1989) and visual cognition (Humphreys & Bruce, 1989; Yantis, 2001).

Feature integration theory built upon Broadbent's filter theory by acknowledging that unattended stimuli in Stage One of Broadbent's model can be processed. Support for the idea that unattended stimuli can be pre-attentively processed during Stage One emerged through psychological investigation (Lewis, 1970; Mackay, 1973). Treisman's (1998) addition to Broadbent's filter theory indicated that in Stage One of processing unattended stimuli (which take the form of simple physical features) could be pre-attentively processed. Pre-attentive processing is an inferred stage of early vision that occurs before any conscious visual experience (Treisman, 1998).

Pre-attentive processing is important for attention and information processing, as it allows simple physical features to be registered early, automatically, and in parallel across the visual field with no attentional limits (Treisman & Gelade, 1980; Yantis, 2001). Thus, feature integration theory suggests processing of simple stimuli occurs pre-attentively, in a non-conscious manner in Stage One, while more elaborate
processing of stimuli continue to require attentive conscious serial processing, as similarly found in Stage Two of Broadbent's model.

Simple stimuli that are pre-attentively processed are done so at weaker levels than stimuli that are attended and processed in a serial manner (Driver, 2001). Stimuli are pre-attentively processed at such weak levels that little meaning is usually derived from them. However, this weak processing can be sufficient for identification of stimuli (Driver, 2001). Within feature integration theory these simple stimuli that can be pre-attentively processed are termed features. They would typically include features such as the colour red or a vertical line (Treisman & Gelade, 1980).

Within feature integration theory, stimuli requiring more elaborate processing are regarded as objects (Treisman & Gelade, 1980). Objects are formed when features are combined. It is the combining of features that determines the need for more elaborate processing. As more elaborate processing occurs when features are combined to form objects serial processing is required.

Alternately, the processing of features requires little effort. Features are processed in parallel with no attention limits prior to conscious awareness. The ability to process features pre-attentively is achieved through top-down processing (Treisman & Gelade, 1980). Top-down processing utilises past experiences with features so they become stored in memory. Thus, by using top-down processing, unattended features within a visual scene that have been previously stored in memory can be processed prior to conscious perception (Treisman & Gelade, 1980).

Wolfe and Bennett (1997) suggest that objects could become features. This requires substantial processing of the basic features attributed with an object, so the object becomes thought of as a pre-attentive object file (see Wolfe & Bennett, 1997). Thus, basic features attributed to an object that earlier received considerable processing could be pre-attentively processed.

Pre-attentive processing of objects implies that some unattended objects stored in memory through previous substantial processing can also be processed prior to conscious perception. Hence, it appears that some objects can be processed in a similar manner to features. Objects pre-attentively processed are, for example, letters of the alphabet (Driver & Baylis, 1991; Gardner, 1983; LaBerge, 1973; cf. Quinlan, 1998; Pashler & Badgio, 1987; Schneider & Shiffrin, 1977; Styles & Allport, 1986, Wolfe & Bennett, 1997).
However, not all researchers share confidence in the finding that letters can be processed pre-attentively (see Estes, 1972; Gibson, 1971; Johnson, Forester, Calderwood, & Weisgerber, 1983; Ogden, Martin, & Paap, 1980; Thompson, 1987). The common belief held among opponents of pre-attentive letter processing is that the processing of alphabet letters requires the combining of features through "conjunction" (a term used by Treisman, 1977 and Treisman & Gelade, 1980). Combining features through conjunction to form letter objects requires more elaborate processing. More elaborate processing to conjoin features to form letter objects occurs under serial processing conditions, which occur after pre-attention of features (Treisman & Gelade, 1980).

Debate also surrounds pre-attentive processing for words. Studies have proposed that unattended words can be processed non-consciously or implicitly (Lewis, 1970; Shapiro, Heckler, & McInnis, 1997; Tipper & Driver, 1988) or automatically (Deutsch & Deutsch, 1963; MacLeod, 1991). Alternatively, Rees, Russell, Firth, and Driver (1999) found that, when placed under high perceptual load, people are unable to process words even when the person looks directly at ignored words. Even though Rees et al. (1999) found inability to process words, they indicated this inability occurred under high perceptual load, when task processing was demanding. They suggested pre-attentive processing of words might still be possible if task demands were low or when perceptual load surrounding words were low. This belief that pre-attentive processing of words might still occur under low perceptual load is also supported by Treisman and Gelade (1980), who proposed that processing letters pre-attentively can occur under conditions of low, but not high, perceptual load.

It therefore appears that ability to process letters and words depends not so much upon the construction of the letters and words themselves, but rather upon stimuli surrounding letters and words at the time of processing. When stimuli surrounding target letters and words create conditions of low perceptual load, it appears that pre-attentive processing of letters and words is possible. Conversely, when stimuli surrounding target letters and words create conditions of high perceptual load, then pre-attentive processing of letters and words appears not to occur. Under these conditions, serial processing of target letters and words would be likely.

Given that under low perceptual load conditions, empirical studies demonstrate that letters and words are processed without being ignored (albeit non-consciously). It appears that words making up a pull-through advertisement could be
processed similarly. This is provided that surrounding stimuli create conditions of low perceptual load or that the task for processing is low. Thus, it appears possible that pull-through advertisements can be processed and not ignored. On the contrary, if surrounding stimuli create conditions of high perceptual load or require higher demands for processing, pull-through advertisements could be ignored in favour of continued processing of stimuli from the television programme. It is unclear whether the stimuli surrounding pull-through advertisements would constitute high or low perceptual load. As a result it is ambiguous or underdetermined whether pull-through advertisement information will be ignored or processed pre-attentively.

Recently, studies involving pre-attentive processing moved away from using a single item as a target, such as colour, shapes, or a letter of the alphabet. Investigation of pre-attentive processing began to focus on "chunks" of related stimuli, such as combination of letters that form a word (see Rees et al., 1999; Shapiro et al., 1997). By using pull-through advertisements as a target of investigation to determine the manner in which a stimulus is likely to be processed among competing stimuli, insight will be gained into the manner in which a string of related words (as in the advertisement message) is processed.

It was suggested that through pre-attentive processing, consumers’ were capable of processing advertisements in a non-conscious manner (Shapiro, Heckler & McInnis, 1997). Furthermore, as shown by Janiszewski (1988, 1993) and Shapiro and McInnis (1992), pre-attentively processed information within advertising contexts were capable of affecting consumer judgements about advertisements and brands. The method for processing information in a non-conscious manner through pre-attention was theorised by Treisman in her work within the visual information-processing field on feature integration.

Feature integration theory suggests that within the visual information processing system certain types of information including advertisements were capable of being processed prior to conscious awareness in a stage of pre-attention. Thus, it is possible for consumers to process advertisements without being consciously aware of their processing them. Feature integration theory also suggests that information processed in the pre-attentive stage is likely to be processed simultaneously or in parallel, which means other information that is present, even if deemed not relevant, could be ignored and still be processed (Shapiro, Heckler, & McInnis, 1997). Thus, information emanating from the television programme at the time a pull-through
advertisement is executed and the pull-through advertisement itself are capable of being processed at the same time, even if consumers deem the advertisement to be irrelevant.

Stimuli from the televised sport programme can attach itself to the pull-through advertisement that could lead to distortion of the intended message advertisers sought to send to consumers. Furthermore as feature integration theory suggests that information can be processed in a non-conscious manner, pull-through advertisements could be processed by consumers without conscious awareness, thus affecting their attitude formation toward brands without their knowledge. Gaining an understanding of televised sport programme contexts that could effect processing of pull-through advertisements, as well as the outcomes of these effects in terms of advertisement effectiveness, would be important information for marketers. Use of feature integration theory would aid in understanding the methods consumers might employ to process pull-through advertisements.

Excitation Transfer Theory

The theory that describes the manner in which information can be processed in an affective, emotional condition of physiological arousal is Zillman's (1978) excitation transfer theory. Zillman's theory is based on the belief that a stimulus is able to manifest arousal, which can be transferred or misattributed to an irrelevant stimulus that did not cause the arousal. The end result is a heightened emotive response for the irrelevant stimulus. This heightened emotive response becomes misattributed or transferred as individuals have difficulty interpreting the cause of their own physiological state and tend to attribute it to a more salient stimulus (Turnbull & Wolfson, 2002).

A key element in Zillman's theory (1978) is that arousal heightens an individual's emotive response. Arousal is not emotion, but serves to increase an individual's emotive state. Arousal can come from "innocent sources" and can intensify affect toward irrelevant objects that become salient (Fiske & Taylor, 1984). Thus, arousal can serve to increase or amplify an individual's positive or negative emotive state. In other words, arousal combined with emotion can make the emotive state more strongly positive or more strongly negative.

Studies involving excitation transfer show evidence of support for the notion that arousal responses can be transferred or misattributed to an irrelevant stimulus (see
Barton, Vrij, & Bull, 2000; Bunce, Larsen, & Cruz, 1993; Dutton & Aron, 1974; Gorn, Tuan Pham, & Yatming Sin, 2001; Schacter & Singer, 1962; Turnbull & Wolfson, 2002; White, Fishbein, & Rutstein, 1981). However, not all studies concur with the notion that prior arousal can lead to the transfer of a heightened emotive response to an irrelevant stimulus. Several authors have demonstrated that elapsed time between arousal and exposure to a target stimulus affects excitation transfer (Cantor, Zillman, & Bryant, 1975; Martin, Harlow, & Strack, 1992; Zillman, Katcher, & Milavsky, 1972). These studies show that individuals, who were immediately given an emotive stimulus after arousal, were correctly able to determine their levels of arousal resulting from the arousal stimulus (e.g., exercise) and not due to the emotive target stimulus; thereby, diffusing the excitation transfer process.

However, individuals who were given the emotive target stimulus five minutes later incorrectly identified the target emotive condition for their heightened emotion and not the initial arousal condition (e.g., exercise). Thus, individuals transferred their arousal to the introduced emotive condition, which resulted in a heightened emotive response. It is believed that, as the time delay increases, an individual's arousal decreases to a point where individuals became unaware of arousal, even though physiological measures indicate its presence (see Cacioppo, 1979; Cantor, Zillman, & Bryant, 1975; Gollwitzer, Earle, & Stephan, 1982). This residual arousal remains within an individual long after the initial arousal stimulus dissipates (Bryant & Zillman, 1979), thus making individuals believe they have returned to their normal state, when in fact they have not (cf. Bunce et al., 1993). As individuals were unaware of their residual arousal, they misattributed this state to the irrelevant target stimulus that was present, rather than the initial arousal-eliciting stimulus.

Within excitation transfer theory, the arousal generated by a low salience stimulus is transferred to a high salience stimulus via misattribution (i.e., salient stimuli are more likely to be viewed as causes of things). Yet, with pull-through advertisements the reverse could be true – the stimulus creating the arousal (i.e., the sport programme) could be far more salient than the advertisements, thus rendering the advertisements ineffective. It is not clear the process works in reverse.

Taken together, studies involving excitation transfer indicate that while excitation transfer is possible, for the process to occur, a time delay must occur between the arousal stimulus and the second emotive stimulus. The above studies, with the exception of Dutton and Aron (1974), were all conducted in a manner that
provided a time delay between the arousal and emotive stimuli. Thus, sequential
processing of a prior arousal stimulus and a target stimulus that sought an emotive
response occurred.

In other words studies exploring excitation transfer firstly aroused an
individual and then, once aroused exposed that individual to a condition that evoked
an emotional response. Gorn et al. (2001) aroused individuals through music and then
moved the individuals to another room to seek responses to advertisement
information. Bunce et al. (1993) had subjects ride stationary bicycles before exposure
to a series of photographic slides, while Zillman and Bryant (1974) and Zillman,
Katcher, and Milavsky (1972) used physical exertion before seeking responses on
aggression. Furthermore, Barclay (1970) and Barclay and Haber (1970) angered
subjects before exposing them to erotic material; while Zillman (1971) found that
prior sexual arousal can increase aggression. Hence, provided there was an
appropriate time delay, excitation transfer effects were found when individuals
processed sequentially presented information that firstly aroused and then secondly
exposed individuals to a target stimulus.

However, a study by Dutton and Aron (1974) indicated an arousal-inducing
stimulus and an emotive stimulus presented and processed at the same time might also
result in excitation transfer. For this to occur it would mean parallel processing of an
arousal-inducing stimulus and an emotive stimulus took place. Yet, this suggestion
that parallel processing of an arousal-inducing stimulus and an emotive stimulus
resulting in excitation transfer effects appears moot when consideration is given to
prior studies on excitation transfer (see Cantor, Zillman, & Bryant, 1975; Martin,
Harlow, & Strack, 1992; Zillman, Katcher, & Milavsky, 1972). These studies
indicated that excitation transfer effects were not found when there was little time
between an emotive response and an arousal stimulus. Thus, as there would be no
time delay between an emotive response and arousal stimulus when presented and
processed at the same time, excitation transfer should not occur.

Nevertheless, the study conducted by Dutton and Aron (1974) tape-recorded
men’s stories, as they stood on either a suspension bridge or a secure bridge, in front
of a picture of a woman. Each man was required to tell a story to the picture. Dutton
and Aron found that men on the scary bridge had more sexual content in their stories
than men on the sturdy bridge. It was presumed that arousal instigated by fear had
transferred to sexual attraction. As the story telling occurred at the same time the men
were fearful (as they were on the scary bridge), it appeared that an arousal-inducing stimulus and an emotive stimulus were processed and transferred simultaneously. Hence, this suggests that processing an arousal-induced stimulus and an emotive stimulus could occur in parallel, and that this parallel processing occurred in a similar manner to that which permits excitation transfer of stimuli through residual arousal. That is, processing of an arousal-inducing stimulus may occur without awareness.

Evidence to support this assertion was found by Corteen and Wood (1972). Not only could individuals process an arousal-induced stimulus without being aware of the stimulus, but also the arousal actually intensified responses. Thus, it appears not only that excitation transfer can occur through residual arousal, but excitation transfer might also occur when an arousal-inducing stimulus and an emotive stimulus are processed in parallel.

Parallel processing of arousal-inducing and emotive stimuli could occur simultaneously within a communication channel. This suggests these stimuli are competing for processing attention within the communication channel. For stimuli to be processed in parallel within a communication channel would require that stimuli be processed without awareness. For parallel processing, which could result in excitation transfer occurring, arousal-induced and emotive stimuli would need to be processed automatically. Lang, Newhagen, and Reeves (1996) found support for arousal-inducing emotive stimuli being processed automatically.

Automatic processing of arousal-inducing emotive stimuli in parallel suggests excitation transfer could result from the processing of pull-through advertisements. Arousal-inducing and emotive stimuli could be present at the time of execution of a pull-through advertisement. The arousal-inducing and emotive stimuli would be the stimuli emanating from the sporting program at the time of pull-through advertisement execution. The affect of these stimuli could transfer to the pull-through advertisement.

In summary, Zillman's (1978) excitation transfer theory proposes that effects of an arousal-inducing emotive stimulus can be transferred to an irrelevant stimulus. Results from studies of excitation transfer found evidence to support this theory. However, some research demonstrates that excitation transfer does not occur when there is little or no time delay between an arousal stimulus and emotive stimulus when sequentially presented (Cantor, Zillman, & Bryant, 1975; Martin, Harlow, & Strack, 1992; Zillman, Katcher, & Milavsky, 1972). This suggests an arousal-inducing
stimulus and emotive stimulus diffuse excitation transfer when presented within close proximity to one another. There also is evidence that proposes that when an arousal-inducing and emotive stimulus is presented simultaneously, parallel processing of stimuli, which could result in excitation transfer, can occur.

Excitation transfer theory was also used to explain effects of disturbing television news events on processing television commercials that followed. Mundorf, Zillman, and Drew (1991) found support that “news capable of evoking intense affective reactions will foster a cognitive pre-occupation with the arousing news event that results in impaired attention to, as well as impaired processing and storage of, subsequently presented commercials” (p. 51). Furthermore, Mattes and Cantor (1982) found that “placement of commercials immediately after highly arousing programming may be detrimental to their capacity to elicit favourable affective reactions” (p. 47).

These findings suggest that through the excitation transfer process stimuli from the televised sport programme could effect processing pull-through advertisements. Findings further indicate that effects found appear to make advertisements less effective than marketers would want, thus it would be important for marketers to gain an understanding of effects of sport programme stimuli surrounding the pull-through advertisement at the time of execution. However, the process of excitation transfer as mentioned in the above findings relies on cause and effect whereas processing television programme content and the pull-through advertisement occur simultaneously. It is unclear whether the excitation transfer process will work when stimuli are presented together and need to be processed in parallel or simultaneously. Experimental studies presented in this thesis examine this point.

Summary

In terms of a stimulus competing with other stimuli for processing attention, feature integration theory and excitation transfer theory both suggest two information-processing systems can be effected. The first system indicates ignored information within a communication channel can be processed in parallel with information a message receiver wants to process. This ignored information is likely to be processed at a non-conscious level as, over time, it has become very familiar to the message
receiver. Hence, ignored but familiar stimuli could attach themselves to target stimuli intended for processing, which could create distortion for the target stimuli.

The second system indicates a stimulus can be processed independently from other stimuli. Focused attention, which is likely to occur at a conscious level, separates information from other stimuli deemed irrelevant by the message receiver. In this system, information deemed irrelevant and unfamiliar to the message receiver can be excluded from processing. Thus, both theories also suggest a stimulus competing among stimuli for processing information in a serial manner can ignore processing attention.

Neither theory gives a definitive answer to how pull-through advertisements are processed. Both theories suggest pull-through advertisement information can be either ignored or processed along with other information present at the time the pull-through advertisement was screened. This could pose problems for advertisers if a pull-through advertisement is ignored. It means advertisers have failed to have their messages processed by potential consumers, resulting in poor returns from advertising expenditure. If a pull-through advertisement has extraneous information processed along with the actual advertisement, it could mean the advertisement message will be distorted by the extraneous information. This could change the intended meaning of the advertisement message as desired by advertisers, resulting in reduced effectiveness of the advertised message.

Theoretical Linkages with Advertisement Processing

Even though both theories indicate similar methods for processing information, their processing channels are quite different (cf. Zajonc, 1980). Feature integration theory (a cognitive theory) has information mentally processed through a variety of processes including memory (Matlin, 1998). Memory is important to cognition, as it provides opportunities to make a complete and thorough examination of information (Bourne, Dominowski, Loftus, & Healy, 1986).

There are three key capabilities of memory used within advertising research. First, memory allows information to be comprehended, so meaning can be derived from the information (Kintsch, 1998). Second, memory facilitates recognition, so familiarity can be achieved toward information (Nelson, Reuter-Lorenz, Sylvester, Jonides, & Smith, 2003). And third, memory enables recall, so information can be retrieved (cf. Armstrong, Stern, & Corn, 2001; Mangels, Picton, & Craik, 2001).
Advertisers make use of the capabilities of memory to comprehend, recognise, and recall advertisement information by measuring the extent to which consumers are familiar with and able to retrieve advertisement and brand information (Kent & Allen, 1994). Thus, it would appear that measures of memory are useful to advertisers for testing the effectiveness of their messages.

Processing affective information occurs through a different channel than that used for processing cognitive information (Zajonc, 1980). Affective information is processed within the thalamus region of the brain (Hall, Szechtman, & Nahmias, 2003). The thalamus region is believed to be the control centre for emotional behaviour which, when activated, produces both the experience of emotion and the associated bodily effects to emotion. These emotions and bodily effects can include feelings, physiological arousal, action tendencies, appraisals, or appreciations (Fisher, Shaver, & Carnochan, 1990). It is these experiences that advertising researchers focus upon to gain an understanding of the affective component of consumer response toward brands and advertisements. Consumers’ affective responses toward a brand or advertisement can provide researchers with a good understanding of the likelihood for product or brand purchase (Lutz, MacKenzie, & Belch, 1983; MacKenzie & Lutz, 1989). Thus, consumer affective responses are important to advertisers.

Zajonc (1980) indicated that as different channels are used to process cognitive and affective information, different effects on the information processed are likely to emerge. Information processed through cognition is found to be more deeply processed, more enduring and more resistant to change than information processed through affect (cf. Petty & Cacioppo, 1981; Petty, Cacioppo, & Schumann, 1983). Hence, it would appear that advertisers would want advertisement information processed through cognition rather than affect. However, this is not necessarily the way it occurs. Research within advertising found consumers can demonstrate good memory for an advertised brand; however, their affective responses to the brand or advertisement were negative, thus reducing the likelihood of purchase of that particular brand (cf. Gorn & Goldberg, 1980; So, 1996).

Furthermore, researchers demonstrated advertisement information is more effective if message appeals are linked to the product class of a particular item (Cutler & Javalgi, 1993). Advertisement messages that require thinking and rational decision-making tend to be processed through cognition, while advertisement messages containing emotive appeal tend to be processed through affect (Yi, 1990). However,
this does not mean the two processing systems are mutually exclusive. In fact, cognition and affect can both work independently or in tandem when information is processed (Zajonc, 1980).

Lutz, McKenzie, and Belch (1983) found when processing advertisement information the type of processing system used (or the extent to which combined use of two systems occurs) was dependent upon a range of antecedent variables. These antecedent variables provided a continuum between cognitively and affectively processed advertisement information and included: advertisement credibility; advertisement perceptions; attitude toward the advertiser; attitude toward advertising; and mood. Advertisement credibility and advertisement perception are regarded as variables requiring cognitive effort, while attitude toward the advertiser, the advertising, and mood are processed affectively.

Underneath these antecedent variables lay a second order of determinants, also believed to indirectly influence advertisement processing (Lutz et al., 1983; McKenzie & Lutz, 1989). This second order of determinants include: advertisement claim discrepancy; advertising credibility; perceptions of advertisers; perceptions of advertising; consumers individual differences; message reception context; nature of exposure; and clutter. In a similar manner to the antecedent variables, these second order determinants provide a continuum between cognitively and affectively processed advertisement information. Thus, dependent upon the influence of antecedent variables or second order determinants prior to processing advertisement information, advertisement information could be processed either through cognition, affect, or a combination of the two.

Cognition and affect are both recognised by advertisers as useful and effective systems by which to communicate advertising messages to consumers. As pull-through advertisements compete for processing attention within a cluttered environment, it is unclear whether cognition or affect or a combination of the two is used. It is also unclear what effects (if any) are likely to accrue to advertisement messages processed either cognitively or affectively within a cluttered environment. To facilitate an understanding of the possible effects of processing advertisement information through either cognition or affect, a discussion of cognition, affect, and advertisement processing follows.
Cognition, Affect, and Advertisement Processing

Use of cognitive and affective information processing systems to process advertisements has attracted considerable research interest (Dholakia, 1986; Edell & Staelin, 1983; Gardner, 1983; Park & Young, 1986; Rothschild, 1993; Srull, 1990). Research involving cognition and affect typically focuses on brand names and advertisements (Agarwal & Malhotra, 2005; Burke & Edell, 1989; Chaudhuri & Buck, 1995; Kempf, 1999; MacKenzie & Lutz, 1989; Sharma, 2000; Vakratisas & Ambler, 1999). Such attention is warranted as brand names are used to identify an organisation’s products and differentiate its identity from competitors.

Brand names are also important for manufacturers and retailers, as they play a key role in a consumer’s decision-making process when they purchase products (Pitt & Nel, 1988). Consumers shop for desired brands (Liu, 2002) and the manner in which consumers develop desire for particular brands depends on their ability to remember a brand name (Pitt & Nel, 1988) and/or acquire positive affective feelings toward a brand. Hence, in terms of understanding the manner in which consumers are likely to process brand name and advertisement information, and the effects of this processing, a focus on cognition and affective information processing systems is useful.

Meyers-Levy and Malaviya (1999) suggested that gaining an understanding for the way consumers process advertisement information is important, as it could assist advertising practitioners to make decisions regarding the execution of advertisements and the type of media needed to reach consumers. Gardial, Schumann, Petkus, and Smith (1993) also suggested that gaining an understanding of the manner in which consumers process advertisement information provides insight into the encoding and subsequent retrieval of advertisement information. Further, Cobb and Hoyer (1985) indicated that an understanding of the influence of advertising within a consumer’s decision-making process at the moment of brand choice is important. Thus, becoming aware of the way in which consumers’ process brand and advertisement information is useful to manufacturers, retailers, and advertisers.

Cognitive Processing of Brand Names and Advertisements

Investigation of cognitive information processing of brand names and advertisements typically focuses on measures of memory (Duke, 1995; Grunert, 1996; McDaniel & Kinney, 1998; Vakratisas & Ambler, 1999). Focusing on memory is
regarded as important for gaining an understanding of the processing of brand and advertisement messages (Shapiro & Krishna, 2001). Memory is important for brand and advertisement messages, as it plays a critical role in a consumer’s decision-making process to purchase a product (Bettman, 1979; Coupey, 1999; Gardial, Schumann, Petkus, & Smith, 1993).

Typical measures of memory used by advertisers have been recall, recognition, and comprehension of the advertisement message and brand name. These measures are believed to be useful indicators of a consumer’s ability to process and store advertisement messages and brand names within memory (Dubow, 1995; Janiszewski, 1990; Martin & Ditcham, 1987; Unger, Johnson, & Rohrbach, 1995).

However, one element found to interfere with recall, recognition, and comprehension of advertisements, is clutter. In Chapter One it was argued that clutter and noise are similar properties, in that both can be unwanted or extraneous elements and both can interfere with information processing. “Clutter” is the term used in advertising to describe the quantities of advertisements that appear in close proximity to one another (Brown & Rothschild, 1993; Elliott & Speck, 1998; Ha, 1996). “Noise” is the term used to describe unwanted stimuli within a communication channel (Hiebert, Ungurait, & Bohn, 1991; Oden, Rueckl, & Sanocki, 1991; Shannon & Weaver, 1948). Hence, clutter and noise can affect information processing.

Clutter was shown to affect processing of advertisement information by reducing memory for advertised brands (Brown & Rothschild, 1993; Pieters, Warlop, & Wedel, 2002) and advertisements (Ha, 1996; Singh, Lessig, Kim, Gupta, & Hocutt, 2000). Relationships were shown to exist between clutter and the number of brands recalled (Webb, 1979; Webb & Ray, 1979), recognised (Singh & Rothschild, 1983b), and comprehended (Janiszewski, 1990). In each case, as clutter increases memory for brands and advertisements decreases.

Brown and Rothschild (1993), however, found the relationship between memory and clutter reaches what they termed a “ceiling level”. They found that by significantly increasing clutter, a point is reached where memory for brand names diminishes no further. In terms of information processing, the indication that effects of clutter could reach a ceiling point suggests that additional clutter (such as a pull-through advertisement) could compete for processing attention. By introducing additional clutter, processing is not diminished to a point where processing of
information ceases to occur. This could, however, reduce memory for advertisements to minimal levels.

Overall, clutter is found to negatively impact upon memory for advertisements. Processing brand and advertisement information within environments where competition for processing attention is needed reduces memory for the brand and advertisement (cf. Keller, 1987; Kent & Allen, 1994; Unnava & Burnkrant, 1991). Typically, this competition for processing attention for brand names and advertisements occurs among the advertisements themselves. In television, advertisements are typically grouped together to form “pods” or commercial breaks. The more advertisements screened during these commercial breaks, the more competition between the advertisements to have their information processed by consumers. Thus, advertisements themselves can become unwanted elements that consumers must contend with when trying to process advertisement information.

The situation where consumers must contend with unwanted advertisements when processing information within memory is similar to the competition found within a communication channel between noise (an unwanted stimulus) and target information. Noise within a communication channel is also found to reduce memory for a stimulus (Allen, 1991; Morris, 1992). Noise does this by increasing the information to be screened in preparation for further processing. Hence, similar to clutter, the more unwanted matter found within a communication channel, the more the load for processing information is increased (cf. Domic, 1978). This in turn reduces the effectiveness of memory. Clutter can therefore also be considered noise within a communication channel.

Notwithstanding the above argument, pull-through advertisements are executed away from the clutter of advertisements found within commercial breaks. As such, pull-through advertisements are processed within an environment where little noise exists. However, pull-through advertisements must compete for processing attention amongst the quantity of stimuli found within the television programme itself. Gibbons, Vogl, and Grimes (2003) found memory errors occurred among viewers with television programme content that was complex or complicated. It was suggested by Gibbons et al. (2003) this complex or complicated content led to confusion for, and misattribution of the information found within a programme by viewers. Thus, television programmes themselves can be regarded as cluttered environments already containing noise. Therefore, even though pull-through advertisements are executed
away from the clutter of other advertisements, it would appear they compete for processing attention amongst noise emanating from television stimuli. Hence, the quantity of television stimuli found within a programme may just substitute for more traditional forms of clutter and noise.

As pull-through advertisements intrude into a television programme, they increase the quantity of information to be processed. This increase in the quantity of information to be processed increases the load on memory, which in turn decreases memory for information. Advertisers once believed executing pull-through advertisements away from the clutter of advertisements could increase memory for advertisement messages; however, it now appears possible that executing pull-through advertisements amongst the noise of a television programme could in fact diminish memory for advertisement messages, thus making this practice ineffective. Further research is warranted to gain an understanding of the possible effects on memory of processing a pull-through advertisement and to explore the manner in which the advertisement competes for processing attention among other stimuli.

Affective Processing of Brand Names and Advertisements

As in the cognitive processing literature, affective processing research also focuses on the two important elements of the brand and the advertisement itself. This has typically been investigated using attitude toward the advertisement \(A_{ad}\) and attitude toward the brand \(A_b\) (Batra & Ray, 1986; Burke & Edell, 1989; Derbaix, 1995; Grewal, Kavanoor, Fern, Costley, & Barnes, 1997; MacKenzie & Lutz, 1989).

Utilising \(A_{ad}\) and \(A_b\) as affective variables was found to be important for understanding a consumer’s feelings and emotions toward an advertisement and brand (Aylesworth, Goodstein, & Kalra, 1999; Burke & Edell, 1989). Development of this understanding is important, as positive relationships between \(A_{ad}\) and \(A_b\), were found, as well as between \(A_b\) and Purchase Intent (PI) (Brown & Stayman, 1992; Gresham & Shimp, 1985; Lutz, MacKenzie, & Belch, 1983; Mitchell & Olson, 1981; Muehling, 1987; Shimp, 1981). These relationships mean a consumer’s favourable affective responses (such as feelings and emotions) generated through advertisements can be passed on to a brand. In turn, favourable brand attitudes can positively influence people’s intent to purchase that brand.

By corollary, the \(A_{ad} – \ A_b\) and \(A_b – \ PI\) relationships also suggest if negative attitudes are formed toward the advertisement, this negative attitude can generate a
negative brand attitude. The development of this negative brand attitude is likely to reduce a consumer’s intent to purchase that brand. As a result of the $A_{ad} - A_{b}$ and $A_{b} - PI$ relationships, Muehling (1987) indicated it is in an advertiser’s best interest to create advertisements that will produce the most favourable affective responses.

In regard to outcomes for processing affective stimuli within an environment where competition among stimuli exists, $A_{ad}$ has been found to decrease as clutter increases (Elliot & Speck, 1998; Ha, 1996; Singh, Lessig, Kim, Gupta, & Hocutt, 2000; Zanot, 1984). Singh et al. (2000) also found that higher quantities of clutter lead to decreased $A_{b}$. Given that $A_{ad} - A_{b}$ and $A_{b} - PI$ relationships exist, it would be expected that increased clutter would also lead to decreased PI.

Overall, when processing advertisement information either by affect or cognition, deleterious effects are found when the quantity of advertisements to be processed increases. As the number of advertisements to be processed increases, affective processing of advertisement information indicates an increased dislike for advertisements and brands, while cognitive processing advertisement information finds that memory for advertisements and brands decreases. In terms of processing pull-through advertisements, increasing the quantity of stimuli within a television program by adding a pull-through advertisement could lead to similar effects (i.e., a reduction in $A_{ad}, A_{b}, PI$, and memory). Hence, increasing quantities of stimuli that need to be processed within a television programme by executing a pull-through advertisement could reduce advertisement effectiveness.

Summary

Considerable research on models of communication indicates that unwanted stimulus (noise) is an important factor in information processing. Pull-through advertisements could be deemed unwanted stimuli. Although a pull-through advertisement could be deemed unwanted stimuli, unwanted stimuli or noise is almost always present in a communication channel. Theories of information processing indicated that noise (if deemed to be readily distinguishable) could be difficult to ignore when processing information. As letters of the alphabet and words have been found readily distinguishable, pull-through advertisements, even if deemed as unwanted stimuli, could still be processed. Thus, an unwanted stimulus (such as a pull-through advertisement) can compete successfully for processing attention within a communication channel.
Theories of information processing also indicated that processing an unwanted stimulus can occur non-consciously. Within a cognitive framework, non-consciously processed stimuli would be processed at much weaker levels than consciously processed stimuli. Hence, people can be unaware that they are processing unwanted stimuli.

Theories of information processing also suggest that within a communication channel, a target stimulus may be affected by surrounding stimuli. Here, a stimulus response that an individual is unaware of can be passed on to an unwanted or irrelevant stimulus. Thus, an individual’s response to a television programme could be passed on to the pull-through advertisement, thus affecting the intended advertisement message.

In terms of the television medium, it is unclear how a target stimulus (i.e., pull-through advertisement) that is not part of a program is likely to compete for processing attention. Even though information-processing theories suggest pull-through advertisements can compete successfully for processing attention, prior research within advertising indicates outcomes of pull-through advertisements on advertising effectiveness may be deleterious.

Pull-through advertisements are seen by advertisers to be an effective method to reduce advertisement avoidance, to have advertisement messages executed away from advertising clutter, and to reduce the costs of advertisements. However, feature integration theory and excitation transfer theory suggest the use of pull-through advertisements might not be as effective as first thought by advertisers. These two theories of information processing indicate that people might be able to avoid processing advertisement information. Pull-through advertisements, instead of competing against advertising clutter for processing attention, must now compete for processing attention against the clutter of stimuli found within television programmes at the time a pull-through advertisement is executed. Furthermore, these two theories of information processing suggest these television stimuli could be processed along with pull-through advertisement information. As extraneous television programme stimuli could be processed in conjunction with a pull-through advertisement, the context of the message contained within the pull-through advertisement could become distorted, thus changing the intended meaning of the advertisement message.

Even though costs of producing pull-through advertisements are quite low in comparison to commercial break advertisements, in terms of advertisement message
delivery to consumers these costs could be high. If consumers are able to avoid processing pull-through advertisements, or if contextual stimuli surrounding a pull-through advertisement could distort an intended advertisement message, then costs for executing pull-through advertisements could be high. These high costs would be a result of pull-through advertisements not being as effective in the delivery of advertisement messages as first thought.

This thesis will explore two key questions:

1. How a pull-through advertisement, used as a target stimulus, competes for processing attention among other televised stimuli and,
2. The effectiveness of pull-through advertisements as a marketing tool.

To address these questions this thesis examines pull-through advertisements embedded within televised sports programmes. In doing this, two theories of information processing (i.e., feature integration theory and excitation transfer theory) are tested under new contexts. Marketers and advertisers will benefit from a better understanding of who pull-through advertisements are processed: particularly, in terms of effects of advertisement message speed, television programme context, and frequency of their exposure, on typical measures of advertisement effectiveness that include memory of, and attitude toward, advertisements and brands.
CHAPTER 3

Study One
Ecological Validity Study

Introduction

This chapter describes the process and results of an ecological validity study of pull-through advertisements. The study served to gain an understanding of pull-through advertisements used in real world settings so an ecologically valid pull-through advertisement could be designed for use as a target stimulus in follow-up experimental studies. The design of an ecologically valid pull-through advertisement would maintain external validity and generalisability of results from these follow-up studies.

The ecological validity study examined characteristics of pull-through advertisements, the context in which pull-through advertisements were executed, and their placement during sport telecasts. Characteristics of pull-through advertisements included advertisement message length, the way in which brand logos were used within the advertisement, the length of time that pull-through advertisements were screened, and advertisement message speed. Exploring the context in which pull-through advertisements were executed provided information on the types and quantities of stimuli surrounding a pull-through advertisement. Surrounding stimuli were those elements of television programming content that occur simultaneously with the pull-through advertisement.

As pull-through advertisements are used mainly in sport broadcasts, surrounding stimuli would typically include the visual imagery and sounds of the sport programme, such as players involved in a contest or arena signage, spectator noise, or the broadcast commentary. These surrounding stimuli are important as they compete with the pull-through advertisement for processing attention. To ensure the target stimulus (when used in further studies) was placed in similar contexts to those found for pull-through advertisements in real-world settings, identification of types and quantities of surrounding stimuli was needed.

Identifying placement of pull-through advertisements used in real-world settings provided information on where pull-through advertisements were likely to be located within a sport telecast with respect to other pull-through advertisements and
advertisements screened in commercial pods. A commercial pod is a series of usually three or four advertisements shown together during a television programme (Zhao, 1997). Each advertisement within the pod is screened typically for 30 seconds (Broach, Page, & Wilson, 1995). Hence, an advertisement pod can screen on television and interrupt a programme for a period of approximately two minutes.

Placement refers to the use of pull-through advertisements as part of the programme content. This addresses questions of: Was the pull-through advertisement the only advertisement? Was it used in conjunction with sponsorship? and, Was it used in combination with an advertisement in a pod? Gaining an understanding of the placement of pull-through advertisements provided insight into their use with pods and other pull-through advertisements. Pull-through advertisements used in combination with pod advertisements might be able to reinforce the brand advertised in the minds of viewers, as pull-through advertisements offer opportunities for priming or repeat brand exposure (cf. Yi, 1990a & 1990b). Thus, companies could use pull-through advertisements as primers in their marketing strategy to increase brand awareness, or to generate sales by increasing the frequency of brand exposure to consumers.

This demands identifying the placement of pull-through advertisements during sport telecasts. This is important for gaining an understanding of priming effects (Yi, 1990a & 1990b) for a stimulus that competes among stimuli for processing attention. Determining whether a primed stimulus was able to compete more effectively among stimuli for processing was unclear and warranted further investigation. To provide ecological validity for the target stimulus for placement of pull-through advertisements, it was necessary to identify various combinations and methods of placement among pull-through advertisements and advertisements found in pods from real-world settings.

For the purposes of this thesis, investigation of brand exposure through placement was limited only to that found in pull-through advertisements. This did not include brand exposure through arena signage or sponsor logos on player uniforms, as both would appear on differing focal planes (Eysenck & Keane, 2000; Rock & Palmer, 1990) to that of pull-through advertisements and, as a result, would confound further investigation.

In summary, this ecological validity study presents an investigation of pull-through advertisements from real world settings executed during sport telecasts.
Results of this study aided development of a target stimulus that promoted external validity and generalisability of results in follow-up experimental studies.

Method

The Ecological validity study involved video recording sport television programmes containing pull-through advertisements. As the content was being analysed for multiple elements (including characteristics of pull-through advertisements, context of surrounding stimuli, and placement of advertisements), video recording was necessary so analyses could be conducted later. Sport television programmes were recorded, as most pull-through advertisements were executed during sport telecasts.

These sport television programmes recorded were Australian broadcasts of the following events: the Wimbledon Tennis Championships; the US Open Tennis Championships; the Gold Coast Indy Car race; the State of Origin Rugby League Series; the Pan-Pacific Swimming Championships; the Australian Open Golf Championship; and the Australia v West Indies International Cricket Series. These sport television programmes represented a convenience sample of programmes collected from sport broadcasts at or around the time of commencement of the study. A total of 51 pull-through advertisements appearing in the above television sport programmes were examined.

Data gathered from observations of these pull-through advertisements was content analysed. Content analysis is useful for examining collected data, as it requires development of contextual codes that place information into specific categories. The placement of information from collected data into specific categories made the gathered data more manageable, allowing more meaningful analysis to emerge, in addition to increasing validity and reliability (Krippendorf, 1980). More meaningful analysis emerged as data placed into specific categories permitted clearer themes and distinctions to be drawn from within and between categories. According to Krippendorf (1980) contextual coding in content analysis is an acceptable method for data analysis.

Inspection of data collected for the Ecological validity study revealed three broad categories of contextual code: (1) characteristics of pull-through advertisements; (2) programme context in which pull-through advertisements were executed; and (3) placement of pull-through advertisements during the sport telecast.
Within each of these three contextual code categories, further codes were developed based on various characteristics of pull-through advertisements and the sport television broadcast.

Characteristics of pull-through advertisements were explained with the contextual codes of message length, logo use, screen time, and message speed. The category context in which pull-through advertisements were executed varied on the basis of the following contexts that included: exciting plays, such as when tries were scored; action contexts, when play was occurring in the middle of field; dead conditions, when little was occurring such as a kicker lining up for goal or to start the game or during player change of ends in tennis; replays; and spectator or crowd shots. Lastly, the category of placement of pull-through advertisements during sport telecasts included the contextual codes of proximity to pod advertisements and primer complementary advertisements. These categories and contextual codes are illustrated in Table 1. A discussion of the method used to measure each code follows. To ensure consistency, one researcher conducted all coding.

Table 1

*Contextual Codes for Ecological Study of Pull-through Advertisements*

<table>
<thead>
<tr>
<th>Characteristics of pull-through advertisements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contextual code</td>
<td>Description</td>
</tr>
<tr>
<td>Message length</td>
<td>Number of words contained in the advertised message.</td>
</tr>
<tr>
<td>Logo use</td>
<td>Whether use is made of a logo within the pull-through advertisement.</td>
</tr>
<tr>
<td>Screen time</td>
<td>The amount of time that the pull-through advertisement can be seen on the television screen.</td>
</tr>
<tr>
<td>Message speed</td>
<td>The measurement of the speed that words of a pull-through ad move across the television screen. Speed was measured in words per minute (wpm).</td>
</tr>
</tbody>
</table>
Table 1 (cont.)

<table>
<thead>
<tr>
<th>Contextual code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Execution context</td>
<td>The type of visual context (i.e., what pictures were being displayed from the television programme) that was occurring at the time that the pull-through advertisement was executed.</td>
</tr>
<tr>
<td>- Action</td>
<td></td>
</tr>
<tr>
<td>- Excitement</td>
<td></td>
</tr>
<tr>
<td>- Dead</td>
<td></td>
</tr>
<tr>
<td>- Replays</td>
<td></td>
</tr>
<tr>
<td>- Spectator</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contextual code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proximity to pod advertisements</td>
<td>The amount of time that elapsed between the point in the television programme that a pull-through advertisement is executed and a pod.</td>
</tr>
<tr>
<td>Primer complementary advertisement</td>
<td>The use of pull-through advertisements to prime upcoming advertisements within the next pod that contained the same brand and product.</td>
</tr>
</tbody>
</table>

Characteristics of Pull-through Advertisements

Message length. Messages contained within all inspected pull-through advertisements were transcribed. The number of characters within the message was then determined. Determining the number of characters contained within each message meant an average measure of words found in each message. Thus a standardised measure could be calculated. The standard measure for calculating words from characters for this study was adapted from standard measures used in calculating words for the measurement of typing speed (cf. Levine, Flory, & Ash, 1977). In accordance with the standard typing measure, the standard measure used to calculate the number of characters required to represent a word was five characters per word. Calculation for the number of characters in messages of pull-through advertisements included spacing between words, punctuation, and the number of letters of the message.
**Logo use.** Most pull-through advertisements contain brand logos as well as messages. Data were gathered about brand logos contained within pull-through advertisements to determine the manner in which the former were used. The position of the brand logo in the pull-through advertisement was recorded during inspection of each pull-through advertisement. Recording of the positions of the brand logo within the pull-through advertisement included; at the start of the message, at the end of the message, in the middle of the message, whether the logo was fixed on the left or right side of the television screen, or if no brand logo was used.

**Screen time.** The total time a pull-through advertisement could be seen on the television screen was recorded. To allow for deeper analysis, separate time lengths for the brand logo and message were also recorded.

Measurement of time was made through use of a stopwatch. The total time measurement for exposure of the pull-through advertisement was achieved by recording the length of time any part of the pull-through advertisement appeared on the screen until the advertisement disappeared from view. Any part of the pull-through advertisement included the brand logo or letters of the words in the message. Separate time measurement for the brand logo and message was determined by recording the time of exposure from the first appearance of the brand logo or first letter of the message until the disappearance of the brand logo or last letter of the message.

**Message speed.** The speed of the pull-through advertisement that moved across the television screen was measured using a stopwatch. A mark was placed on the television screen and was used as a point of reference. The speed of the pull-through advertisement was taken by measuring the time between the first letter of the first word and the last letter of the last word as the pull-through advertisement passed by the mark on the television screen. To compensate for variance in the researcher’s reflexes each element of a pull-through advertisement requiring timing was repeated and recorded three times. An average time was calculated from these three times.

This average time recorded for message speed was then used in conjunction with the number of standardised words for each message contained within the pull-through advertisement to calculate the speed of the pull-through advertisement. The
final calculation provided a value in terms of words per minute (wpm). This final calculation represented the pull-through advertisement speed.

Context in which Pull-through Advertisements Executed

Execution context. To analyse the context in which pull-through advertisements were executed, the visual imagery surrounding the pull-through advertisement at the time it appeared on screen was recorded. Context was determined by recording the type of visual imagery of the television programme at the time the pull-through advertisement appeared. Type of visual imagery included: whether the game was in progress or whether there was a stoppage in play; if the game was in progress, type of play in which the players were engaged; whether scores or time clocks were exposed at the same time the pull-through advertisement was executed; and whether pull-through advertisements were executed against the backdrop of spectator shots or playing surfaces.

If the game was in progress at the time of exposure of a pull-through advertisement, types of visual imagery included: players scoring touch downs or tries; players completing successful plays such as hitting “winners” in tennis; players being unsuccessful in attempting plays (such as dropping or fumbling the ball); and action plays, where teams or players were fighting for ascendancy in terms of field position or control of play with little chance of scoring or winning points (as in a rally in tennis). If there was a stoppage in play at the time the pull-through advertisement was executed, the type of visual imagery that might be observed could be a kicker waiting to kick for goal or commence the next passage of play, or a tennis player getting ready to serve. In these cases little action occurred.

Placement of Pull-through Advertisements During Sport Telecasts

Proximity to pod advertisements. To gather data to determine the proximity of pull-through advertisements to pod advertisements, the time that a pull-through advertisement and pod each appeared on the television screen was recorded. By calculating the difference in times between the pull-through advertisement and pod the proximity to a pod for a pull-through advertisement could be determined. Measurement of time of pull-through advertisement execution points also permitted analysis of proximity of execution among pull-through advertisements.
Measurement of time of pull-through advertisement and pod execution points allowed analysis of the execution of pull-through advertisements and pods in other sport telecasts. Analysis of execution points of pull-through advertisements and pods among other television programmes allowed determination of whether time differential between pull-through advertisements and pods were pre-determined or randomised. Where time differentials between pull-through advertisements and pods were random, further analysis was undertaken to identify the time differential between the target stimulus and pod to ensure ecological validity.

**Primer complementary advertisement.** To determine whether pull-through advertisements were used in conjunction with pod advertisements to achieve a repeat exposure of the same brand, recording of brands advertised in pull-through advertisements and pods occurred. Where pull-through advertisements and pod advertisements were found to advertise the same brand, the order in which the pull-through advertisement was used with the pod advertisement was also recorded.

The recording of the order could identify whether the pull-through advertisement was placed before or after the pod. Furthermore, recording of the order could also identify whether two exposures of a pull-through advertisement were used in conjunction with a complementary pod advertisement; in other words, whether a pull-through advertisement was executed both before and after the pod advertisement. Depending upon the order of execution, the pull-through advertisement might be used as a primer for an upcoming pod advertisement. Whereas, if the pull-through advertisement came after the pod, that pod advertisement could serve as a primer for an upcoming pull-through advertisement.

**Results**

Characteristics of Pull-through Advertisements

*Message length.* As the pull-through advertisement moved across the television screen it was not uncommon to find that words forming the first part of the message had disappeared off the screen well before latter parts of the message appeared. As a result, it was quite common for pull-through advertisement messages not to be seen in their entirety on the television screen. Not being able to see messages in their entirety suggested that messages in pull-through advertisements could be quite lengthy.
Measurement for the number of characters in pull-through advertisement messages showed great variance. The number of characters used in messages ranged from six to 110 characters, with a mean number of characters being 70. When the number of characters contained within messages was recalculated and standardised to numbers of words, the range for numbers of words found in pull-through advertisements fell between one and 22. The mean number of words found within a pull-through advertisement was fourteen. Further inspection of message length revealed that up to six words of the message might be seen on the television screen at one time.

Use of logo and screen time. All pull-through advertisements examined in this study used a logo that depicted the company or brand of the product being advertised and was typical of a picture display. Approximately 90% of pull-through advertisements commenced with the logo located on the bottom left of the television screen (as a viewer would watch the television). The pull-through advertisement continued by scrolling words of the message toward the logo. Hence, the pull-through advertisement would appear from the bottom right hand side of the television (as a viewer would watch the television). When the words contained in the pull-through advertisement reached the logo located at the bottom left of the television screen, the words of the message would seemingly disappear behind the logo.

Half of the pull-through advertisements commenced their message at the same time as the logo appeared; the other half used a time delay of up to 0.5 seconds before the introduction of the message.Delaying commencement of the message until after the logo appeared meant the message itself was exposed to viewers for a shorter period of time. Inspection revealed it was possible for the message to be up to one second shorter than the screening of the logo.

All pull-through advertisements using a logo on the left-hand side of the television screen faded out the logo after the last word in the message disappeared from the screen. It was not unusual for the fade out of the logo to take up to 0.5 seconds.

Message speed. Analysis of speed of messages contained in pull-through advertisements indicated a wide variance among pull-through advertisement speed that ranged from 83.6 wpm to 227.5 wpm. Table 2 shows descriptive statistics for message speed of pull-through advertisements.
Table 2

Descriptive Statistics for Message Speed of Pull-through Advertisements

<table>
<thead>
<tr>
<th>Range</th>
<th></th>
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<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td><strong>Words per minute</strong></td>
<td>164.8</td>
<td>46.57</td>
<td>51</td>
<td>83.6</td>
<td>227.5</td>
</tr>
</tbody>
</table>

Context in Which Pull-through Advertisements Executed

*Execution context.* Examination of visual imagery from sport telecasts surrounding pull-through advertisements found a range of contextual differences. Types of visual imagery existing at the point of execution of pull-through advertisements were coded as: exciting -- such as touchdowns or tries being scored; action-oriented -- such as a rally in tennis; dull -- where players were waiting to kick off to recommence the game after a stoppage; player injuries; funny occurrences -- such as a play that did not go according to plan and players were seen laughing; car crashes; positive plays -- such as pass completion or successful catch of a fly ball; negative plays -- such as incomplete passes or fighting; and replays. The various types of visual imagery meant pull-through advertisements were less likely to be executed with the same surrounding visual imagery. Furthermore, where pull-through advertisements were repeated during the same telecast it was found the visual imagery differed from that of the previous exposure on each occasion.

Placement of Pull-through Advertisements in Sport Telecasts

*Primer complementary advertisement.* Analysis for use of pull-through advertisements in conjunction with a complementary brand advertisement in a pod revealed three methods were used. Method One saw a single exposure of a pull-through advertisement placed prior to a complementary brand in a pod. Method Two saw a single exposure of a pull-through advertisement placed after a complementary brand in a pod. Method Three saw two exposures of a pull-through advertisement used in conjunction with a complementary brand in a pod. Here, one exposure of a pull-through advertisement occurred before the complementary brand pod advertisement while the second exposure of the pull-through advertisement occurred after the complementary pod brand advertisement. Where a pull-through advertisement was executed after a pod, it was unusual to see another pull-through
advertisement for the same brand executed prior to the next pod. In other words, it was unusual to see two consecutive pull-through advertisements communicating messages about the same brand without a pod between them.

Investigation of pod advertisements and pull-through advertisements from sport telecasts revealed that on 59% of occasions pull-through advertisements were used with a complementary pod advertisement. Where pull-through advertisements were used in conjunction with a complementary advertisement in a pod, 41% of occasions saw pull-through advertisements executed before the pod. On the other hand, pull-through advertisements executed after a complementary advertisement in a pod occurred 47% of the time. Finally, where two exposures of a pull-through advertisement (executed both before and after the complementary pod ad) were used, this accounted for 12% of occasions.

*Proximity to commercial break.* It was found that pull-through advertisements were executed in a random manner during sport telecasts. No consistency was found in terms of time of execution of pull-through advertisements among television programmes. This finding suggests that pull-through advertisements were not scheduled at predetermined time periods.

Investigation of time differences between pull-through advertisements and complementary advertisements in pods revealed great variance. Overall, it was found time differences between pull-through advertisements and pods ranged from between 1 minute 26 seconds and 22 minutes 7 seconds. Tables 3a, 3b, and 3c show more detailed information by providing descriptive statistics for the three methods of use for placement of pull-through advertisements during sport telecasts.

Table 3a

<table>
<thead>
<tr>
<th>Range</th>
<th>M</th>
<th>SD</th>
<th>N</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before pod</td>
<td>8 mins 50 secs</td>
<td>5.44</td>
<td>21</td>
<td>1 min 46 secs</td>
<td>22 mins 07 secs</td>
</tr>
</tbody>
</table>
Table 3b

*Descriptive Statistics for Pull-through Advertisements Placed After a Pod*

<table>
<thead>
<tr>
<th></th>
<th>Range</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>M</em></td>
<td><em>SD</em></td>
<td><em>N</em></td>
<td><em>Min</em></td>
<td><em>Max</em></td>
</tr>
<tr>
<td>After pod</td>
<td>7 mins 20 secs</td>
<td>4.10</td>
<td>24</td>
<td>1 min 26 secs</td>
<td>14 mins</td>
</tr>
</tbody>
</table>

Table 3c

*Descriptive Statistics for Pull-through Advertisements Placed Before and After a Pod (Two Exposures of Pull-through Advertisement)*

<table>
<thead>
<tr>
<th></th>
<th>Range</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>M</em></td>
<td><em>SD</em></td>
<td><em>N</em></td>
<td><em>Min</em></td>
<td><em>Max</em></td>
</tr>
<tr>
<td>Before and after pod</td>
<td>12 mins</td>
<td>2.10</td>
<td>6</td>
<td>10 mins 30 secs</td>
<td>14 mins 24 secs</td>
</tr>
<tr>
<td>Before pod</td>
<td>9 mins</td>
<td>3.30</td>
<td></td>
<td>5 mins 33 secs</td>
<td></td>
</tr>
</tbody>
</table>

Discussion

Characteristics of Pull-through Advertisements

Four characteristics of pull-through advertisements were examined: message length; use of logo; length of time the advertisement appeared on screen; and message speed. Variance in use for each of these characteristics among pull-through advertisements was found; with results suggesting the greatest variance in use for each of these characteristics occurred for message speed and message length. This great variance in message speed and message length of pull-through advertisements suggests variance might also occur for processing advertisement information.

*Message speed.* The wide variance of message speed found among pull-through advertisements could pose problems for achieving optimum processing of advertisement information on each pull-through advertisement execution. Processing pull-through advertisement information is achieved through use of reading, as speed of reading has been found to affect information processing. According to Jensema (1998) and Jensema, McCann, and Ramsey (1996), television viewers found the speed of reading closed-captions used in television programmes to be more comfortable at 145 wpm. This belief by viewers that reading speed was more comfortable at 145 wpm
was also reflected in the better message comprehension scores achieved by viewers at that speed. When comparisons were made between the mean speed of messages contained within pull-through advertisements (164.8wpm) and closed-caption speed (145 wpm), it can be seen that messages within pull-through advertisements were executed faster. As pull-through advertisements were executed at a higher mean speed than that deemed comfortable for reading captions, it is suggested that optimum processing of advertisement messages could be reduced.

Furthermore, closed-captions used in television programmes support the surrounding information (i.e., imagery) being screened at the time the closed-caption appears. Closed captions present the verbal information hearing impaired people cannot hear and as such provides consistent information between what is spoken and the visual imagery. On the other hand, pull-through advertisements often appear without supporting information from the surrounding imagery. Hence, pull-through advertisements tend to supply inconsistent information between advertisement and visual imagery from the television programme.

A stimulus surrounded by supporting information can be processed at higher rates than a stimulus not surrounded by supporting information (Rayner & Pollatsek, 1989). Being able to process a stimulus at a higher rate when that stimulus is situated amongst supporting information again suggests the mean speed found for pull-through advertisements appears to be higher than what would be deemed comfortable when processing information. Hence, the higher speeds of pull-through advertisements could make processing advertisement information less efficient than would otherwise be expected. The variance in speed of pull-through advertisements (particularly those executed at speeds furthest away from what would be deemed as comfortable) appears to pose problems for marketers attempting to maximise processing of advertisement information for consumers.

As speed of reading appears to be a key element in processing information, and variance of reading speed has been found to pose problems for information processing, it is difficult to determine from this ecological validity study an appropriate pull-through advertisement speed that could be used in follow-up studies. Hence, Experiment One of this thesis will determine a pull-through advertisement speed that would achieve optimum processing of advertisement information.
Message length. Within a category, characteristics of pull-through advertisements, variance was also found among the length of messages. Length of messages could pose problems for information processing, particularly when the entire message is not visible on the screen at once. As some pull-through advertisements contain messages that cannot be seen in their entirety on the television screen, memory for words in the advertisement message screened previously would have to occur in order for meaning to be derived from the advertisement.

The effect on memory (and thus meaning derived from the advertisement) when a pull-through advertisement is not seen in its entirety on the screen is unclear and should warrant further investigation. However, for the purposes of this thesis, and when compared with speed of pull-through advertisements, message length appears to have less impact upon information processing. Further investigation of message length does not occur here, although future research could investigate this issue.

Message length is important in terms of information processing, but speed of pull-through advertisements was identified as a major factor that affects processing of advertisement information. Data gathered from the ecological validity study makes it difficult to accurately determine a speed at which optimum processing of the advertisement would occur. Hence, Experiment One of this thesis investigates the speed at which optimum pull-through advertisement processing is achieved. Mean message length will also be used in Experiment One.

Context in Which Pull-through Advertisements Executed

Execution context. The variance found in visual imagery or context at the time a pull-through advertisement is executed could pose problems for advertisers. It was found that the contextual information surrounding a stimulus could be processed (Soldow & Principe, 1981). The effects of context (particularly as the context is not likely to be congruent with the advertisement message) might affect processing of advertisement information, which affects that intended by the advertiser. The differing visual contexts (particularly where pull-through advertisements were repeated) could create confusion in the minds of television viewers for a particular brand image (cf. Messaris, 1997). These effects could lead to advertisement message distortion and a decrease in effectiveness for the advertisement.

The effects of context on effectiveness of pull-through advertisements are unclear. Also unclear is how the same stimulus is likely to compete for processing
capacity against differing contextual stimuli. The variance among visual context at the
time of execution of pull-through advertisements raises some interesting questions:

1) What could the variance in visual context mean for the same pull-through advertisement in terms of advertising effectiveness?

2) Could confusion occur for the viewer who might be processing these same advertised messages?

3) Does the viewer link the advertised message with the visual context occurring at the time of execution of pull-through advertisements? and

4) If the viewer does link the visual context of the television programme with the pull-through advertisement, what effects might emerge for the viewer if the visual context for a pull-through advertisement is different from the context in which the product is typically portrayed within advertisements screened in commercial pods?

These questions raise other questions on how successful marketers are able to communicate advertisement messages to consumers through pull-through advertisements. Effects of visual context could distort intended messages for consumers, thus posing problems for marketers in terms of achieving desired outcomes for sending the advertisement message. Hence, effectiveness of pull-through advertisements in achieving advertising outcomes could be low, which in turn results in a poor return on advertising expenditure.

Where pull-through advertisements were deemed as a cheap alternative to pod advertisements, it could be that the barriers to effective communication that prevent pull-through advertisements gaining processing attention, among the context of programmes, could be negated or reduced. This would make pull-through advertisements less attractive in terms of an effective communication tool and a cheap alternative to traditional advertising than first thought. The experimental studies reported in this thesis will determine likely effects of context on processing pull-through advertisements and will provide an understanding of the manner in which pull-through advertisements are processed.
Placement of Pull-through Advertisements During Sport Telecasts

Two characteristics were examined in terms of placing pull-through advertisements during sport telecasts; proximity to pod advertisements and the use of a complementary primer advertisement in an adjacent pod.

Proximity to pod advertisement. The study found wide variance existed for the point in time for execution of pull-through advertisements during television programmes. This finding suggests there is little structure in terms of precise scheduling for pull-through advertisements to be broadcast; hence, pull-through advertisements are broadcast in an ad hoc manner.

Primer complementary advertisement. Inspection revealed that pull-through advertisements were being used as primers for advertisements screened in the next pod. It was also found that advertisements in pods were being used as primers for upcoming pull-through advertisements screened after the pod.

Within print advertising, priming was found to increase the effectiveness of advertisements in terms of recall (Homer & Kahle, 1986); recognition (Bruce, Carson, Burton, & Kelly, 1998); and attitude formation (Yi, 1990b, 1993). It is possible that pull-through advertisements might be an effective advertising technique when used as primers, as they could work in conjunction with pod advertisements to increase effectiveness of advertising for that particular brand or product.

However, as pull-through advertisements are executed on either side of a pod, it is unclear whether one combination is better than the other, or if in fact the use of pull-through advertisements in conjunction with pod advertisements is able to increase advertising effectiveness for a brand. Furthermore, in terms of information processing and competition among stimuli for processing attention, it is unclear how a primed stimulus is likely to compete for processing attention. This is examined in Experiment Three.

Conclusion

Pull-through advertisements are a recent introduction into television broadcasts. They provide an excellent opportunity to explore the manner in which a stimulus competes for processing attention among stimuli.
Inspection of pull-through advertisements revealed these advertisements show little consistency, particularly in the way they are constructed and executed. It is suggested that the manner in which pull-through advertisements are constructed and executed poses problems for processing advertisement information. Key characteristics of a pull-through advertisement's construction and execution that most likely to effect information processing were identified. These were:

1) pull-through advertisement message speed;
2) the contextual imagery surrounding the pull-through advertisement at the time of ad execution; and
3) the repeated screening of a brand name that could be seen either in pull-through advertisements or pull-through advertisements used in combination with an advertisement in an adjacent pod.

Chapters Four, Five, and Six describe experimental studies examining the effects of identified key characteristics in the construction and execution of pull-through advertisements. In Chapter Four, Experimental Study One determines a speed at which optimum processing of advertisement information is achieved. Experiment Two, in Chapter Five builds upon findings from Experiment One, exploring effects of contextual imagery surrounding a pull-through advertisement at time of execution, while Chapter Six describes Experiment Three, which further builds upon results from Experiment One and Two to illustrate effects of repeated priming of a brand name.
CHAPTER 4

Experiment On
Determining Optimum Pull-through Advertisement Caption Speed

Introduction

The ecological validity study conducted in chapter three revealed that a wide variance in message speed occurred among pull-through advertisements. With such a wide variance in message speeds, questions were posed as to whether any effects or differences emerged for processing pull-through advertisement information. Hence, the speed at which pull-through advertisements are executed was identified as a key element that could affect processing of advertisement information, which requires further investigation. The variance in speed of pull-through advertisements is illustrated in Table 2. This further provides descriptive statistics for message speed of pull-through advertisements as found from the ecological validity study.

Literature Review

Previous investigation of effects of speed of reading text exposed on the screen has focused primarily on closed-captions. Jensema (1998) and Jensema, McCann, and Ramsey (1996) found television viewers were comfortable with reading closed-captions at a rate of 145 wpm. When comparisons were made between the mean speed of pull-through advertisements (164.8 wpm) and closed captions, it was seen that pull-through advertisements were executed faster than the rate deemed comfortable for reading closed captions.

Even though similarities can be drawn between closed-captions and pull-through advertisements in that they are both text messages that move across the television screen during a programme, and they both require reading to process information, it appears this is where the similarities end. Closed-captions use the same words that are being spoken in the televised programme (Jensema, 1998), thereby they are supported by the programme’s visual imagery. Pull-through advertisements, on the other hand, contain information that has little to do with what is being spoken or the visual imagery of the programme. With closed-captions, words, and pictures from the televised programme are seen together, and as such portray a unified context. The use of closed-captions in conjunction with the visual imagery seen on the
television screen serves to aid processing of information so that deaf or hearing-impaired people can gain educational information and entertainment from television programme content (Jensema, 1996).

With pull-through advertisements, words from the advertisement message and pictures from the televised programme are seen together. However, advertisement messages from pull-through advertisements are typically not reflective of the visual display coming from the television programme at the time of execution of the pull-through advertisement. At best, possible synergies could be drawn between a pull-through advertisement and the visual display, but on most occasions pull-through advertisements and pictures from the television programme do not depict a unified context. This means the text from the message contained within the pull-through advertisement is not the same as what is being seen on the television programme. As a result, the difference in context between pictures from the television programme and text within the advertisement messages from pull-through advertisements could affect the processing of advertisement information.

By tracking eye movement patterns, Jensema et al (2000) found closed-captions within television programmes turned the viewing of television programmes into a reading task. Within the task of reading, the combined use of pictures and words depicting similar contexts has been found to increase the speed at which people are able to read text (Rayner & Palletsek, 1989; Smith, 1978). It could be expected that within closed-captioning, the combined use of words and pictures into a unified context would aid the viewer in reading closed-captions, which would result in faster reading speeds.

If unified or similar contexts between words and pictures were able to increase reading speed, then a problem appears to exist with the mean speed found for pull-through advertisements in that this speed is higher than that deemed comfortable for reading closed-captions. If use of contextual cues in reading are able to increase speeds at which information can be read, then, as pull-through advertisement information is executed within contexts that do not support advertisement information, the message speed deemed as comfortable for reading pull-through advertisements should be slower than that found for closed-captions.
Reading

In analyses of reading tasks, it was found that people use contextual cues drawn from either pictures or surrounding text to assist with comprehension and speed of reading the text (Calvo, 2005; Eysenck & Keane, 1990; Just & Carpenter, 1987; Rayner & Pollatsek, 1989; Smith, 1978). The degree to which people use contextual cues is a function of degradation or difficulty they find for reading that text. People, who comprehend the text they are reading well, might be using minimal quantities of contextual information; however, people having great difficulty comprehending text might rely heavily on contextual cues. Thus, the more difficulty people encounter reading text, the more they rely on contextual cues to gather meaning. Degradation of text can be either poor understanding of words; words that are illegible; poor reading ability; or reading too quickly (Just & Carpenter, 1987; Stanovich & West, 1979).

Under circumstances where people are relying on large quantities of contextual information, it has been found that people will use any available pictorial information, or the context of preceding text, to aid comprehension (Eysenck & Keane, 2000; Just & Carpenter, 1987; Matlin, 1998; Smith, 1978). For messages contained within pull-through advertisements, the use of contextual cues when text becomes degraded could occur when the speed of the message becomes too fast for a television viewer to read. As a result, it could be expected that as the speed of pull-through messages increases, the reliance upon contextual cues also increase in order to aid comprehension of these messages. The contextual cues the television viewer might rely upon would be the pictures from within the television programme that are being displayed at the time of execution of the pull-through advertisement.

The ecological validity study of pull-through advertisements described in chapter three found most messages contained within pull-through advertisements had little to do with the context of the visual display currently being screened within the television programme. Studies involving the use of contextual cues to aid comprehension and speed of reading have found that when pictures and text are not consistent with the surrounding context, a decrease occurs in the speed at which people read (Just & Carpenter, 1987). This decrease occurs due to the contextual conflict between text and picture, because in an attempt to gather meaning people fixate longer on words believed not to be consistent with the surrounding context (Eysenck & Keane, 2000; Just & Carpenter, 1987).
Within cognition, it was found that when reading and processing text, people tend to fixate momentarily on the middle of a word. It has also been found when people read they tend to saccade (which is a term used to describe the backward movement of the eyes). This saccadic movement of the eyes occurs between 10-15% of the time. If a word exists within a sentence and appears not to fit with the context of the sentence or preceding sentences, the rate of fixation on that word increases. Saccadic eye movements also increase in an attempt to gather contextual cues to make sense of the word and the meaning of the context in which that word is placed (Eysenck & Keane, 1990; Rayner & Pollatsek, 1989).

Similarly, with pictures and text, words or sentences that appear out of context with a picture would also require slower scrutiny involving longer fixations and increased saccadic eye movements. Hence, with messages contained in pull-through advertisements not being consistent with the context of pictures from television programmes, viewers would require longer fixations on words in order to comprehend the pull-through advertisement.

From the standpoint of conflicting contexts between pull-through advertisements and pictures from television programmes, it appears advertisement messages need to be executed at a slower speed than that previously found for the speed of execution of closed-captions. Furthermore, a slower speed of a pull-through message might be required to allow viewers to make saccadic eye movements to process words in the message before these words move off the television screen.

Visual and Non-visual Information

From within the field of cognition, the task of reading can be defined as "the ability to extract visual information from the page and comprehend the meaning of the text" (Rayner & Pollatsek, 1989, p. 23). Of interest to advertisers would be the ability of television viewers to extract visual information (i.e., words) and comprehend meaning of text (i.e., words and message) from pull-through advertisements. In other words, advertisers would be interested in the reading performance of television viewers for pull-through advertisements.

Within cognition, reading performance can typically be measured through recall and comprehension (Baddely, Logie, Nimmo-Smith & Brereton, 1985; Palmer, MacLeod, Hunt, & Davidson, 1985; Wenger & Payne, 1996). Recall can be used to assess a television viewer's ability to extract visual information, i.e., words that must
be picked up by the eyes in order for the pull-through advertisement to be read (Smith, 1978). However, visual information is not sufficient for reading. Understanding of the text (or in other words, non-visual information) is also a key factor within the reading task.

Non-visual information is information already contained within a person's mind such as understanding of the relevant language, familiarity with the subject matter, and general reading ability. To assess non-visual information (or in other words, a person's understanding of text), the use of comprehension measures for text can be useful (c.f. Baddeley, 1997; Baddeley et al. 1985; Palmer et al. 1985; Smith, 1978). As such, comprehension of the message contained within a pull-through advertisement by a television viewer can be used to assess the meaning and understanding the viewer may have derived from that message. Taken together, visual and non-visual information are required for reading and are regarded as a joint necessity (Smith, 1978).

Recall and Comprehension

The speed or rate of reading can affect recall and comprehension of visual and non-visual information (Just & Carpenter, 1987; Rayner & Pollatsek, 1989; Smith, 1978). Recall of visual information can be affected by rate of reading being either too fast or too slow. Typically people should only be able to read at speeds at around 60 words per minute (wpm) as it takes about one second to complete a full identification of four to five words (Smith, 1978). However, similar to the use of contextual cues, the use of non-visual information can greatly increase the speed at which people can read (Eysenck & Keane, 1990; Just & Carpenter, 1987; Smith, 1978).

However, if the speed of reading becomes too quick, people begin to skip words and become heavily dependent upon non-visual information. As such, people tend to make up a story with the words they happened to fixate upon in an attempt to explain what they may have read (Just & Carpenter, 1987). The increased use of non-visual information in situations where the rate of reading becomes too high leads to decreased recall of text. In other words, in an attempt to read more rapidly, people process less text. Decreased recall of text (when the rate of reading becomes too high) occurs because people have not been able to focus upon and process text, as they have traded off the use of visual information for the use of non-visual information in an attempt to read more rapidly (Just & Carpenter, 1987; Smith, 1978). Correspondingly,
reading at a higher rate has been associated with less recall and lower levels of comprehension or textual information (Just & Carpenter, 1987; Rayner & Pollatsek, 1989).

On the other hand, recall of text has been found to diminish when visual information is read too slowly (Just & Carpenter, 1987; Smith, 1978). Slow speed can affect recall of text by what is termed "tunnel vision", whereby readers fixate on every word in a sentence as they attempt to comprehend each word's meaning (Smith, 1978). Fixating on every word leads to an overload of visual information within the mind that creates inefficient use of short-term memory (Smith, 1978).

Short-term memory or working memory acts as a processing and storage unit of information within the mind. Information being worked on or processed is then sent on to long-term memory, from where can be retrieved for use at a later date. If a person is reading too slowly, they are processing much more information than is required, which results in much of the resources of short-term memory being used to process extraneous information. With short-term memory being used so inefficiently little information is actually effectively transferred into long-term memory, as the working memory is attempting to filter through the extraneous information and determine what might be useful for future reference.

With deleterious effects occurring for recall of text when reading is either too fast or too slow, it would be expected that similar findings for recall would also emerge for pull-through advertisements executed either too slowly or too fast. Thus, determining an optimum speed for execution of pull-through advertisements to achieve maximum processing would be useful to marketers.

Similarly with effects for recall, reading at a higher rate has also been found to lower comprehension for text (Just & Carpenter, 1987; Rayner & Pollatsek, 1989); however, this result was not found to be generaliseable across all contexts. Higher reading rates were found not to decrease significantly for the comprehension of verbatim or factual text. Comprehension for text is lowered where inferential information is required to understand text such as narratives (Baddeley, 1997; Jensema & Burch, 1999). The difference for comprehension between verbatim or factual text and text from narratives indicates that advertisement messages contained within pull-through advertisements should be explicit and not implicit when the rate of message is speed is high.
In order for people to comprehend implied messages, they must become actively involved to supply information not explicit within the message (Eysenck & Keane, 1990). To become actively involved people must make use of both their short-term (working memory) and long-term memory to comprehend meaning within these messages. If the speed of the implied message is too fast, people have less time to comprehend meaning from that message, whereas explicit text (whose message is salient) requires less effort.

Thus, from the standpoint that both visual and non-visual information are required for reading, and that within the task of reading people use contextual cues to assist them with comprehension and speed of reading text, the combined use of recall and comprehension measures were appropriate to provide information for reading performance of television viewers for pull-through advertisements.

Advertising Effectiveness

Typical measures of advertising effectiveness have previously included the use of recall along with recognition for brands and products (Percy & Rossiter, 1997). However, criticism for use of recall and recognition as measures of advertising effectiveness has emerged (Eyesenck & Keane, 2000; Percy & Rossiter, 1997). According to Percy and Rossiter (1997) the use of recall as a measure of advertising effectiveness is at best a measure of attention to advertising. This is because the test situation is irrelevant to a consumer’s decision-making process. According to Eyesenck and Keane (2000) effectiveness of recall and recognition is dependent upon contextual information present at the time of encoding and retrieval. Effective recall requires the encoded cues to be the same as those displayed at retrieval (Eyesenck & Keane, 2000). Similar requirements are also necessary for recognition to be an effective measure of advertising (Eyesenck & Keane, 2000).

As pull-through advertisements compete for processing attention among contextual information from the television programme, it would appear that use of recall and recognition measures would still be useful to provide insight into the effectiveness for use of these advertisements. Recognition is also regarded as a measure of cognition (Matlin, 1998). Even though criticism is raised for use of recall and recognition measures, taken together these measures would be useful for gaining an understanding of how information from pull-through advertisements is likely to be processed within memory.
In fact, memory for advertisements can be tested using different criteria, which often generates different outcomes. For example, the ability of viewers to recall or recognise which brands were advertised may differ (Kinoshita, 1989; Lerman & Garbarino, 2002; Watkins & Gardiner, 1979). Furthermore, viewers may recall or recognise the brand advertised, but may not have comprehended the advertisement message (Stewart, 1986; Waters & Caplan, 1996). That is, they may not be able to specify attributes or benefits claimed for the product in the advertisement. Hence, each form of measurement -- recall, recognition, and comprehension -- taps a different aspect of memory for an advertisement.

Taken together, recall, recognition, and comprehension should permit a more robust measure of cognition. Furthermore, use of recall and recognition should provide some insight into the types of brand and product information people might process from the pull-through advertisement.

Although pull-through advertisements differ from closed-captions in terms of their relationship to other programme content (and in terms of viewers’ motivation to read them), the shape of the function describing the relationship between speed and recall, recognition, and comprehension should be similar for pull-through advertisements and closed-captions as processing of information within these advertisements will rely on the same cognitive processes. In other words, since the psychological processes are the same, the shape of the function should be the same, although the amplitude and location of those functions may differ (i.e., the optimal speed may be different for pull-through advertisements than for closed-captions).

Since studies of reading comprehension and closed captioning demonstrate caption speed can be too slow or too fast, the expected effect of caption speed on information processing (measured as recall, recognition, or comprehension) should be diatonic. The functions describing the relationship between caption speed on the one hand, and recall, recognition, and comprehension on the other should be shaped as inverted “U”s, although the amplitude and location of the functions (for recall, recognition, and comprehension) may vary. By determining the point of the curve at which the slope is zero (i.e., the peak of the inverted U), it is possible to estimate optimal message speeds for recall, recognition, and comprehension of pull-through advertisements.

The optimal speed for a pull-through advertisement may be different for unfamiliar brands than for familiar brands. Consumers are better able to recall
information from the advertisements for familiar brands than for unfamiliar brands (Kent & Allen, 1994). Further, brand familiarity assists readers to comprehend text messages (Abu-Rabia, 1996), particularly when reading at high speeds (Pexman, Ferretti & Katz, 2000). The optimal speed for pull-through advertisements promoting familiar and unfamiliar brands should thus be estimated separately.

**Purpose of the Study**

The purpose of this study is to test the inverted U relationship of recall, recognition, and comprehension of pull-through advertisement messages with message speed. Specific hypotheses were:

- **H1**: Unaided recall of a familiar brand mentioned in a pull-through advertisement will be an inverted U function of message speed.
- **H2**: Unaided recall of an unfamiliar brand mentioned in a pull-through advertisement will be an inverted U function of message speed.
- **H3**: Recognition (i.e. aided recall) of a familiar brand mentioned in a pull-through advertisement will be an inverted U function of message speed.
- **H4**: Recognition (i.e. aided recall) of an unfamiliar brand mentioned in a pull-through advertisement will be an inverted U function of message speed.
- **H5**: Comprehension of the attributes of a familiar brand mentioned in a pull-through advertisement will be an inverted U function of message speed.
- **H6**: Comprehension of the attributes of an unfamiliar brand mentioned in a pull-through advertisement will be an inverted U function of message speed.
- **H7**: Comprehension of the benefits of a familiar brand mentioned in a pull-through advertisement will be an inverted U function of message speed.
- **H8**: Comprehension of the benefits of an unfamiliar brand mentioned in a pull-through advertisement will be an inverted U function of message speed.

**Method**

**Materials**

When this thesis was written pull-through advertisements were most common during televised sport programmes. This fact led to the recording of a number of broadcast sport events for study. Detailed description of these sport events was provided in chapter three, where the ecological validity study was presented. The recordings of broadcast sport events were examined to enable an ecological valid pull-
through advertisement to be developed and inserted into various treatment conditions within a televised sport programme. This pull-through advertisement was used as a target advertisement within this experimental study, which examined speed of pull-through advertisements on message processing.

Televised Sport Programme.

This experimental study used a videotaped recording of a game from the 2000 World Rugby Sevens Tournament held in Argentina, which was aired on pay television (the International Rugby Board granted permission for use of this programme). Rugby Sevens was selected for three reasons. Firstly, the tournament was not broadcast on free-to-air television and pay television viewership was only recently introduced in Australia. At the time of broadcast only 19.3% of households subscribed to pay television (Roy Morgan research, www.roymorgan.com). Consequently, few potential subjects would have been exposed to the broadcast.

Secondly, the game is of short duration with each game lasting for 14 minutes (seven minutes each half). As the sport telecast was pre-recorded the broadcast also contained a one-minute commercial break inserted at the half-time interval instead of the five-minute interval that occurs during "live" broadcasts. Thus, the entire sport telecast was fifteen minutes in length. This short duration allowed subjects to be exposed to a sporting telecast that could be viewed in its entirety without being detained for an unreasonably long period of time. Also, having subjects view a programme in its entirety provided for a more "natural" viewing situation, rather than having subjects view pieces of a programme. Viewing programmes in their entirety has been found to make it more difficult for subjects to "guess" at what a researcher might be investigating thus reducing bias within the results and increasing generalisability (Fowles, 1992).

Thirdly, Gibson (1996) found that two exposures of traditional advertisements were necessary to achieve an adequate salient effect. Hence, two exposures of pull-through advertisements were used. Two exposures fit nicely into a sport environment, as most sports comprise games played in two halves, which allowed for one exposure of a pull-through advertisement to be inserted each half.

At the conclusion of the Rugby Sevens game and before subjects were handed questionnaires to complete, a two-minute video segment entitled Australia: Business Opportunities Beyond 2000 was screened. This segment was used as a distracter to
provide additional information to subjects so that any information from the Rugby game stored in the short term or working memory would have to move into long-term memory to allow processing of information from this distracter segment. Thus, the distracter segment provided a delay between viewing the Rugby game and completion of the questionnaire.

This delay between the video of the Rugby game and completion of the questionnaire sought to ensure responses to the questionnaire were from long-term memory rather than short-term memory. Having information retrieved from long-term rather than short-term memory is important for marketers in the understanding of the communication effects of advertising (cf. Percy & Rossiter, 1997). According to Percy and Rossiter (1997), measuring advertising effectiveness immediately after exposure to the test advertisement does not provide a reliable measure; however, reliability is increased when a delayed test is administered. Measuring advertising effectiveness immediately after exposure to a test advertisement is not reliable as advertising effectiveness measures “particularly brand recall, declines drastically with time” (Percy & Rossiter, 1997, p. 278). Thus, inserting the distracter video segment between the video of the Rugby game and questionnaire provides a delay in time, which serves to increase reliability of measures used in determining communication effectiveness of pull-through advertisements.

In its entirety the experimental videotape designed for these studies was of seventeen minutes duration. This contained seven minutes for the first half of the game; one minute of advertisements; seven minutes for the second half of the game; and it then concluded with two minutes from the distracter video. The pull-through advertisements were contained within the game segments of the experimental video.

Insertion of Treatment Conditions

Treatment conditions were inserted into the experimental videotape by using video editing software. Video editing software allowed pull-through advertisements to be inserted into any point within the pre-recorded televised sport contest. Thus, separate experimental conditions could be made from the original experimental videotape.
Target Brand

For the purposes of this thesis, the product category selected for use in pull-through advertisements was breakfast cereals, as it was felt that this product category’s everyday use would ensure it would be common to most people. The brand of breakfast cereal selected was Vita-Brits, made by the company Uncle Toby’s is a better-known breakfast cereal within Australia.

Uncle Toby's has adopted an individual brand name strategy which is useful for companies, as it allows them to give specific brand names to each product within their product mix (Czinkota, et al., 2000). Individual brand name strategies allowed Uncle Toby's to develop the best possible brand name for their product, which could communicate to the consumer the attributes likely to be found in their product. As such, the use of the name Vita-Brits represents a brand appropriate for use in this thesis. Permission was sought and granted from Uncle Toby’s to use their brand in this thesis.

To be able to determine an optimum message speed likely to provide best results for recall, recognition, and comprehension of advertisement information, a pull-through advertisement to insert the target brand was required. As non-visual information (being information already existing within a person's mind, such as familiarity of subject matter) was found to enhance reading performance, it was necessary to control potential influence of non-visual information. To ensure control, a fictitious brand was constructed.

However, the use of a fictitious brand in the pull-through advertisement could confound results due to novelty effects. To control potential confounding effects through the use of a fictitious brand, another pull-through advertisement promoting a brand that should be familiar to respondents was also used in this study. As a result, each videotape contained pull-through advertisements for two different brands: a brand that should be familiar to respondents and another brand that was fictitious, and therefore should not be familiar to respondents.

The familiar brand of breakfast cereal selected was Vita-Brits. In conjunction with Uncle Toby’s, the following message was constructed as a pull-through advertisement and inserted into the video tapes:

“Vita Brits the 100% natural energy, high fibre, low fat cereal to start your day right”
The message contained within the pull-through advertisement was based on Fishbein’s attitude-toward-object model, an accepted and successful approach to organising persuasive messages as described by Bettinghaus and Cody (1987). Fishbein’s attitude-toward-object model has been found suitable for determining consumers' attitudes toward product attributes and the importance of those attributes (Moon, Florkowski, Beuchat, & Resurreccion, 1999). Bettinghaus and Cody (1987) found that a logical organisation of a message consistent with people’s decision-making steps could increase the persuasive appeal of that message by making the message more comprehensible. Hence, product attributes and benefits or importance of the product attributes were included in the constructed advertisement message.

For Vita Brits the product attributes were “100% natural energy, high fibre and low fat”, which preceded the product benefits “starts your day right”. The organisation of the message in this order would be consistent with the consumer’s decision-making process, as it would be logical to make product attributes salient to a consumer before communicating to that consumer the reasons why the product attributes are important.

The number of characters contained within the message (i.e., 86 characters) was greater than the mean number of characters found from within the ecological validity study (i.e., $M = 70$). However, the number of characters used for the message in the pull-through advertisement for this study was still within the range of characters of pull-through advertisements sampled from the ecological validity study (range = 6 to 108 characters). The number of characters used for the Vita-Brits advertisement message was greater than the mean number of characters, as this allowed for a logical message to be constructed to include product attributes and benefits.

The construction of the unfamiliar brand and its message involved creating a fictitious brand that gave the impression it could be a breakfast cereal. The number of characters within the unfamiliar brand advertisement message was the same number as that for the familiar brand. The message was also organised similarly to that for the familiar brand in that the fictitious product attributes were mentioned before the fictitious product benefits. The following is the advertisement message for the unfamiliar brand inserted into the videotapes:

“Bran Puffs the cereal that contains carbohydrate and protein for a daily energy source”
Two exposures were shown to be necessary to achieve a salient effect for broadcast advertisements (Gibson, 1996); therefore, subjects were exposed to two familiar and two unfamiliar brand pull-through advertisement messages during the videotape. One pull-through advertisement for a familiar brand and one pull-through advertisement for an unfamiliar brand were executed in each half of the Rugby game. Four points were chosen in the Rugby Sevens broadcast for insertion of the advertisement messages -- two during the first half and two during the second half. These were the same regardless of advertisement message speed. The presentation order of familiar and unfamiliar brands was then counterbalanced for each of the five advertisement message speeds, resulting in the development of ten distinct videotapes. Each tape also contained two unrelated advertisements screened between halves and a short video segment at the conclusion of the game about Australian business opportunities that acted as a distracter segment prior to administration of the questionnaire.

Selection of Subjects

Subjects for each experimental study were recruited from clubs and organisations throughout Gold Coast, Australia. Subjects consisted of a broad cross-section of people from various community groups (e.g., service clubs, cultural organisations, and sporting clubs). Clubs and organisations were randomly selected from a community directory published by the local council. Random selection of the clubs and organisations was achieved through the use of a random number table. The contact person associated with the club or organisation randomly selected was contacted by telephone and asked whether members of their club or organisation might be interested in being involved in a university research project. It was usual to explain to the contact person that the research project involved watching a video and then answering questions about the video. To minimise bias, no mention of the specific nature of the experiment was made.

A letter was sent to people who indicated that club or organisation members might be interested in taking part in an experiment. The letter provided broad information about the experiment and matters relating to confidentiality of data collected. In most instances the letter was tabled at the club’s or organisation’s next meeting and discussed by committee members. If approval was granted for members
to be involved in the experiment, a date and time was set that coincided with a
meeting of club members. Where a contact person for a club or organisation thought
their organisation was unsuitable, this club or organisation was discarded from the list
of clubs and organisations and the random selection process continued.

Subjects for this study were one hundred (100) residents of a mid-sized city on
the east coast of Australia (58 males and 42 females). Subjects were volunteers
recruited through local service, community, and sport organisations. Subjects' age
ranged from 16-82 years ($M = 38.7$, $SD = 19.7$). One quarter (25%) of the subjects
held a university degree, 19% had some tertiary education, and 56% reported only a
high school education. Average family income reported was AUD $46 300 ($SD = $30
000).

Design and Procedures

The effects of each of five different message speeds were tested experimentally. As the ecological validity study in chapter three found pull-through advertisement speeds ranging from 84 to 228 words per minute (wpm), five different speeds were chosen to represent the range of pull-through advertisement speeds in this study. The five different message speeds chosen were: 80, 120, 160, 200, and 240 wpm. Videotape was produced for the five message speeds, each containing four pull-through advertisements (two familiar brand advertisements and two unfamiliar), and then counterbalanced to reduce order effects. In all, ten videotapes were made for the experiment. Pull-through advertisements were embedded in videotapes of a contest in the World Rugby Sevens Tournament.

Videotapes were made using the Avid Cinema software programme. This software programme does not contain a function to allow for selection of desired message speed. To calculate desired message speeds for pull-through advertisements a stopwatch was used. During the production of the videotapes accurate assessment for the speed of the videotapes was difficult. The Avid Cinema programme did not provide a preview of the pull-through advertisement where the words moved smoothly at a constant speed across the television screen. Instead, in preview mode, the words of the advertisement messages tended to jerk their way across the screen. It was not until the production of the videotapes had been completed that the words within the message moved smoothly across the screen. As a result, after the
videotapes were made that included pull-through advertisements the speed of advertisement messages were re-checked.

The re-checking of message speeds found that the speeds varied from those that were originally intended. Hence, the speed of messages contained within pull-through advertisements used in this study was now 81.5 wpm, 123 wpm, 170 wpm, 208 wpm, and 255 wpm.

Twenty subjects were randomly assigned for exposure to one of the five message speeds. As each message speed contained two videotapes to allow for counterbalancing for the order in which familiar and unfamiliar brand pull-through advertisements were executed, ten subjects were assigned to each of the videotapes. As there were ten distinct videotapes containing five different message speeds a total of one hundred subjects were recruited for the study.

This sample size met the requirements for groups to achieve a level of statistical power of .80 (Hair, Anderson, Tatham, & Black, 1998; Maxwell & Delaney, 1990).

Instrumentation and Materials

Subjects completed a questionnaire after viewing one of the videotapes. Measures of recall, recognition, and comprehension were collected so calculation of an optimum message speed for pull-through advertisements could be conducted. The questionnaire also contained measures of brand familiarity and demographic measures. Each measure is discussed below.

Measures

Recall. Recall was measured without the use of aids or prompts. Subjects were asked to name any brands featured during the Rugby game or business video segment. For each respondent who recalled and correctly named each target brand (i.e., Vita Brits or Bran Puffs), the number one was recorded into the Statistical Package for Social Sciences -- SPSS. For respondents who did not recall and correctly name Vita Brits or Bran Puffs, a zero was recorded into SPSS. To clarify, if respondents recalled and correctly named both Vita Brits and Bran Puffs they would have scored a one for each of the responses, which would total two. Respondents who recalled and correctly named Vita Brits but not Bran Puffs would have received a one for Vita Brits and a
zero for Bran Puffs, while respondents who recalled neither Vita Brits nor Bran Puffs would have scored two zeros.

**Recognition.** Recognition was measured by providing a list of brand names (prompts). Subjects were asked to identify brands (by checking boxes) from a checklist containing brand names they might have seen featured during the Rugby game or the business video. To control for respondents who might randomly check selections, the checklist also included brands not displayed in the video. Included in this list were target brand names --Vita Brits and Bran Puffs. In the same manner as scores were recorded for recall, respondents who correctly recognised target brand names scored a one and those who did not scored a zero. Scores for each respondent were entered into SPSS.

**Comprehension.** Multi-choice questions (cf., Jensema & Burch, 1999; Oakhill, 1982, 1984) tested respondents’ levels of comprehension for messages contained within each of the familiar and unfamiliar brand pull-through advertisements featured in the video taped versions of the televised Rugby game. Two questions were asked for both familiar and unfamiliar brands. Respondents had four answers to select from for each question.

Questions were based on product attributes and benefits for each brand. One question for the familiar brand sought to seek respondents’ comprehension for product attributes, while the second question for the familiar brand sought respondents’ comprehension of product benefits. The same method was repeated for unfamiliar brands. There was one correct response and three incorrect responses for each question. In the same manner, as used for recording scores for recall and recognition, correct comprehension scored a one while incorrect comprehension scored a zero. Scores were also entered into SPSS.

Each set of multi-choice answers contained answers for both the familiar and unfamiliar brands, along with two other answers that might have been logical. This allowed for two sets of answers to be developed; one for product attributes and one for product benefits. Two sets of answers allowed for exact repetition of possible answers for both the familiar and unfamiliar brand, thus minimising any bias if answers available to respondents for familiar and unfamiliar were different.
**Brand familiarity.** A three-item seven-point scale was used to measure subjects’ familiarity with the brands Vita Brits and Bran Puffs. The scale was anchored with familiar/ unfamiliar, inexperienced/ experienced and knowledgeable/ not knowledgeable. Scores for all three items were aggregated to form an overall measure of familiarity with the Vita Brits and Bran Puffs brands. This scale is reported to be reliable in achieving a Cronbach’s alpha of $\alpha = .85$ in prior work (Kent & Allen, 1994).

**Demographic measures.** Demographic measures were age, gender, ethnicity, education, and income.

Questionnaire design and administration

The questionnaire began by seeking subjects' interest in the business video that followed the Rugby game. These questions about business interest came before questions of recall, recognition, and comprehension were used as distracter questions. This order for questions was selected to make subjects’ use working memory for the distracter questions so that any responses to recall, recognition, and comprehension questions that came later were more likely to come from long term memory rather than short term memory, thus giving a stronger indication of reading performance. Furthermore, information in long-term memory is regarded as being permanently stored, whereas information in short-term memory can be readily dismissed (Eysenck & Keane, 2000).

The questionnaire was designed in three sections. The first section contained questions relating to business interest and unaided recall; the second section gathered data for recognition; while the third section contained questions relating to comprehension of the messages, brand familiarity, and demographics of respondents.

The questionnaire was designed in three sections so each section could be given to respondents one at a time. After respondents had completed a section (for example the first section seeking data for unaided recall), this section was collected and respondents handed the next section to complete, which in this example would have been the section relating to questions about recognition. Each section within the questionnaire was independently collected to control for respondents going back to previous sections and re-entering responses to questions after receiving cues from
these earlier sections. For example, if respondents had section one (containing unaided recall) and section two (containing aided recognition), they might have been prompted for answers for unaided recall through the brands displayed in the recognition question. Respondents might have then gone back to the first section (i.e., unaided recall) and made additions or changes to the list of brands they had recalled.

The second section of the questionnaire asked respondents to tick or check brand or product names they might have seen during either of the Rugby or business videotape segments.

The third and final section of the questionnaire commenced with comprehension questions relating to familiar and unfamiliar brand advertisement messages contained within the pull-through advertisements. The comprehension questions were followed by measures of brand familiarity and demographic measures. Measures of brand familiarity followed comprehension questions, so these measures would not act as primers to respondents’ comprehension for pull-through advertisements.

Experimental studies

Subjects selected to take part in this study were assigned to a treatment or control condition through a stratified sampling process. Attempts were made to achieve equal numbers in each group based on gender and age. Subjects viewed a videotaped sporting programme containing a treatment condition on a 24" television. To allow each subject the opportunity to sit comfortably within close proximity to the television subjects viewed the television in smaller sub-groups of between four to six persons. Viewing the television in smaller sub-groups of people also allowed the environment for television viewing to remain as natural as possible to what might be expected when viewing television at home.

To ensure subjects were able to read pull-through advertisements when they were executed a pre-test was conducted. Prior to commencement of the videotape that contained the Rugby game and treatment condition, a series of numbers were inserted into the videotape screened on the television. Numbers were used instead of words to reduce any priming effect on pull-through advertisements created by pre-testing. Subjects were asked to copy the numbers screened on the television onto a paper form. Before the videotaped Rugby game commenced, the test administrator checked the results of copying the numbers and made adjustments where necessary. For
example, a subject having difficulty seeing the numbers would have been moved closer to the television screen.

During the viewing of videotapes, subjects involved in the experiment were observed by the experimenter to ensure they were exposed to the treatment and attending to the experiment. The intent was to remove any subject's data if they were deemed either to have not been exposed to the treatment condition or not actively taking part in the experiment. The experimenter found removal of subject data was not required.

After viewing the videotape, subjects were asked to complete a questionnaire containing advertisement effectiveness and demographic measures (specific advertisement effectiveness and demographic measures used in the follow-up experimental studies are discussed in detail in the appropriate study). Upon completion of the questionnaire the subjects were debriefed.

Debriefing the subjects included asking if they might have been familiar with the Rugby game shown on the videotape. This was done with the intent of removing from the study any subject's data where they indicated they had seen the game previously. Only one person recalled having seen the game, but could not remember the outcome. This person's data was included in the study as they were observed intently watching the game throughout the experiment.

Results

Data collected were entered into the SPSS – version 10 data analysis software programme. Data points were inspected for extreme scores and outliers, while tests of normality revealed no assumptions had been violated.

Manipulation checks

Brand familiarity. To determine whether respondents found the brands used in this study to be familiar and not familiar, one-sample t-tests were conducted. A one-sample t-test for the familiar brand was expected to achieve a score that would demonstrate respondents were significantly familiar with Vita-Brits, while a test on the unfamiliar brand was expected to indicate respondents were significantly unfamiliar with the fictitious brand Bran Puffs.

Data were re-centred to zero to assist with interpretation of results. As data were re-centred, positive mean scores would indicate familiarity with the brand, while
negative mean scores would indicate unfamiliarity with the brand. Table 4 confirms the brands used in this study to achieve familiarity (i.e., Vita Brits) or non-familiarity (i.e., Bran Puffs) was appropriate as respondents significantly found brands to be either familiar (positive mean score) or unfamiliar (negative mean score).

Table 4

<table>
<thead>
<tr>
<th>Brand type</th>
<th>M</th>
<th>SD</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Familiar -- Vita Brits</td>
<td>1.140</td>
<td>1.521</td>
<td>99</td>
<td>7.495*</td>
</tr>
<tr>
<td>Not familiar -- Bran Puffs</td>
<td>-1.338</td>
<td>1.267</td>
<td>98</td>
<td>-10.507*</td>
</tr>
</tbody>
</table>

* Significant at ρ < .05, two-tailed.

Message speed. Prior to determining the optimum speed for messages that achieved maximum recall, recognition, and comprehension further manipulation checks were conducted to determine whether any differences existed among age or gender associations occurred among the five message speeds.

Gender. To check whether associations existed for gender among the five message speeds, a speed of message by gender cross tabulation was conducted. Chi-square analysis showed no significant associations, $\chi^2 = 3.120$ (df, 4) $P > .05$.

Age. To determine whether significant differences existed for age of respondents among the five message speeds, a one-way ANOVA was conducted. Levene's test for homogeneity of variance indicated that equal variances could be assumed. ANOVA demonstrated there were no significant differences for age among the five message speeds, $F(4, 81) = .844; P > .05$.

Tests for inverted U relationships

To calculate the optimum message speed to achieve maximum recall, recognition, and comprehension for information contained within pull-through advertisements, which involved prediction for this optimum speed, the appropriate data analysis tool is regression analysis. To represent scores for cognitive measures of reading performance (i.e., recall, recognition, and comprehension) for information
contained within pull-through advertisements, respondents’ scores were coded either “one” for each correct response or “zero” for each incorrect response. Being coded either “one” or “zero” respondent’s scores represented categorical data. As categorical data were collected, linear regression could not be used as an analytical tool because linear regression assumes the use of continuous data. Logistical regression was a more appropriate analytical tool within SPSS that allowed prediction to occur using categorical data.

In order to test for the effect of words per minute, logistic regressions were performed for each dependent variable (recall, recognition, comprehension of product attributes, and comprehension of product benefits) for each brand (familiar and unfamiliar). This yielded eight regressions (4 dependent variables × 2 brands). To calculate the necessary estimates with adequate precision, words per minute had to be converted to words per second (a simple linear transformation). Both linear and quadratic (squared) words per second were entered as independent variables into the logistic regression. If the relationship was an inverted U shape, then the linear term would be positive with the quadratic term negative and statistically significant.

Message speed. It is also possible to estimate an optimal speed for advertisement messages contained within pull-through advertisements with respect to each dependent variable and each type of brand. Estimating an optimal advertisement message speed is achieved by setting the first derivative of the estimated equation (from the logistic regression) with respect to words per second equal to zero, then solving for words per second. The resulting estimate specifies the point of the curve at which the likelihood function (i.e., the probability of recalling each brand, recognising each brand, comprehending the message, or knowing the claimed benefits) is at its highest.

Calculation of the optimum speed from results from logistic regressions necessitates the use of the parameter estimates (beta coefficient scores) found within the regression table after analysis has been conducted. These parameter estimates (beta coefficient scores) are used in the mathematical equation derived from the regression equation \( \hat{y} = \beta_0 + (\beta_1 \times t) + (\beta_2 \times t^2) \). In this equation,

\[
0 \text{ is the constant}
\]
\( \beta \) represents the estimated beta coefficients measure of change of the probabilities, which is the odds ratio, used in logistic regression (Hair, Anderson, Tatham, & Black, 1998) and \( t \) represents words per minute (wpm).

The above equation predicts values on the \( y \) intercept at any given point on the non-linear regression line. However, the point of interest for this study is to determine at which point on this non-linear regression line is likely to indicate the optimum speed for advertisement messages to achieve best recall, recognition, and comprehension. It would be expected that optimum speed for best recall, recognition, and comprehension for advertisement messages would be depicted where the slope of the line is zero, as this would be the peak of the curve. To mathematically derive the peak of the curve (or, in other words, determine where the slope of the curvilinear line is zero the regression equation \( \hat{Y} = \beta_0 + (\beta_1 \times t) + (\beta_2 \times t^2) \) is transformed to become,

\[
\beta_0 + (\beta_1 \times t) + (\beta_2 \times t^2) = 0
\]

By taking the first derivative of the above equation, it is possible to calculate speed (Meriam & Kraige, 1993). To enable the optimum speed to be calculated for zero, it is necessary to transform the above equation once more by taking the first derivative of the above equation. The result for the first derivative is:

\[
(\beta_1) + 2(\beta_2)t = 0
\]

As \( t \) represents words per minute (or in other words speed), solving for \( t \) becomes the point of interest. Solving for \( t \) the equation becomes,

\[
t = \beta_1/(2\beta_2)
\]

Inserting parameter estimates \( \beta_1 \) and \( \beta_2 \) coefficients from logistic regression into the equation allowed the optimum speed of advertisement messages to be determined for recall, recognition, and comprehension.

Prior to calculations, logistic regression models for each variable under question were checked for goodness of fit. In all cases Hosmer and Lemeshow
goodness-of-fit tests revealed non-significant chi-square values. These non-significant results indicated a good model fit and, as such, the models were suitable for further examination (Hair, Anderson, Tatham, & Black, 1998).

Table 5 provides parameter estimates from the logistic regression, the percent of cases correctly classified, as well as the estimate for the optimal speed of pull-through advertisements. The estimate for $\beta_2$ is the regression coefficient for the square of speed (i.e., the parameter of particular interest). Regression coefficients are the weights for words per second (and words per second squared), which are estimates for optimal speed is specified in words per minute (wpm). The conversion from the estimates (in words per second) back to words per minute is a simple linear transformation. The conversion is necessitated by the fact the quadratic (squared) terms in the logistic regressions would be too large for meaningful parameter estimates if words per minute were the scale used in the regressions.

Table 5

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>$\beta_0$</th>
<th>$\beta_1$</th>
<th>$\beta_2$</th>
<th>% correct classification</th>
<th>Wpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recall</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H₁ Familiar brand</td>
<td>-4.450*</td>
<td>3.0892*</td>
<td>0.5653*</td>
<td>69%</td>
<td>163.9</td>
</tr>
<tr>
<td>H₂ Unfamiliar brand</td>
<td>-3.184*</td>
<td>1.9342</td>
<td>-0.3702</td>
<td>74%</td>
<td>156.7</td>
</tr>
<tr>
<td>Recognition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H₃ Familiar brand</td>
<td>-2.784*</td>
<td>2.4596*</td>
<td>-0.4933*</td>
<td>57%</td>
<td>149.6</td>
</tr>
<tr>
<td>H₄ Unfamiliar brand</td>
<td>-2.431</td>
<td>2.2958*</td>
<td>-0.4235*</td>
<td>63%</td>
<td>162.6</td>
</tr>
<tr>
<td>Comprehension</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H₅ Familiar brand attributes</td>
<td>-1.272</td>
<td>2.1065</td>
<td>-0.4118*</td>
<td>71%</td>
<td>153.5</td>
</tr>
<tr>
<td>H₆ Unfamiliar brand attributes</td>
<td>-3.170*</td>
<td>2.4027*</td>
<td>-4.4213*</td>
<td>59%</td>
<td>171.1</td>
</tr>
<tr>
<td>H₇ Familiar brand benefits</td>
<td>-1.025</td>
<td>1.1515</td>
<td>-0.2409</td>
<td>55%</td>
<td>143.4</td>
</tr>
<tr>
<td>H₈ Unfamiliar brand benefits</td>
<td>-2.413</td>
<td>1.5131</td>
<td>-0.3129</td>
<td>72%</td>
<td>145.1</td>
</tr>
</tbody>
</table>

*Significant at $p < .05$, one tailed

Inspection of Table 5 shows that five of the eight coefficients for the quadratic term were negative and statistically significant. Thus, the expected inverted U relationship was found for recognition of both familiar and unfamiliar brands, for
comprehension of attributes of familiar and unfamiliar brands, and for recall of familiar brands. Words per minute did not affect recall of unfamiliar brands or comprehension of benefits for familiar or unfamiliar brands. Hence, an optimal message speed of approximately 150 wpm provides best results.

**Discussion**

Five of the eight relationships take the expected inverted U relationship, but three do not. Inspection of the regression parameters and subjects’ responses suggests that for two of the three variables for which the expected relationship was not found, subjects were generally unable to perform the task. That is, subjects (regardless of condition) found it difficult to recall unfamiliar brands, and found it difficult to remember the benefits claimed for unfamiliar brands. This difficulty with recalling unfamiliar brands or their benefits may be a consequence of the fact that there is no node in memory for that brand and hence no basis for brand-specific priming. Consequently, on the basis of only two exposures, the brand is not memorable. If that is the case then pull-through advertisements will be most effective when used for brands that are already familiar. Exposures to familiar brands may trigger brand-related association networks, but exposures to unfamiliar brands will not. Future work should explore the ways that pull-through advertisements’ brand familiarity, and message content evoke viewer associations.

In this study, subjects could recall the attributes of the product claimed in the pull-through message, but could not recall its claimed benefits. This was true for both familiar and unfamiliar brands, yet the reasons for this difference are not clear. One basis for the effect may be the order in which attributes and benefits were presented. For advertisements describing familiar and unfamiliar brands, the benefits were specified after the attributes. As the number of characters in the target pull-through advertisement was greater than the average number of characters found from the ecological validity study, it may be that short-term or working memory was full by the time benefits were described. We do not know how various parts of the message were chunked in memory.

However, spatial working memory tasks within cognition indicate that up to seven items can be processed and stored within working memory at one time. Capacity for processing two parts of the advertisement message in working memory could become overloaded, as working memory is required to process, store, and
connect two parts of a message that are firstly not seen together. Secondly they must compete against the clutter of information and visual images from the sport programme.

As two separate parts of the advertisement message must be remembered in order to gather meaning for the pull-through advertisement, it could be that the quantity of clutter surrounding the advertisement message has doubled, making processing of the entire message difficult. In other words, the clutter surrounding the first part of the message could also be processed and stored in memory while waiting for the second part of the message to appear. When the second part of the message appears, working memory not only has to process the advertisement information, but also could be processing the clutter surrounding the second part of the message.

Hence, the failure to process the benefits described in the pull-through advertisement as working memory is already or close to being full from processing and storing the attributes and clutter surrounding the first part of the message. As a result, working memory could have difficulty processing later parts of an advertisement message. This could lead to message distortion, as working memory is unable to connect the two parts of the pull-through message not seen together and transfer this entire message into long-term memory.

Studies within the field of cognition have revealed the number of individual items within a block of information can be more effectively processed and retrieved than the number that can be separately processed (Eysenck & Keane, 2000; Matlin, 1998). From a practical perspective, results from this study suggest it might be necessary to change the manner in which pull-through advertisements are executed in order to increase effectiveness of pull-through advertisements, particularly for advertisement messages not seen in their entirety on the television screen.

To assist working memory to process, store, and connect arguments contained within advertisement messages, it might be better to process the pull-through advertisement in a block or chunk rather than separately or sequentially. It is suggested that after the entire first part of the advertisement message has been executed, this line of information flips up one line and then stays static, while the second part of the message scrolls underneath. This would provide people with an opportunity to read the pull-through advertisement message in its entirety (in a block), thus increasing processing and retrieval of advertisement information. This also provides an opportunity for people to read the pull-through advertisement in its
entirety would make available all words in the message, in turn making efficient use of saccadic eye movements. This could also assist people to more accurately process and gather the correct meaning of the message and reduce message distortion.

If lack of memory space was responsible for the failure to recall benefits, future work should explore ways in which pull-through advertisements are chunked as they are being processed. Since the pull-through advertisement competes simultaneously for information processing channel capacity with the television programme broadcast, effects of programme context on available channel capacity and message chunking should also be explored.

From a strictly practical point of view, the findings here have some potential utility. Study One, the ecological validity study, found the speed of advertisement messages contained in pull-through advertisements on television varied substantially from 83 wpm to 228 wpm. The estimates of optimal speed identified in this study, though different from one another, fall generally within a narrow range (that is far narrower than observed in actual use). Thus the speeds noted here may provide useful guidelines for the choice of speed to be used when running a pull-through advertisement, this being approximately 150 wpm for a brand with which the audience can be expected to be familiar. This is close to the 145 wpm that Jensema and his colleagues (Jensema, 1998; Jensema, McCann, & Ramsay, 1996) estimated to be comfortable when reading closed captions.

Working memory is found to process information most effectively when highly activated and stimulated (Eysenck & Keane, 2000; Rayner & Pollatsek, 1989). Executing advertisement messages at speeds that would encourage activation and stimulation of working memory makes working memory attend more effectively and efficiently to appropriate information. At the same time, this tends to limit processing of extraneous information, which would be the clutter of information from the television programme. Working memory is required to function effectively and efficiently, as working memory needs to identify information that needs to be transferred into long-term memory, where this information can be stored for future reference.

Thus, it might be that messages executed either slower or faster than the optimum speed found in this study could be subject to increased message distortion. Increased message distortion could occur as increased quantities of clutter or noise (television programme) within the communication channel is also likely to be
processed which would increase the load onto working memory while it attempts to process the advertisement message. In other words, as advertisement message speed increases or decreases from the optimum speed found, increased quantities of clutter (i.e. the television programme) are likely to be processed instead of advertisement information. As the advertisement message continues becoming slower or faster, the message within the advertisement becomes increasingly distorted for people as the message competes for processing capacity against increased quantities of clutter. As a result, the effectiveness of pull-through advertisements would be reduced when advertisement messages are executed slower or faster than the optimum speed.

This is not to say that all available processing capacity would be allocated to processing the pull-through advertisement if those messages are executed at the optimum speed found in this study. Inspection of the percentage of correct classifications within the statistically significant regressions revealed encouraging, but not substantial results. Clearly, factors beyond message speed affect recall, recognition, and comprehension. One of the unique features of pull-through advertisements is that they compete directly with programme content for the viewers’ attention and information-processing capacity. Further work is needed to examine ways in which programme content at the time a message is pulled across the screen affects viewers’ attention to, and memory of, the advertising message. This is addressed in the next experiment.

It appears that even at the optimum advertisement message speed, people are also processing the context of the television programme at the time pull-through advertisements are executed. As a result, the context in which these advertisements appear could be also be important, particularly in terms of affecting attitudes toward brands being advertised within the pull-through advertisement. For example, Messaris (1997) found pictures or visual images accompanying a brand being advertised could affect attitudes toward a brand. According to Messaris Levi jeans wanted to upgrade an advertisement for their consumers to show that "Levis was with the times". However, changing the context in which people associated Levi jeans by upgrading advertisements actually altered a market segment and lost market share. Further work is needed to examine ways in which programme context at the time a message is pulled across the screen affects viewers’ attention to, memory of, and attitude toward the advertising message.
Interestingly, the most effective speed for an unfamiliar brand was estimated to be higher than for a familiar brand for both recognition and comprehension of benefits. This is contrary to the direction one would have expected given the effects of familiarity on reading speeds (e.g., Pexman et al. 2000). The reasons for the consistent disparity in optimal speeds for familiar and unfamiliar brands are not clear. Perhaps those differences are due to the surprise or novelty introduced by the unfamiliar brand name; in other words, the fact that subjects had never seen the name “Bran Puffs” may have captured their attention (i.e., drawn it away from the Rugby match). If that is the case, then novelty may have a paradoxical effect. It may help to capture attention, thus allowing a faster reading speed, even though it works against recall.

Pull-through advertisements provide a unique context for studying the ways consumers process simultaneous messages and attend to commercial content. Further work examining context effects and message processing may do more than identify the most effective ways to implement pull-through advertisements. It may help us to better understand the ways consumers process commercial messages. It is to the examination of context effects on simultaneous message processing that this thesis now turns.
CHAPTER 5

Experiment Two
Effects of Context on Message Processing

Introduction

At the point of execution of a pull-through advertisement, television viewers are simultaneously exposed to the advertised message and the visual imagery and sounds of the televised sport contest. Hence, pull-through advertisements are viewed in the surrounding context of material from the televised sport programme (cf. Soldow & Principe, 1981). Thus, the sport programmes context or type of “play” that occurred at the time a pull-through advertisement is executed could affect message processing and influence the effectiveness of the advertisement’s message.

The contextual material from the televised sport programme would act as competition for processing of information contained in pull-through advertisements by television viewers. Thus, television viewers might see the pull-through advertisement, might not see the pull-through advertisement, or might not recall having seen the pull-through advertisement, but could have processed the advertisement message anyway (cf. Janiszewski, 1988; Shapiro, Heckler, & MacInnis, 1997; Diao & Sundar, 2004).

Television viewers who did not see the pull-through advertisement may not have been looking at the television screen at the time it was executed. However, it is possible for television viewers to process extraneous information such as a pull-through advertisement while watching a programme and not recall having seen it (Janiszewski, 1988, 1990; Shapiro & Krishnan, 2001; Wells, 1997). As a result, investigation into effects of context on effectiveness of pull-through advertisements and the manner in which pull-through advertisements compete for processing attention among the visual stimuli or context of the sport programme is warranted. To investigate likely effects and the way pull-through advertisements might compete for processing attention, it would be useful to first examine previous research into effects of context on processing advertisement information.
Effects of Context on Processing Advertisements

The affects context has upon advertisement effectiveness has been investigated by numerous researchers (Bello, Pitts, & Etzel, 1983; Goldberg, Gorn, & Sofer, 1985; Lee & Labroo, 2004; McClung, Park, & Sauer, 1985; Singh & Churchill, 1987; Singh & Hitchon, 1989; Thorson, Reeves, & Schleuder, 1985; Yi, 1993; Youn, Sun, Wells, & Zhao, 2001). Findings, such as controversial sexual television programme, content was found to influence processing of advertisement messages for males, but not for females (Bello, Pitts & Etzel, 1983). More favourable attitudes toward the brand were generated when a target brand came to mind more readily and was processed with contextual conceptual fluency (Lee & Labroo, 2004). Television programme-induced arousal also mediated advertisement effectiveness (Singh & Churchill, 1987; Singh & Hitchon, 1989). And because of the context in which the advertisement was presented, consumer beliefs about product attributes could be influenced indirectly, even though those attributes were not directly mentioned in the advertisement (Yi, 1990b, 1993). Furthermore, television programme contexts surrounding an advertisement have been found to affect advertisement interest (Bello, Pitts, & Etzel, 1983); aided recall (Goldberg, Gorn, & Sofer, 1985); commercial liking and memory (Thorson, Reeves, & Schleuder, 1985; Youn, Sun, Wells, & Zhao, 2001); commercial involvement (McClung, Park, & Sauer, 1985); and viewer excitement (Singh & Hitchon, 1989).

In a study of print advertisements Yi (1990) found the context in which the advertisement was placed could indirectly affect judgements about a brand. Yi suggested this indirect effect was a result of context influencing different product attributes than those intended. The existence of indirect effects indicated that consumers might make different product assessments, depending upon which product attributes people internalised from the context of an advertisement. Yi, (in Wells, 1997, p. 60) indicated that "advertisement context is not merely a benign background for advertisements, but it can also become an effective communication itself". Hence, the context in which an advertisement is placed is also processed along with advertisement information. Thus, context in which advertisements are placed becomes important to advertisers for communicating clear messages to consumers about products and brands.

Yi (in Wells, 1997) suggested that indirect effects resulting from the context in which advertisements were placed could lead to “potentially dysfunctional” (p. 61) advertisement message communication and that “advertisers might wish to have more
control over, not only the media outlets, but also specific editorial content" (p. 61). However, in regard to pull-through advertisements, advertisers have little control over their point of insertion within television programmes and advertisers have to make do with whatever context pull-through advertisements are executed within.

Hence, problems can occur in using pull-through advertisements to communicate clear messages to consumers. The contexts in which pull-through advertisements were executed are typically not consistent with advertisement messages and, as such, could influence consumers to make different judgements about products and brands than those intended by advertisers. Clear communication of pull-through advertisements could be indirectly affected by the context in which these advertisements were executed. To gain a better understanding for effects of context on processing advertisements, a deeper discussion on effectiveness of advertisements found in television will now occur.

Effects of Context on Effectiveness of Television Advertisements

Research into effects of television programme context on effectiveness of advertisements has uncovered an array of findings that appear to be a result of the varied operationalisation of television programme context. It appears that findings of advertisement effectiveness are a function of the operationalisation of programme context selected for that study (Norris & Colman, 1994). Operationalisation of television programme context has included: the use of arousal (Pham, 1992); arousal and pleasure (Newell, Henderson, & Wu, 2001; Pavelchack, Antil, & Munch, 1988); mood (Aylesworth & MacKenzie, 1998; Goldberg, Gorn, & Sofer, 1985); congruity (Coulter, 1998); involvement as cortical arousal (Thorson, Reeves, & Schleuder, 1985); liking (Thorson & Reeves, 1985); involvement (Sharma, 2000); and programme type (Murphy, Cunningham, & Wilcox, 1979).

This study focuses on research where context was operationalised at various levels of arousal. Arousal was selected for two reasons: (1) prior studies of advertising effectiveness operationalising context as arousal have tended to use sport contexts; and (2) the contextual material wherein pull-through advertisements are typically executed are sport ones (see Newell, Henderson, & Wu, 2001; Pavelchack, Antil, & Munch, 1988; Pham, 1992; Tavassoli, Schultz, & Fitzsimons, 1995).

Findings from research on advertising effectiveness, where televised sport programme context was operationalised as arousal, found programme contexts that
promoted greatest arousal achieved the lowest advertisement and brand name recall scores (Newell, Henderson, & Wu, 2001; Pavelchak, Antil, & Munch, 1988), the lowest brand name recognition scores (Pham, 1992), and the lowest attitude toward the ad \( (A_{ad}) \) scores (Tavassoli, Schultz, & Fitzsimons, 1995). These findings suggest sport programme contexts that promote high arousal among viewers, such as exciting plays or exciting contests and events, are likely to reduce the effectiveness of advertisements surrounding the programme. As a result, the effectiveness of pull-through advertisements executed within exciting sport programme contexts could be diminished when compared with other less arousing contexts.

In terms of information processing, it appears sequential processing of information is likely to occur in arousing contexts. Here, focus of attention is toward the arousing stimulus, which means that other extraneous information (such as brand names) tends to be ignored.

Conversely, television programme context research conducted by Singh and Hitchon (1989) found exciting programmes could increase arousal levels, which resulted in better performance on brand name recall and recognition tasks. They also found high levels of arousal generated through exciting contexts were likely to intensify attitude formation.

However, Singh and Hitchon did not indicate that exciting contexts promoted favourable attitudes, only that they intensified the attitude formed. This suggested advertisements, and not the exciting context, must first generate a favourable attitude among television viewers. If a favourable attitude can be formed through the advertisement in exciting contexts, the strength of this favourable attitude is likely to increase. Conversely, if negative attitudes were formed for advertisements surrounding exciting contexts, it is likely the strength of this negative attitude would also increase.

An important point to consider is that the above research focused on advertisements executed during a commercial break. These breaks interrupted the televised programme often during exciting contexts. As pull-through advertisements do not interrupt the televised programme, but are screened simultaneously to the programme, it is unclear how effects of context are likely to impact upon the effectiveness of pull-through advertisements and also in the manner in which they are processed. However, as pull-through advertisements were typically executed in sport contexts and effects of context were found to influence processing of advertisement
information, it is possible the varied contexts found during a sport telecast were likely to impact differently upon the effectiveness of pull-through advertisements and the way advertisement information is processed. In order to explore effects of television programme context on effectiveness of processing pull-through advertisements specific hypotheses derived were:

\( H_1 \): Television programme context will affect recall of seeing the pull-through advertisement

\( H_2 \): Television programme context and recall of seeing the pull-through advertisement interact.

\( H_3 \): Television programme context will affect advertisement processing levels.

*Advertisement Processing and Cognition*

Researchers acknowledge that consumers process advertisement information by either cognitive or affective processes, or a combination of both (Edwards, 1990; MacKenzie, & Lutz, 1989; Sharma, 2000). Processing advertisement information through cognition was found to be important in influencing consumer behaviour. Cognitive processing of advertisement information was found to be related to consumer behaviours such as: consumer attributions of price promotion and satisfaction or dissatisfaction with brand image (Hunt & Keaveney, 1994); increasing sales of products by personalising advertisement banners on websites (Nowak, Shamp, Hollander, & Cameron, 1999); and increasing attention and message processing for consumers, which made comparative advertisements more effective than non-comparative advertisements (Grewal, Kavanoor, Fern, Costley, & Barnes, 1997).

With the consumer seen as a cognitive information processor, measures for testing advertisement effectiveness has typically used variables such as unaided brand recall, aided brand recall (recognition) (Krishnan & Chakravarti, 1999; Ha, 1996; MacKenzie & Lutz, 1989), and message comprehension (Mick, 1992). These measures are typically regarded as measures of memory (Fiske & Taylor, 1984) that act to determine effectiveness for processing information (Baddeley, 1997; Ha, 1996; Mick, 1992; Pinker, 1984).

Typical measures of message comprehension see respondents being asked to recognise verbatim message information (Janiszewski, 1990; Jensema & Burch, 1999,
Matlin, 1998, Oakhill, 1982, 1984) or draw inferred conclusions (Jensema & Burch, 1999). Message comprehension involves retrieval of larger volumes of information than is required for recalling brand names. Thus, message comprehension is able to provide a measure of advertising effectiveness for processing increased quantities of advertisement information. As the advertisement message requires larger volumes of information to be stored in memory, increased effort and elaboration is required to process this information (Craik & Tulving, 1975). As a result of this increased effort and elaboration, processing of advertisement messages and subsequent comprehension is likely to occur at deeper levels within memory.

Processing of information occurs at a number of levels (Banquet, Gaussier, Quoy, Revel, & Burnod, 2005; Eysenck & Keane, 2000; Matlin, 1998; Mick, 1992). MacInnis and Jaworski (1989) indicated that up to six levels of processing might be used for processing advertisement information. Cognitive processing involving aided and unaided recall and comprehension tasks mostly ranged from level one (where processing of information is negligible) to level three (which involves comprehension of the advertisement). Both aided and unaided recall tasks tend to be processed at a lower level; i.e., level two. Therefore, processing of cognitive variables, aided and unaided recall and comprehension, occurs in a hierarchical manner. Accordingly, cognitive outcomes as measured by aided and unaided recall and message comprehension are important factors for determining effective advertisement processing, which in turn is important because of its relationships with consumer behaviour. To investigate effects of recall of pull-through advertisements on levels of processing within memory a specific hypothesis derived was:

\[ H_4: \text{Advertisement processing levels will be affected by recall of seeing the pull-through advertisement.} \]

*Advertisement Processing and Affect*

In addition to consumers being able to process advertisement information cognitively, consumers are also able to affectively process information contained within advertisements (Edwards, 1990; MacKenzie & Lutz, 1989; Sharma, 2000). Gaining an understanding for affective processing of advertisement information is important for advertisers, as affect serves to influence a consumer’s behaviour. Favourable affective advertisement appeals were found to influence consumer choice for brands (Biehal, Stephens, & Curlo, 1992). Comparative advertisements generated
fewer favourable attitudinal responses toward the advertisement than non-comparative advertisements. This finding showed that users of a comparative brand saw the comparison in the advertisement as an attack on their brand, which caused people to either derogate the source of the message or provide counter-arguments (Grewal, Kavanoor, Fern, Costley, & Barnes, 1997).

Furthermore, emotion-laden advertisements were found to attract consumers' attention and help retrieve prior product knowledge from memory, which brought the product to the surface of consumers' memory, thus increasing the likelihood of affecting behaviour (Chandy, Tellis, MacInnis, & Thaivanich, 2001).

Advertisement information processing and affect are typically assessed through measures of attitude such as attitude toward the advertisement ($A_{ad}$) and attitude toward the brand ($A_{b}$) (Babin & Burns, 1997; Coulter, 1998; MacKenzie & Lutz, 1989; Murry, Lastovicka, & Singh, 1992). By definition, attitude toward the advertisement ($A_{ad}$) "is a predisposition to respond in a favourable or unfavourable manner to a particular advertising stimulus during a particular exposure occasion" (MacKenzie & Lutz, 1989, p. 50). Therefore $A_{ad}$ is a construct that is restricted by time in the sense that a formation of attitude is based solely on the advertisement seen by a person at that point in time.

Processing of advertisement information using affect suggests peripheral processing would most likely be in operation (Petty & Cacioppo, 1981). Use of peripheral processing means that when processing pull-through advertisements television viewers are also likely to process contextual cues surrounding the advertisement. MacKenzie and Lutz (1989) indicated a person's affective state could influence $A_{ad}$ even if the advertisement is not recognised as an advertisement, but is still attended to by the viewer. Under peripheral processing, conscious awareness of information is not necessary, as processing of affective responses was found to occur in the absence of any conscious awareness of cognitive processing (Zajonc, 1980). For pull-through advertisements, peripheral processing would indicate contextual cues that might not be advertisement related could affect a person's affective state, which in turn could influence their attitude toward the pull-through advertisement without their having recalled seeing the advertisement.

Research has demonstrated that attitude toward the brand ($A_{b}$) is influenced by $A_{ad}$ (Alwitt & Mitchell, 1985; Brown & Stayman, 1992; MacKenzie & Lutz, 1989). The pure affect model of advertisement-based persuasion (Mackenzie & Lutz, 1989,
p. 52) indicates $A_{ad}$ directly influences $A_{b}$. The model also indicates that while cognitions about the advertisement do not directly influence $A_{b}$, they would indirectly influence $A_{b}$ through $A_{ad}$. Thus, MacKenzie and Lutz suggest that peripheral processing is used to form brand attitudes.

Effectiveness of pull-through advertisements in terms of creating favourable $A_{ad}$ and $A_{b}$ appear to be reliant upon contextual cues that might be processed peripherally. As pull-through advertisements are likely to be peripherally processed, conscious awareness for these advertisements could be negligible. Favourable affective contexts therefore appear to be important in achieving effectiveness of pull-through advertisements, particularly for the formation of favourable brand attitudes. To examine effects of television context on measures of affect a specific hypothesis derived was:

$H_5$: Television programme context affects attitude toward the advertisement ($A_{ad}$) and attitude toward the brand ($A_{b}$).

**Visual Processing of Information**

Within advertising it was found that processing of advertisement information is possible without the viewer having recalled or recognised information about the advertisement (Janiszewski, 1988; Shapiro & Krishnan, 2001; Wells, 1997). It was also found that non-attended information can influence the processing of an attended message (Janiszewski, 1990). Wells (1997) indicated, “… information that is present but ‘ignored’ can, in fact, be processed, albeit at a non-conscious, pre-attentive level” (p. 27). In other words, information can be processed without conscious awareness, at a non-conscious level. As a result, it appears pull-through advertisements could be processed even if television viewers have not recalled seeing the advertisement (provided that they were looking toward the television screen at the time a pull-through advertisement was executed).

Investigation into effectiveness of advertisements between people who either did or did not recall seeing the advertisement revealed that more favourable $A_{ad}$ and $A_{b}$ were achieved for people who did not recall seeing the advertisement (Janiszewski, 1988, 1993). Janiszewski (1990) found information that is present but typically ignored can compete for non-conscious resources needed to process attended advertisement messages, which in turn influences memory (i.e., brand recall and recognition and comprehension of advertisement messages).
Hence, this finding that non-attended information processed at a non-conscious level can generate more favourable attitudes suggests favourable affective outcomes are possible for pull-through advertisements. Pull-through advertisements would compete for television viewers’ processing resources, so where viewers did not recall seeing the pull-through advertisement it is possible the advertisement was processed, and a favourable $A_b$ could be formed. To explore effects of recall on attitude formation the following hypothesis was derived:

$H_6$: Attitude toward the advertisement ($A_{ad}$) and attitude toward the brand ($A_b$) will be affected by recall of seeing the pull-through advertisement.

Relevance

Relevance to consumers of information contained within the advertisement was found to be important to advertising effectiveness (Colman & Brown, 1983). A relationship exists between the level of relevancy within an advertisement for a person and the degree of attention the same person is prepared to give to the advertisement (Colman & Brown, 1983; Grunert, 1996). The more relevant an advertisement is to a person, the more attention they will display toward the advertisement. Increased attention toward advertisements was found to increase recall (Donthu, Cherian, & Bhargava, 1993), recognition (Rothschild, 1993), and to affect attitudes (Donthu, Cherian, & Bhargava, 1993). For television programmes, it could also be expected that the more relevant a programme is to a person, the more likely they are to attend to that programme. This may also affect a television viewer’s recall, recognition, and attitude toward a pull-through advertisement.

As pull-through advertisements are typically executed during sport programmes, the relevance of the sport programme to a television viewer will be important in determining the level of attention that might also be given toward a pull-through advertisement. Levels of viewer attention will vary throughout a sport programme (or among other similar sport programmes viewed at a later time), even within the same sport type, as relevancy of programme content to the viewer will vary. For example, people are more likely to view a television sport programme featuring their favourite team, their least favourite team (if there was a chance their least favourite team could lose), and a game that impacted upon their favourite team’s position on the competition ladder (Mahony & Moorman, 1999).
Apart from the variations in the relevance among sport programmes, the degree of relevance may vary during the game or sport programme itself. For example, controversial decisions or plays affecting the outcome of the game may be highly relevant to a viewer and, as a result, retain their attention. On the other hand, the outcome of the game could already be decided as a team may be winning by a large margin. As the viewer already knows the outcome, the relevance to them may diminish. Also, a viewer may only be interested in viewing parts of a game; for example, when teams score or a batter in baseball or cricket makes "a great hit" or gets "out". Here a viewer might be viewing the television using divided attention while conducting a conversation with friends or reading. When it appears a team may score or a player has made a great hit, a stimulus becomes more relevant to a viewer, who may then switch from using divided attention to focused attention. Thus, relevance of advertisement information or the sport programme becomes important for advertisers, as relevance could affect processing of advertisement information.

In summary, the contextual stimuli surrounding an advertisement were found to affect advertisement messages both directly and indirectly. Contextual stimuli surrounding an advertisement can pose problems for advertisers endeavouring to send clear messages to consumers about products or brands. Surrounding stimuli deemed to be exciting and arousing has lead to contrary results for measures of memory. It has been suggested that exciting and arousing stimuli surrounding an advertisement can reduce memory for an advertisement, while other research has suggested it can enhance memory for, and attitude toward, the advertisement.

People can process advertisement information through cognition or affect. In terms of cognition, message processing in memory occurs in a hierarchical manner; thus context could affect how deeply advertisement information is processed. Advertisement information can also be processed through affect. In emotion-laden contexts, affective processing of non-conscious information was found to create favourable A. Furthermore, it was found information that has been ignored could be processed. It is suggested though, that the ignored information is processed through non-conscious means. Thus, processing advertisement information and surrounding contextual stimuli might not be limited to only those people who recall seeing an advertisement and surrounding contextual stimuli. Consequently, contextual stimuli surrounding pull-through advertisements become important to advertisers in attempts to deliver clear advertisement messages to consumers.
**Purpose of the Study**

The purpose of this study is to explore the effects of programme context on the effectiveness of pull-through advertisements. It is also the purpose of this study to explore the likely manner in which people process pull-through advertisements.

Summary of the specific Hypotheses tested are:

- **H$_1$**: Television programme context will affect recall of seeing the pull-through advertisement.
- **H$_2$**: Television programme context and recall of seeing the pull-through advertisement interact
- **H$_3$**: Television programme context will affect advertisement processing levels.
- **H$_4$**: Advertisement processing levels will be affected by recall of seeing the pull-through advertisement.
- **H$_5$**: Television programme context affects attitude toward the advertisement ($A_{ad}$) and attitude toward the brand ($A_{b}$).
- **H$_6$**: Attitude toward the advertisement ($A_{ad}$) and attitude toward the brand ($A_{b}$) will be affected by recall of seeing the pull-through advertisement.

**Method**

**Subjects**

Subjects for this experimental study were recruited in the same manner as for previous experiment, which saw clubs and organisations throughout Gold Coast, Australia, consisting of a broad cross-section of people from various community groups (e.g., service clubs, cultural organisations, and sporting clubs) randomly approached. Subjects for this study were 132 residents of the Gold Coast (77 males and 55 females). Subjects were volunteers recruited through local service, sport, and community clubs. Subjects’ age ranged from 16-86 years ($M=42.9$, $SD=21.2$). Twenty-four percent (24%) of the subjects held a university degree; 40% had experienced some tertiary education, and 36% reported only a high school education. Average family income reported was AUD $49 700 ($SD=$25 250).
Design and Procedures

In order to determine whether effects of televised sport programme context influenced effectiveness of pull-through advertisements, an experimental research design was used. The televised sport programme was the same as that used in the experiment described in chapter four (i.e., a game from the International Rugby Board (IRB) Rugby Seven’s Tournament). Four videotapes were made for this study, each containing the same television programme. Pull-through advertisements were inserted into three of the videotapes each with a different context. Hence, three different contexts were studied. Three videotapes were produced, each representing a different context in which a pull-through advertisement was inserted. A fourth videotape containing no inserted pull-through advertisements was used as a control condition.

Four videotapes were made using the Pinnacle Studio DC-10 Plus editing software programme. As the previous study on message speed (described in chapter four) found an advertisement message speed of 150 wpm could achieve best brand recall, brand recognition, and brand comprehension, this message speed was used in this study.

The familiar brand of breakfast cereal used in the pull-through advertisement message speed study was again used as the brand advertised in this experimental study (Vita Brits). The unfamiliar brand of breakfast cereal was not included in this study as results on measures from the message speed study revealed scores consistently worse than those found for familiar brands. However, the advertisement message was re-designed for this experiment, as follows:

“Vita Brits the natural energy cereal for Australia and you”.

The pull-through advertisement was redesigned to better represent the mean number of characters of pull-through advertisements as found from the ecological validity study (as described in chapter three). Hence, the advertisement message for this study of effects of context contained fewer characters than the message used in the prior study investigating advertisement message speed. Thus, the number of characters of the advertisement message for this study was 58 characters, which was within four characters of the mean number of characters (i.e., 54) found from the ecological validity study.
As advertisement relevance is important for processing advertisement information, this pull-through advertisement message was constructed in a manner that could achieve best possible advertisement relevance for the audience. The construction of the advertisement message focused not only on use of words that might be deemed relevant by the audience, but also took into consideration the content of the sport programme itself.

Use of the word Australia was designed to provide relevance in terms of the team playing in the sport programme (i.e., Australia). Australia was also used as the predominant sample for this study; hence the message would be deemed relevant to Australian people. The word “you” was used to make explicit reference to the relevance of the message to the audience.

The constructed message was given to a panel of experts comprised of academics and practitioners, who were asked to comment on the relevance and content of the message. The general consensus was that, given the restricted length of the pull-through advertisement, the message content was deemed appropriate. Furthermore, the experts indicated that, given the team playing in the sport contest and the ethnicity of the majority of the sample, use of the words “Australia and you” would be deemed the most relevant in this situation.

Similar to the study conducted in chapter four, two exposures of the same pull-through advertisement were inserted into each videotape. The Rugby Sevens broadcast was again used meaning one exposure of a pull-through advertisement was inserted into each half of the game.

Thirty-three subjects were assigned to each exposure: (1) dead condition; (2) action condition; (3) excitement condition; and (4) control. Hence, 132 subjects were recruited for the study. This number of subjects achieved a level of power of .80 with an $\alpha = .05$ (Maxwell & Delaney, 1990).

Instrumentation and Materials

The independent variable context was operationalised by identifying three different types of “plays” or conditions within the Rugby game. These conditions were termed “dead,” “action,” and “excitement” contexts similar to the levels of arousal used by Newell, Henderson, and Wu (2001), Pavelchack, Antil, and Munch (1988), Pham (1992), and Tavassoli, Schultz, and Fitzsimons (1995).
The “dead” condition was defined as that point within the telecast sport programme without action, such as when a kicker in football was preparing to take a kick at goal or preparing for the kick-off. The “action” condition was defined as that point in the sport programme in which play was occurring, but neither team had a large advantage over the other, such as when the game seemed to be played in the middle of the field, with play going back and forth. The “excitement” condition was defined as that point in the game where one team was about to score a “try” or “touchdown”.

Videotape of each context was given to a panel of experts comprising practitioners from the media industry and academics knowledgeable within media. These experts were asked to make judgements on the appropriateness of classification of the background imagery emanating from the sport programme at the time a pull-through advertisement was executed. The general consensus was that the contextual names given to the background imagery were appropriate and suitable for operationalising the context variable.

After viewing one of the videotapes, subjects were asked to complete a questionnaire. Measures of recall for seeing words of a pull-through advertisement, unaided brand recall, aided brand recognition and advertisement message comprehension, attitude toward the ad (\(A_{ad}\)), attitude toward the brand (\(A_{b}\)), and advertisement relevance (\(A_{rel}\)) were collected. Demographic measures were also included. Each measure is discussed below.

Measures

Recall for seeing words of a pull-through advertisement. To determine whether respondents had seen a pull-through advertisement, respondents were asked whether they might have seen “words which make up an advertisement move across the bottom of the television screen”. Respondents who checked the “yes” box were recorded in SPSS with a one and those who checked “no” were recorded with a zero.

Unaided brand recall and aided brand recognition. These dependent variables were measured and scored in the same manner as conducted in the previous study as described in chapter four.
Advertisement message comprehension. This dependent variable was measured similarly to the study described in chapter four. To measure advertisement message comprehension a multi-choice question comparable to that used by Jensema & Burch (1999) and Oakhill, (1982, 1984) was constructed. Respondents who correctly identified the advertisement message were recorded as one and those respondents who did not correctly identify the message were recorded as zero. Respondents were asked to select the correct message from four message choices. The other three message choices were similar in content to the correct message. Message choices were:

A. the natural energy cereal for England and you
B. the high energy cereal for Australia and me
C. the natural energy cereal for Australia and you
D. the high energy cereal for England and me

Cognitive Processing of Advertisement Information

Advertisement processing levels. Cognitive outcomes were measured by aided and unaided recall and message comprehension. As cognitive processing involving aided and unaided recall and comprehension occurs in a hierarchical manner, it is possible to develop an overall measure of cognition for determining effectiveness of pull-through advertisements. The hierarchical manner in which information is cognitively processed occurs at a number of levels within memory. The levels of processing within memory range mostly from Level One (where processing of information is negligible) to Level Three (which involves full comprehension of the advertisement). Aided and unaided recall tasks tend to be processed at Level Two. Thus, an overall measure of cognition was formed through the use of these hierarchical levels of processing.

Values based on the levels of processing within memory, were given to combinations of unaided brand recall, aided brand recognition, and advertisement message comprehension that represented respondents’ correct or incorrect responses for recall, recognition, and comprehension of advertisement information. Table 6 illustrates values for combinations of memory measures.
Table 6

Values for Combinations of Measures of Memory

<table>
<thead>
<tr>
<th>Value</th>
<th>Correct</th>
<th>Incorrect</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Unaided brand recall</td>
<td>Aided brand recall</td>
</tr>
<tr>
<td></td>
<td>Aided brand recognition</td>
<td>Advertisement message comprehension</td>
</tr>
<tr>
<td>1</td>
<td>Aided brand recognition</td>
<td>Unaided brand recall</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advertisement message comprehension</td>
</tr>
<tr>
<td>2</td>
<td>Unaided brand recall</td>
<td>Aided recognition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advertisement message comprehension</td>
</tr>
<tr>
<td>3</td>
<td>Advertisement message comprehension</td>
<td>Unaided brand recall</td>
</tr>
<tr>
<td>4</td>
<td>Unaided brand recall</td>
<td>Aided recognition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advertisement message comprehension</td>
</tr>
</tbody>
</table>

It can be noted from Table 6 that respondents’ incorrect responses for recall, recognition, and comprehension of advertisement information were represented with a score of zero. Respondents’ correct responses for recall and comprehension of advertisement information were represented with a score of four. Thus, as respondents were able to correctly recall, recognise, and comprehend advertisement information, higher values were scored. This represented deeper levels of processing advertisement information within memory and reflected the hierarchical levels used by MacInnis and Jaworski (1989).

It can also be noticed from Table 6, that no value was allocated for people who correctly recalled the target brand, but did not recognise the brand, because this response was not found. In other words, when people recalled the target brand, they also recognised it; therefore inclusion of a value for this response was not needed. Furthermore, Value 3 did not include brand recognition. Brand recognition was not included in Value 3, as it should not matter whether people recognised the target brand or not, as this would not change this level of processing, which would still fall between Levels 2 and 4. At Value 3, people had correctly comprehended the advertisement message, which was the first time in the measure that comprehension had occurred. As comprehension of information is processed at a deeper level than
recognition, whether or not people recognise the brand at this level appears to be redundant. As a result, scores for brand recognition were collapsed for Value 3.

Once values had been allocated to respective processing levels for correct or incorrect recollection, recognising, or comprehending advertisement information, these values were entered into SPSS to allow for further data analysis. The combination of responses to measures of unaided recall, aided recognition, and advertisement message comprehension to form an overall measure of cognition for pull-through advertisements allowed for the formation of the dependent variable called advertisement processing levels. Advertisement processing levels were used in further analysis to represent cognitive outcomes for processing pull-through advertisements.

Affective Processing of Advertisement Information

Affective information processing was represented by measures of attitude toward the advertisement ($A_{ad}$) and attitude toward the brand ($A_b$).

*Attitude toward the advertisement ($A_{ad}$)*. Muehling (1987) indicated that no single set of items to measure $A_{ad}$ were predominantly used in the marketing/advertising literature. Since then, this trend has continued (cf. Arias-Bolzman, Chakraborty, & Mowen, 2000; Brunel & Nelson, 2000; Goldsmith, Lafferty, & Newell, 2000; Lohse & Rosen, 2001; Snipes, La Tour, & Bliss, 1999; Stevenson, Bruner II, & Kumar, 2000). Typically items to measure $A_{ad}$ have been adapted from other research to suit the construct dimension the researcher is measuring (Perrien, Dussart, & Paul, 1985). Pull-through advertisements are a new form of advertising quite different from traditional forms of advertising (i.e., an advertisement message embedded into a broadcast programme as compared to an advertisement screened during a commercial break that interrupts a programme). Scales measuring $A_{ad}$ were used to gather information from traditional advertisements and, as such, no single scale appeared to suit the construct dimension to measure $A_{ad}$ for pull-through advertisements. Items to measure $A_{ad}$ for this study had to be adapted from other measures of $A_{ad}$ to better suit the pull-through advertisement construct.

Seven 7-point semantic differential items were used to measure $A_{ad}$ (eye catching/not eye catching; likeable/unlikeable; irritating/not irritating; appealing/not appealing; persuasive/not at all persuasive; good/bad; informative/not informative).
Items good/bad, appealing/not appealing, and likeable/unlikeable were taken from an \( A_{ad} \) measurement scale used by Janiszewski (1988) in prior work on non-conscious information processing. As the literature suggests, pull-through advertisements could be processed without conscious awareness and it is this non-conscious processing that is likely to create favourable \( A_{ad} \). Hence, these items from Janiszewski’s measurement scale were included in this study’s \( A_{ad} \) scale. Work using items from Janiszewski’s scale reported a Cronbach's alpha of \( \alpha = .93 \) and \( .91 \). The remaining items for this \( A_{ad} \) scale were taken from a pool of items collected from prior works involving measures of \( A_{ad} \). This pool of items was based on semantic differential scales developed by Osgood, Suci, and Tannenbaum (1957). The remaining items were selected to fit with the pull-through advertisement context and were previously shown to have good reliability measures when used in other work (see Bruner & Hensel, 1994).

The item eye catching/not eye catching was selected to measure whether people saw or did not see the pull-through advertisement. As pull-through advertisements "intrude" into a broadcast programme and might distract or disrupt viewing of a programme, the item irritating/not irritating was included. The message contained within a pull-through advertisement is quite short when compared with a traditional advertisement, thus items informative/not informative and persuasive/not at all persuasive were selected. The seven items selected for this \( A_{ad} \) measurement scale were given to a panel of marketing experts who agreed these items belonged in the pull-through advertisement construct.

Factor analysis was conducted on these seven items to check unidimensionality. Factor analysis revealed that for both \( A_{ad} \) familiar and \( A_{ad} \) unfamiliar brand, items loaded onto one factor and explained 62% and 61% of the variance respectively. These findings compare favourably with an \( A_{ad} \) scale developed by Petroshius and Crocker (1989). The items selected for their \( A_{ad} \) measure explained 56% of the variance. Good reliability was demonstrated by achieving a Cronbach’s alpha score of \( \alpha = .75 \).

**Attitude toward the brand (\( A_{b} \)).** Attitude toward the brand (\( A_{b} \)) was measured using a three-item, seven-point semantic differential scale. Scale items were anchored with favourable/unfavourable, bad/good, and negative/positive. Scores for the three items were aggregated to form an overall measure of attitude toward the brand. Prior
work showed this scale to be reliable with Cronbach’s alphas ranging from $\alpha = .93$ (Muehling & Laczniak, 1988) to $\alpha = .96$ (Kinney & McDaniel, 1996).

*Advertisement relevance (Ad_rel).* To measure relevance of the advertisement for a respondent, a scale developed by Lastovicka (1983) was used. Subjects were asked to respond to six statements by indicating their level of agreement with the statements on a six-point scale that was anchored with strongly disagree/strongly agree. Scores for the six items were aggregated to form an overall measure of relevance of the advertisement for the respondent. Prior work shows this scale to be reliable with Cronbach’s alphas ranging from $\alpha = .82$ (Hill, Arthurson, & Chalip, 2000) to $\alpha = .85$ (Lastovicka, 1983).

*Brand familiarity.* Brand familiarity was measured using a three-item, seven-point semantic differential scale. Scale items were anchored with Familiar/Unfamiliar, Inexperienced/Experienced, and Knowledgeable/Not Knowledgeable. Scores for the three items were aggregated to form an overall measure of brand familiarity. Use of this scale in prior work conducted by Machleit, Allen, and Madden (1993) and Kent and Allen (1994) demonstrated reliability by reporting a Cronbach’s alpha as $\alpha = .85$.

*Demographic measures.* Demographic measures included age, gender, ethnicity, education, and income.

Questionnaire Design and Administration

Questionnaire design and administration followed the same format and procedures as described in chapter four in the study of pull-through advertisement speed, except for additional measures included in this questionnaire. As in the study described in chapter four, the questionnaire contained three separate sections.

The first section contained measures for recall for seeing words of a pull-through advertisement, which was followed by a question seeking respondents’ unaided recall for brand names seen in the videotape. The second section contained the same measures for aided recognition as was found in the previous study (chapter four). The third section contained measures of attitude, comprehension, brand familiarity, and demographics. The format for administration of measures in this
section were: A_{ad}; A_b; brand familiarity; Ad_{rel}; advertisement message comprehension; and concluded by seeking respondents’ demographics. In the same manner as the study described in chapter four, each section of the questionnaire was administered to respondents after the prior section had been completed and collected.

**Results**

To explore effects of programme context on the effectiveness of pull-through advertisements and to examine the manner in which people were likely to process pull-through advertisements specific hypotheses were derived. These hypotheses were:

H_1: Television programme context will affect recall of seeing the pull-through advertisement.

H_2: Television programme context and recall of seeing the pull-through advertisement interact

H_3: Television programme context will affect advertisement processing levels.

H_4: Advertisement processing levels will be affected by recall of seeing the pull-through advertisement.

H_5: Television programme context affects attitude toward the advertisement (A_{ad}) and attitude toward the brand (A_b).

H_6: Attitude toward the advertisement (A_{ad}) and attitude toward the brand (A_b) will be affected by recall of seeing the pull-through advertisement.

Data collected were entered into the SPSS – version 10 data analysis software programme. Data points were inspected for extreme scores and outliers, while tests of normality revealed no assumptions had been violated.

**Manipulation Checks**

Before these hypotheses were examined, a series of manipulation checks were conducted to determine the similarity of the samples used in each cell of the analysis.

**Gender.** To check whether gender associations existed among the three different television programme contexts and control group, a context-by-gender cross tabulation was conducted. Chi-square analysis showed no significant associations,
$\chi^2 = 4.582 \text{ (df, 3) } p > .05$. All cells contained similar numbers of male and female respondents.

**Age.** To determine whether significant differences existed for age of respondents among the three different television programme contexts (i.e., dead, action, and excitement) and the control group, a one-way ANOVA was conducted. Levene's test for homogeneity of variance indicated equal variances could be assumed. The ANOVA demonstrated no significant differences for age among the three different contexts and control group $F(3,120) = 1.600, p > .05$.

**Brand familiarity.** As the target brand used in this study was deemed a familiar brand of breakfast cereal, a one-sample $t$-test was conducted to check target brand familiarity. A one-sample $t$-test revealed the target brand used in this study was significantly familiar to respondents $t(131) = 4.020, p < .05$.

**Reliability analysis.** Reliability analysis was conducted on the scales used in this study. Examination of reliability of items contained within the scale used to measure $A_{ad}$ was acceptable ($\alpha = 0.93$). Examination for reliability of items contained within the scale used to measure $A_b$ reported Cronbach's alpha as $\alpha = 0.97$, while a Cronbach’s alpha of $\alpha = 0.85$ was found for brand familiarity.

Examination for reliability of items contained within the scale used to measure $A_{rel}$ initially reported Cronbach's alpha as $\alpha = 0.80$. Inspection of scale-item correlations revealed that Item Four (“The Vita Brits advertisement did not have anything to do with my needs”) was found to have a poor correlation with other items in the scale (.20). Tabachnick and Fidell (2001) suggest items that correlated less than .32 should be carefully considered before continued inclusion of this item in the scale. Further inspection of item statistics showed that when this item was removed from the scale reliability improved ($\alpha = 0.88$). As improvement on scale reliability occurred when this item was deleted, Item 4 was removed from the scale, and was not included in further analyses.
Covariate. Correlation analysis was conducted to determine whether Ad_{rel} might covary with the dependant variables A_{ad} and A_{b}. Table 7 illustrates results of correlation analyses.

Table 7

<table>
<thead>
<tr>
<th></th>
<th>A_{ad}</th>
<th>A_{b}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ad_{rel}</td>
<td>.357*</td>
<td>.269*</td>
</tr>
<tr>
<td>N</td>
<td>128</td>
<td>128</td>
</tr>
</tbody>
</table>

*Significant at p < .01.

Table 7 shows significant relationships exist between Ad_{rel} and the dependent variables A_{ad} and A_{b}. These findings indicated that as relevance of the pull-through advertisement increased, so did people’s A_{ad} and A_{b}. Thus, Ad_{rel} will be used as a covariate in further tests.

However, as Ad_{rel} was now included in further tests, a problem of multicollinearity arose between Ad_{rel}, and whether people recalled seeing the pull-through advertisement. People who deemed the advertisement relevant might have been the same people who recalled seeing the pull-through advertisement, while those who did not deem the advertisement relevant might be the same people who did not recall seeing words of a pull-through advertisement. If this were true, the covariate Ad_{rel} would be colinear with whether people recalled seeing words of a pull-through advertisement. Therefore, Ad_{rel} and whether people recall seeing words of a pull-through advertisement would in actual fact be measuring the same. Existence of collinearity would have meant loss of independence for testing Ad_{rel} and corruption of the findings.

To determine whether collinearity existed between Ad_{rel} and whether people recalled seeing words of a pull-through advertisement, an independent samples t-test was conducted. If collinearity existed the independent samples t-test would reveal a significant difference between whether people recall seeing words of a pull-through advertisement and the dependent variable Ad_{rel}. Furthermore, inspection of means for Ad_{rel} would have indicated a positive mean for those who did recall seeing words of a pull-through advertisement and a negative mean for those who did not.
Independent samples t-test found no significant difference between whether people recalled seeing words of a pull-through advertisement for Ad_rel; t(126) = -1.605, p > .05 (equal variance assumed F(126) = .274, p > .05). Furthermore, inspection of means revealed negative results for Ad_rel for both groups; i.e., people who recalled seeing words of a pull-through advertisement M = -1.1618 and those who did not M = -1.4700. The non-significant finding and results of negative means indicated the non-existence of colinearity between Ad_rel and whether people recalled seeing words of a pull-through advertisement. This finding indicated that Ad_rel and whether people recalled seeing words of a pull-through advertisement could be deemed an independent measure. Therefore, Ad_rel is used in further testing.

Hypothesis Analyses

**Hypothesis 1.** Chi-square cross-tabulation analysis was conducted to determine whether television programme context affected whether people recalled seeing the pull-through advertisement. Chi-square analysis revealed that television programme context did affect whether people recalled seeing the pull-through advertisement \( \chi^2 = 12.339 \) (df, = 1) \( p < .05 \). People were most likely to recall seeing the pull-through advertisement in the action context (adj. Std. Resid. 2.8), while people were least likely to recall seeing the pull-through advertisement in the excitement context (adj. Std. Resid. 3.2). Equal proportions of people recalled seeing the advertisement in the dead context.

**Hypothesis 2.** With the use of Wilks’ Lambda criterion, MANCOVA found no significant interaction effects between the independent variables context and recall for seeing pull-through advertisement F(6, 174) = 1.921, p > .05.

**Hypotheses 3 and 5.** Prior to testing for effects of context on advertisement processing levels, attitude toward the advertisement (A_ad) and attitude toward the brand (A_b), a manipulation check was conducted to determine whether differences existed between people exposed to pull-through advertisements executed in different contexts and people who were not shown a pull-through advertisement on the dependent variables. To determine whether differences existed, a series of independent samples t-tests were conducted. Tables 8, 9, and 10 illustrated results of independent samples t-tests conducted on A_ad, A_b, and advertisement processing levels for the three contexts, “dead”, “action,” and “excitement”.
Table 8
Independent Sample t-tests Dead Condition v Control

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>t</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude toward the advertisement</td>
<td>53***</td>
<td>3.977**</td>
<td>.3607</td>
</tr>
<tr>
<td>Attitude toward the brand</td>
<td>64</td>
<td>.723</td>
<td>.5027</td>
</tr>
<tr>
<td>Advertisement processing level</td>
<td>55***</td>
<td>6.795**</td>
<td>.3166</td>
</tr>
</tbody>
</table>

** Significant at $p < .01$  *** Equal variance not assumed $p < .05$.

Table 9
Independent Sample t-tests Action Condition v Control

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>t</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude toward the advertisement</td>
<td>64</td>
<td>4.336**</td>
<td>.2889</td>
</tr>
<tr>
<td>Attitude toward the brand</td>
<td>64</td>
<td>1.96*</td>
<td>.4495</td>
</tr>
<tr>
<td>Advertisement processing level</td>
<td>55***</td>
<td>7.268**</td>
<td>.3127</td>
</tr>
</tbody>
</table>

*Significant at $p < .05$  ** Significant at $p < .01$  *** Equal variance not assumed $p < .05$.

Table 10
Independent Sample t-tests Excitement Condition v Control

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>t</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude toward the advertisement</td>
<td>49***</td>
<td>6.436**</td>
<td>.3947</td>
</tr>
<tr>
<td>Attitude toward the brand</td>
<td>64</td>
<td>3.350**</td>
<td>.4749</td>
</tr>
<tr>
<td>Advertisement processing level</td>
<td>64</td>
<td>8.216**</td>
<td>.2803</td>
</tr>
</tbody>
</table>

** Significant at $p < .01$  *** Equal variance not assumed $p < .05$.

Tables 8, 9, and 10 shows that in all contexts (and for all three variables except for $A_b$ in the dead context) pull-through advertisements were able to influence attitude and stimulate processing for advertisement information. Overall, these findings further indicated pull-through advertisements were in fact effective and could be processed from among the plethora of stimuli found in a television programme.

**Effects of context on advertisement processing levels, $A_{ad}$ and $A_b$.** To determine whether television programme context affected advertisement processing
levels, \( A_{ad} \) and \( A_b \) and whether advertisement processing levels, \( A_{ad} \) and \( A_b \) were affected by recall for seeing words of a pull-through advertisement a 3 x 2 (context x recall), MANCOVA was performed. Adjustment was made for the covariate \( A_{rel} \). With the use of Wilks’ Lambda criterion, the results of the MANCOVA found significant main effects for context \( [F(6, 174) = 2.416, p < .05] \) and recall \( [F(3, 87) = 2.715, p < .05] \). The MANCOVA results also showed a significant main effect for the covariate \( A_{rel} \) \( [F(3, 87) = 7.522, p < .05] \). Findings indicate that television programme context and recall of seeing a pull-through advertisement affected processing of advertisement information.

Effects of context. Tests of between-subjects effects for context found significant differences among the three contexts (dead, action, and excitement) in terms of \( A_{ad} \) \( F(2, 89) = 5.944, p < .05 \) and \( A_b \) \( F(2, 89) = 3.365, p < .05 \). Significantly, advertisement processing levels were not affected by different contexts \( F(2, 89) = .808, p > .05 \).

To identify which contexts were likely to differ significantly for \( A_{ad} \) and \( A_b \), simple contrast post-hoc tests were conducted. As data were re-centred on zero, inspection of means for the three contexts on the dependent variables \( A_{ad} \) and \( A_b \) indicates that for both variables, the “excitement” context showed a positive mean score, while the “dead” and “action” contexts revealed negative mean scores (see Table 11).

Table 11

Mean Scores for Context on \( A_{ad} \) and \( A_b \)

<table>
<thead>
<tr>
<th>Context</th>
<th>( A_{ad} )</th>
<th>( SE )</th>
<th>( A_b )</th>
<th>( SE )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dead</td>
<td>-.651</td>
<td>.300</td>
<td>-.358</td>
<td>.368</td>
</tr>
<tr>
<td>Action</td>
<td>-1.368</td>
<td>.392</td>
<td>-.171</td>
<td>.481</td>
</tr>
<tr>
<td>Excitement</td>
<td>.202</td>
<td>.265</td>
<td>.840</td>
<td>.325</td>
</tr>
</tbody>
</table>

As the “excitement” context was found to have achieved positive \( A_{ad} \) and \( A_b \) while other contexts did not, the “excitement” context was used as the referent category in the simple contrast post-hoc analysis. Analysis of variance using simple contrast analysis on \( A_{ad} \) and \( A_b \) variables is summarised in Table 12 and Table 13,
respectively. The purpose of this analysis is to determine significant differences among contexts.

Table 12

Simple Contrast Post-hoc Analysis: Context by A\textsubscript{ad}

<table>
<thead>
<tr>
<th>Context</th>
<th>Excitement</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dead</td>
<td>-.853*</td>
<td>.401</td>
</tr>
<tr>
<td>Action</td>
<td>-1.570**</td>
<td>.474</td>
</tr>
</tbody>
</table>

* Significant at $p < .05$  ** Significant at $p < .01$

Table 13

Simple Contrast Post-hoc Analysis: Context by A\textsubscript{b}

<table>
<thead>
<tr>
<th>Context</th>
<th>Excitement</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dead</td>
<td>-1.198*</td>
<td>.492</td>
</tr>
<tr>
<td>Action</td>
<td>-1.011</td>
<td>.581</td>
</tr>
</tbody>
</table>

* Significant at $p < .05$  ** Significant at $p < .01$

Inspection of Tables 12 and 13 reveals the excitement context not only demonstrated a positive $A_{\text{ad}}$ and $A_{\text{b}}$, but also that this positive attitude formation differed significantly from the other contexts in three of the four cases. The only case not found to be significant (action x excitement context on $A_{\text{b}}$) did reveal values approaching significance $t (1) = -1.011$, $p = .08$. Overall, findings indicate pull-through advertisements executed in exciting contexts were able to generate more favourable $A_{\text{ad}}$ and $A_{\text{b}}$ among television viewers.

Effectiveness of pull-through advertisements in exciting contexts. Even though exciting contexts were found to promote the formation of positive $A_{\text{ad}}$ and $A_{\text{b}}$, investigation was needed to confirm that the mean $A_{\text{ad}}$ and $A_{\text{b}}$ scores demonstrated practical utility. To demonstrate practical utility of pull-through advertisements executed in exciting contexts $A_{\text{ad}}$ and $A_{\text{b}}$ should be significantly different from zero at a point of indifference. Thus, scores not significantly different from zero would be considered too small to warrant practical use. Table 14 illustrate the results of this analysis.
Table 14

One Sample t-tests of $A_{ad}$ and $A_{b}$ in Exciting Contexts

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>t</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>$A_{ad}$</td>
<td>32</td>
<td>.935</td>
<td>.3232</td>
<td>1.9852</td>
</tr>
<tr>
<td>$A_{b}$</td>
<td>32</td>
<td>2.746*</td>
<td>.9091</td>
<td>1.9017</td>
</tr>
</tbody>
</table>

* Significant at $p < .05$. 

Table 14 reveals the mean $A_{ad}$ score was not significantly different from zero. This finding indicates a pull-through advertisement executed in exciting contexts would not assist to significantly generate favourable $A_{ad}$. However, significant favourable $A_{b}$ can be created through the execution of pull-through advertisements in exciting contexts. Thus, pull-through advertisements executed in exciting contexts offer advertisers with another practical method to create favourable $A_{b}$.

In summary, television programme context was found to affect people’s $A_{ad}$ and $A_{b}$, but not advertisement processing levels. In particular, the “exciting” context was found to significantly improve $A_{ad}$ and $A_{b}$. Recall of a pull-through advertisement was found to significantly affect advertisement processing levels, but not $A_{ad}$ and $A_{b}$. Tests of between-subjects effects for recall of a pull-through advertisement found a significant difference between groups for advertisement processing level $F(1, 89) = 5.213, p < .05$, but not for $A_{ad} F(1, 89) = 1.633, p > .05$ and $A_{b} F(1, 89) = .004, p > .05$.

Inspection of means for advertisement processing level shows that when people recalled seeing the words of a pull-through advertisement ($M = 2.8725$) they were more likely to process the advertisement message information at deeper levels than those who did not recall seeing the words of a pull-through advertisement ($M = 2.0644$). Taken together, these findings suggest context effects emerge when information is processed through affect, but not cognition. Furthermore, results indicated that for both affective and cognitive processing it appeared advertisement information was processed through non-conscious means (albeit at much weaker levels) through cognition.

*Hypotheses 4 and 6.* Independent samples $t$-test found no difference between people who did or did not recall seeing words of a pull-through advertisement on $A_{rel}$. This finding suggested people who did not recall seeing words of a pull-through
advertisement were still able to make an assessment for relevance of the advertisement. It does not appear logical, however, that people who did not recall seeing words of an advertisement could make an assessment of relevance at the same level as found for those who did recall seeing words of a pull-through advertisement. Hence, a question is therefore posed as to why there is no difference between people who recalled or did not recall seeing words of a pull-through advertisement and Ad_{rel}.

To assist in answering this question, it is useful to determine whether the finding of no difference between recalling or not recalling seeing words of a pull-through advertisement was consistently found for the dependent variables A_{ad}, A_{b}, and advertisement processing levels. Furthermore, it is also useful to make an assessment for effectiveness of pull-through advertisements.

To determine whether differences were consistently found between those who recall and those who do not recall seeing words of a pull-through advertisement on A_{ad}, A_{b}, and advertisement processing levels, independent t-tests were conducted. Table 15 illustrates these results.

**Table 15**

*Independent Samples t-tests for Recall of a Pull-through Advertisement on A_{ad}, A_{b}, and Advertisement Processing Levels*

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>t</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude toward the advertisement</td>
<td>102*</td>
<td>-0.839</td>
<td>0.3188</td>
</tr>
<tr>
<td>Attitude toward the brand</td>
<td>120*</td>
<td>-0.706</td>
<td>0.3512</td>
</tr>
<tr>
<td>Advertisement processing levels</td>
<td>127*</td>
<td>-6.716**</td>
<td>0.2481</td>
</tr>
</tbody>
</table>

** Significant at p < .01  * Equal variance not assumed p < .05.

Table 15 indicate that for two of the three dependent variables, no significant differences were found. Inspection of Table 15 revealed the two dependent variables (where no significant difference emerged) were the affective dependent variables A_{ad} and A_{b}. This finding indicates processing pull-through advertisement information through affect could result in advertisement information being processed at similar levels, whether or not people recall seeing the advertisement.

The remaining dependent variable, advertisement processing level, was found to be significantly different in terms of whether or not people recalled seeing words of
a pull-through advertisement. Inspection of means for advertisement processing level indicated that people who recalled seeing the words of a pull-through advertisement achieved deeper levels of advertisement information processing ($M = 2.8406$) than that achieved by people than those who did not recall seeing the words ($M = 1.1746$). This finding indicates that pull-through advertisement information is processed at much deeper cognitive levels when people recall seeing the pull-through advertisement.

**Effectiveness of pull-through advertisements** The above results suggest that processing of advertisement information for pull-through advertisements could be effective in terms of forming $A_{ad}$ and $A_{b}$, (even if people do not recall seeing the advertisement) and in creating deeper levels of advertisement processing within memory (when people recall seeing the advertisement). However, the effectiveness of pull-through advertisements to form attitudes and create deeper levels of advertisement processing could be no different from when there were no pull-through advertisements. In other words, a pull-through advertisement’s effectiveness might not be any different on people who were exposed to an advertisement (whether they recalled seeing words of the advertisement or not) and those people not exposed to an advertisement.

To test the effectiveness of pull-through advertisements, independent samples $t$-tests were conducted. As no differences were found between people recalling or not recalling seeing words of a pull-through advertisement for $A_{ad}$ and $A_{b}$, these two groups were treated as one population. Hence, the analysis for $A_{ad}$ and $A_{b}$ will investigate differences between those exposed to a pull-through advertisement (whether people recalled seeing the advertisement or not) and those not exposed to a pull-through advertisement (control group). As a significant difference was found for advertisement processing levels (which indicated two separate populations), separate analyses were conducted. Table 16 illustrates results for those people exposed to a pull-through advertisement and those who were not on the dependent variables $A_{ad}$ and $A_{b}$.
Table 16
Independent Samples t-test Between Those People Exposed to a Pull-through Advertisement and Those Who Were Not for Dependent Variables $A_{ad}$ and $A_{b}$

<table>
<thead>
<tr>
<th></th>
<th>$df$</th>
<th>$t$</th>
<th>$SE$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude toward the advertisement</td>
<td>89***</td>
<td>-6.682**</td>
<td>.2608</td>
</tr>
<tr>
<td>Attitude toward the brand</td>
<td>130</td>
<td>-2.399*</td>
<td>.3936</td>
</tr>
</tbody>
</table>

*Significant at $p < .05$ **Significant at $p < .01$ *** Equal variance not assumed $p < 05$.

Table 16 shows significant differences between those exposed to a pull-through advertisement and those who were not for both $A_{ad}$ and $A_{b}$. Inspection of means for $A_{ad}$ revealed people exposed to a pull-through advertisement ($M = -.4747$) recorded a higher mean than people who were not ($M = -2.2172$). Inspection of means for $A_{b}$ also revealed people exposed to a pull-through advertisement ($M = .2626$) recorded a higher mean than those who were not ($M = -.6818$). These findings indicated pull-through advertisements are in fact effective in attitude formation among people.

Processing of pull-through advertisement information by people who were exposed to the advertisement, but did not recall seeing its words indicated advertisement information was processed affectively. Processing of advertisement information through affect by people exposed to a pull-through advertisement, but did not recall seeing its words indicated that advertisement information was being processed at a non-conscious level.

As a further manipulation check to determine whether people were processing advertisement information at a non-conscious level, independent samples $t$-tests were conducted between those people exposed to a pull-through advertisement who did not recall seeing words of the advertisement and those not exposed to a pull-through advertisement on $A_{ad}$ and $A_{b}$. Again, independent samples $t$-tests revealed significant differences between people exposed to a pull-through advertisement who did not recall seeing the advertisement and people not exposed to a pull-through advertisement for both $A_{ad}$ $t(40.170) = 5.218, p < .05$ (equal variance not assumed $F = 36.345, p < .05$) and $A_{b}$ $t(61) = 2.265, p < .05$ (equal variance assumed $F = 1.459, p >$
.05). Inspection of means revealed people exposed to a pull-through advertisement who did not recall seeing words of the advertisement developed more favourable $A_{ad}$ ($M = 2.333$) and $A_b$ ($M = .5333$) scores than those not exposed to a pull-through advertisement; $A_{ad}$ ($M = -2.2172$) and $A_b$ ($M = -.6818$).

Again, these findings indicated people were able to process pull-through advertisement information without having recalled seeing the words of the advertisement, provided they had been exposed to the advertisement. These findings again suggest pull-through advertisement information was processed at a non-conscious level through affect.

Thus, overall, pull-through advertisements were effective in generating more positive $A_{ad}$ and $A_b$ (even if people did not recall seeing words of the advertisement, but had been exposed to it). Here it is suggested that people were able to process pull-through advertisement information at a non-conscious level (cf. Jansizewski, 1988; Shapiro, Heckler, & MacInnis, 1997). This finding indicates that measures determining effectiveness of processing pull-through advertisements, based on whether people have recalled or not recalled seeing the advertisement, are inappropriate.

However, with regard to depth of processing in memory for pull-through advertisements, a significant difference emerged between those who recalled and those who did not recall seeing words of a pull-through advertisement. Inspection of means indicates people who recalled seeing the words of a pull-through advertisement were able to process the advertisement information at much deeper levels than those who did not recall seeing words of the advertisement.

As a significant difference was found between those who recalled seeing words of a pull-through and those who did not, it was necessary to conduct separate analyses, as prior testing revealed two different populations. To determine the effectiveness of pull-through advertisements in generating processing of advertisement information within memory for those people exposed to a pull-through advertisement (whether recalled seeing words of the advertisement or not) and those not exposed to the advertisement, independent samples $t$-test were conducted. Table 17 and 18 illustrates results.
Table 17
Independent Samples t-test Between Those Exposed to a Pull-through Advertisement and Recalled Seeing Words and Those Not Exposed to a Pull-through Advertisement for Dependent Variable Advertisement Processing Levels

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>t</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recalled seeing words</td>
<td>84*</td>
<td>10.291**</td>
<td>2.4769</td>
</tr>
</tbody>
</table>

** Significant at \( p < .01 \)  * Equal variance not assumed \( p < .05 \).

Table 18
Independent Samples t-test Between Those Exposed to a Pull-through Advertisement But Did Not Recall Seeing Words and Those Not Exposed to a Pull-through Advertisement for Dependent Variable Advertisement Processing Levels

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>t</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did not recall seeing words</td>
<td>52 *</td>
<td>5.619**</td>
<td>1.7030</td>
</tr>
</tbody>
</table>

** Significant at \( p < .01 \)  * Equal variance not assumed \( p < .05 \).

Tables 17 and 18 indicate that in terms of processing advertisement information into memory, pull-through advertisements were effective for people who either did or did not recall seeing words of an advertisement. Overall, pull-through advertisements were effective in terms of stimulating processing of advertisement information into memory than if there were no pull-through advertisements. However, as it was found that people who recalled seeing words of a pull-through advertisement process its information at much deeper levels in memory, than those who did not recall seeing words of a pull-through advertisement, effectiveness of pull-through advertisements for stimulating processing of advertisement information into memory increases when people consciously recall seeing words of an advertisement.

Interestingly, Table 18 indicates that people who did not recall seeing words of a pull-through advertisement were more able to significantly process advertisement information than people not exposed to the advertisement. This finding suggests that advertisement information can be processed cognitively at a non-conscious level; however, the level of processing is significantly weaker than that found for consciously processed information.
In summary, processing advertisement information through affect by people exposed to an advertisement was found to occur at similar levels (whether or not people recalled seeing the words of the advertisement). These findings suggest both conscious and non-conscious processing of information through affect can occur. Similarly, results for processing advertisement information through cognition also found conscious or non-conscious methods were used. However, information processed under non-conscious conditions revealed this information is processed at significantly weaker levels than is information processed under conscious conditions.

**Advertisement relevance (Ad\textsubscript{rel}).** Tests of between-subjects effects for the covariate Ad\textsubscript{rel} found significant relationships for A\textsubscript{ad} \( F(1, 89) = 15.394, p < .05 \) and A\textsubscript{b} \( F(1, 89) = 10.949, p < .05 \). Inspection of \( \beta \) coefficients revealed A\textsubscript{ad} \( \beta = .517 \) and for A\textsubscript{b} \( \beta = .477 \). These findings indicate significant positive relationships exist between Ad\textsubscript{rel} and A\textsubscript{ad} and Ad\textsubscript{rel} and A\textsubscript{b}. In other words, as relevance of the pull-through advertisement increases attitudes toward the advertisement and brand also increase.

**Discussion**

Significant effects were found on three of the six hypotheses. Television programme context affected recall of seeing the pull-through advertisement. People were more likely to recall seeing the pull-through advertisement in the action context, and less likely to recall seeing the pull-through advertisement in the excitement context. Reasons for these results are unclear; however, it could be that during action contexts, people were searching for information on the television screen that might provide an insight into what might happen next in the game or to provide a clue as to the potential outcome. Hence, when pull-through advertisements appear on screen people were more likely to see them. Another reason might be that during action contexts people might be bored with the ensuing struggle between the teams and begin to search the television screen for other stimuli.

Action contexts appear to provide opportunities for increased effort and elaboration for processing pull-through advertisements. As increased effort and elaboration is possible this suggests processing pull-through advertisements executed in action contexts could occur in a serial manner. Serial processing of pull-through
advertisements suggests stimuli emanating from the television programme at the time of advertisement execution are unlikely to be processed as focused attention is more likely on the pull-through advertisement. This finding would be favourable to marketers, as this means distortion of a message contained within pull-through advertisement would be reduced, thus providing clearer communication to consumers. Hence, in action contexts, pull-through advertisements appear to compete successfully for processing attention, as they are capable of breaking through the clutter of stimuli from the television programme.

On the other hand, pull-through advertisements executed in exciting contexts were less likely to be recalled. This finding is consistent with results from studies conducted by Newell, Henderson, and Wu, (2001), Pavlechak, Antil, and Munch, (1998), and Pham (1992) who found recall and recognition scores were lowest in contexts promoting high arousal such as exciting plays. It is unclear why exciting contexts achieved lowest recall scores for seeing a pull-through advertisement. Perhaps focused attention was drawn toward the excitement within the television programme or people were not viewing the screen at the time of pull-through advertisement execution; hence the pull-through advertisement was ignored.

As part of the data collection process, the administrator of the experiment watched people’s attention toward the screen at the time a pull-through advertisement was executed. The administrator noticed that during the excitement contexts (the points in the game when tries or touchdowns were being scored) people appeared to be watching the television more intently when compared with other contexts. If this were the case, then most people watching the television screen at the time a pull-through advertisement was executed did not notice the advertisement. Hence, people’s focus of attention could have been toward other stimuli on the screen. This focus of attention could have been toward the player carrying the ball. Thus, people exposed to the exciting context did not recall seeing the pull-through advertisement as they were focusing on the exciting play. To provide a deeper understanding for the visual point of reference for people and the manner in which people process information at the point in time when a pull-through advertisement is executed, it would be helpful to conduct further experiments using eye tracking devices.

Even though the action context was found to promote best recall for people seeing the pull-through advertisement and could provide conditions to promote clear advertisement communication to consumers, practical utility for inserting pull-through
advertisements into these contexts appears futile. Results of attitude toward the advertisement ($A_{ad}$) and attitude toward the brand ($A_{b}$) for pull-through advertisements placed in action contexts revealed negative findings. As positive relationships exist between $A_{ad}$ and $A_{b}$, which in turn have been found to influence purchase intent (MacKenzie & Lutz, 1989), it appears embedding pull-through advertisements in action contexts would do little for generating sales of product as the negativity developed on attitude toward the advertisement would flow on to attitude toward the brand and then purchase intent. This would be an unwanted outcome for marketers.

It could be that serial processing of pull-through advertisements screened in action contexts interrupts people’s viewing of the television programme. Viewers might deem this interruption as unfavourable, hence forming a negative attitude toward the advertisement and its brand. Further investigation on effects of interruption of pull-through advertisements and attitude toward advertising would be useful to explain more deeply reasons for development of negative attitudes in action contexts.

Nevertheless, even though recall of seeing pull-through advertisements in exciting contexts was low, data suggest favourable results can be found when pull-through advertisement information is processed through affect rather than cognition. In exciting contexts significant favourable outcomes on $A_{ad}$ and $A_{b}$ emerged which is consistent with results from studies conducted by Janiszewski (1988) who found that more favourable $A_{ad}$ and $A_{b}$ scores were possible when people did not recall seeing the advertisement. According to Petty and Cacioppo (1981), information can be processed by means of a peripheral route through affect where stimuli surrounding an object of focused attention are processed. Hence, even though exciting contexts achieved the lowest recall scores (suggesting less focused attention is drawn to pull-through advertisements), what emerges as important to marketers is that pull-through advertisements executed in exciting contexts are capable of being processed through affect, which was found to create favourable $A_{ad}$ and $A_{b}$ scores.

Interestingly, Singh and Hitchon (1989) indicated that exciting contexts do not promote favourable attitude, they serve to intensify an attitude. If this were the case then valence scores on $A_{ad}$ and $A_{b}$ should have been consistent in all contexts; i.e., either all contexts demonstrated favourable results or all contexts showed less than favourable results with the excitement context achieving the most positive or negative score. This was not found. Within the dead and action contexts negative results were
found on $A_{ad}$ and $A_{b}$, which are contrary to the positive score found on $A_{ad}$ and $A_{b}$ within the excitement context. Thus, data suggest that stimuli from within the exciting context may have contributed to the creation of favourable $A_{ad}$ and $A_{b}$ scores.

It appears an emotive force emanating from the exciting context could have affected $A_{b}$. This study did not examine the types of emotions likely to affect $A_{b}$ for pull-through advertisements. It appears, however, a pairing of brand with exciting context can occur. Data therefore suggest that under certain conditions arousal may do more than just intensifying an attitude it could also assist in attitude formation. Further investigation is warranted to identify stimuli from within exciting contexts that might assist in generating both arousal and favourable attitude formation. Furthermore, as pull-through advertisements are mostly executed during sport contests, it appears emotive forces are likely to affect attitudes toward the brand; therefore investigation using physiological measures would be useful. In particular, further studies could investigate effects on $A_{b}$ when sports fans from one team are shown a pull-through advertisement after their team scores a touchdown or try when compared with the opponent’s team scoring a try or touchdown.

Exciting television programme contexts thus appear to play a role in activating the type of processing system required to optimise effectiveness for the use of pull-through advertisements, i.e., affect. Processing pull-through advertisements affectively appears to permit the emotion of the exciting context to influence people’s attitude formation about the pull-through advertisement and its brand. As there appears to be an influence from stimuli within the exciting context on attitudes formed about the pull-through advertisement and its brand, it is suggested that stimuli from both exciting context and advertisement are paired together as they are processed simultaneously. This pairing occurs in a manner similar to that found in classical conditioning (e.g., the Pavlovian effect). Hence, the exciting context is conditioning people to a positive affective response toward the brand.

By activating the affective processing system, opportunities exist for marketers to achieve favourable $A_{b}$. Advertisers should be less concerned about the message contained in the pull-through advertisement (as this promotes cognitive processing which was found detrimental to $A_{b}$) and focus on stimulating the affective processing system by pairing a brand with exciting contexts such as those found in sport contests. Thus, it could be better for marketers to flash brand logos in exciting contexts, rather than use an advertisement message.
Results from this study also indicated $A_{ad}$ and $A_{b}$ were not affected by recall of seeing a pull-through advertisement. This means that people who did not recall seeing the pull-through advertisement were still able to process it at a similar level to those who did recall seeing the advertisement. This finding is consistent with literature indicating people do not have to recall seeing words of an advertisement for it to be effective (see Janiszewski, 1990; Shapiro & Krishnan, 2001; Wells, 1997). Janiszewski (1990) found that information that was present but typically ignored could compete for processing attention among stimuli. Hence, data suggest that pull-through advertisements, even though not being recalled, can also effectively compete among stimuli for processing attention. As pull-through advertisements are processed without recollection, this study supports prior findings by Janiszewski that information that is typically ignored can be processed, albeit at a non-conscious level.

On the other hand advertisement-processing levels were affected by recall of seeing a pull-through advertisement. Those who recalled seeing the advertisement processed advertisement information more deeply. Thus, deeper processing of advertisement information occurred when people were conscious of the information they were processing. This suggests people were elaborating on the pull-through advertisement and providing more focused attention toward it, thus pull-through advertisements were effective in breaking through the clutter of stimuli emanating from the television programme and successfully competing for processing attention.

Taken together, data suggest that pull-through advertisements can be processed either through affect or cognition. Both processing systems were found to be effective in permitting pull-through advertisements to compete for processing attention among the stimuli found within a television programme. However, in terms of practical utility for marketers, promoting the use of the affective processing system would be more useful than using the cognitive system. Having brand names stored within memory was found to counter effects on attitude toward the brand, which would be detrimental to sales of product. It appears for effective use of pull-through advertisements marketers would want advertisements executed in exciting contexts (to stimulate affective processing) without wanting people to recall seeing the advertisement (to limit cognitive processing).

The finding that advertisement information can be processed without recall of seeing the advertisement indicates that using only cognitive measures to assess advertisement effectiveness are redundant. Results from this study suggest providing
completeness for measurement of advertisement effectiveness requires measures of affect to also be included to allow non-conscious measurement of processing an advertisement when no recall for seeing the advertisement arises.

The ability to process a pull-through advertisement without recall of seeing it begs the question; how might this have occurred? The scope of this thesis does not provide opportunity for a deep explanation so further work is required to investigate this finding. Perhaps though, during the exciting context within the televised sport programme, people’s point of attention was toward the “play” of the sport contest, and not on the pull-through advertisement, thus it was ignored. However, this raises another issue as when viewers were watching the television the pull-through advertisement was executed over the play, which should have made it difficult for people not to recall seeing the advertisement. As people did not recall seeing the advertisement, their attention must have been focused on the play beyond the pull-through advertisement. This suggests people could have seen the play, and the pull-through advertisement as existing on different visual planes. According to Eysenck and Keane (2000) and Rock and Palmer (1990), if people viewed the play of the sport programme and the pull-through advertisement as existing on different visual planes, then it was possible for information from the play and advertisement to have been processed separately.

Separate processing of play and pull-through advertisements on different visual planes can occur as attention toward the play would be processed through the central visual system, while the pull-through advertisement (not being the point of attention) is in front of the attended object, would be processed through the peripheral visual system (cf. Petty & Cacioppo, 1981; Sekular & Blake, 1990). Information processed through the peripheral visual system would activate the affective processing system and hence, information is processed in a non-conscious manner and as such not recalled. This non-conscious processing of the pull-through advertisement occurs as the ignored information engages a hemisphere within the brain that is needed to make records of outputs of individual hemispheric operations (see Janiszewski, 1990). By recording these outputs, processing of pull-through advertisement information occurs, thus permitting the non-attended pull-through advertisement to be processed without recollection.

This hemispheric resource within the brain is used for both attended and non-attended information (Janiszewski, 1990). Therefore, information from the attended
sport programme is processed simultaneously with the non-attended pull-through advertisement. Hence, the likelihood that both conscious and non-conscious information are processed together. As conscious and non-conscious information are processed together this explains the pairing of stimuli from the exciting context with the brand advertised in the pull-through advertisement. People who thus focused attention toward the play also processed the nearer pull-through advertisement, permitting simultaneous processing of play context to be paired with brand information from the advertisement.

On the other hand, processing of advertisement and play information through cognition did not permit effects of context to emerge. A reason for this could be motion parallax (Eysenck & Keane, 2000). Motion parallax is a cue that provides a strong impression to people for those moving objects that are focused upon. However, while people are focusing on these moving objects, more distant objects appear to move more slowly. This stronger impression for nearer objects leads to a deeper processing of information for this nearer information, while objects appearing more distant achieve much shallower processing.

Furthermore, focus upon this nearer moving information has also been found to achieve segregation of this focused object from its background (Nakayama, 1985; De Yoe & van Essen, 1988). By focusing conscious attention to a nearer pull-through advertisement that is moving, could lead to its segregation from the contextual imagery beyond the pull-through advertisement, which is the play from the sport programme. Hence, the play from the sport programme is not processed and, as such, contextual imagery from the sport programme did not interfere with cognitive processing of the pull-through advertisement and produce any contextual effects. Further investigation using visual plane focus and motion parallax could provide a deeper understanding of the manner in which pull-through advertisements are processed and perhaps provide a more meaningful understanding of why pull-through advertisements can be processed without recall of seeing them.

Conclusion

This study found that televised sport programme context affected the manner in which pull-through advertisement information was processed. It found pull-through advertisements were most effective in exciting contexts; however, this result was only found when people processed advertisement information affectively. Processing of
pull-through advertisements through cognition was found to be immune to effects of context. While cognitive processing was found to work best when people recalled seeing the words of a pull-through advertisement, this led to negative $A_{ad}$ and $A_{b}$. Programme context was found to affect recall for seeing pull-through advertisements. It is suggested that advertisers use pull-through advertisements to concentrate on promotion of the brand rather than the advertisement message.

Practical use of pull-through advertisements sees marketers repeating exposures of the advertisement to consumers. Even though this study found executing pull-through advertisements in exciting contexts could create favourable $A_{b}$, repeated execution of pull-through advertisements in these exciting contexts could lead to deleterious effects. It is to investigation of the effects of repeated execution of pull-through advertisements that this thesis now turns.
CHAPTER 6

Experiment Three
Effects of Repetition Priming on Advertisement Effectiveness When Pull-through Advertisements are Used in Combination With Pod Advertisements to Advertise the Same Brand.

Introduction
The ecological validity study in chapter four found it likely that a number of pull-through advertisements would be executed throughout the duration of a television programme. These pull-through advertisements were either repeat advertisements for the same brand or advertisements for a number of different brands. Furthermore, it was not unusual to see advertisements executed in pods that contained the same brand names as those advertised in pull-through advertisements. Hence, pull-through advertisements were often used in combination with pod advertisements.

By executing pull-through advertisements either before or after a pod, advertisers created opportunities to increase the number of exposures for a particular brand name in a much shorter time period than would typically be seen in television advertising. Advertisers were able to execute pull-through advertisements in close proximity to a pod. Hence, advertisers were able to achieve two or three exposures of a brand name within close succession, depending upon whether advertisers executed a pull-through advertisement on both sides of a pod, or just before or just after the pod that contained an advertisement for the same brand name.

By executing pull-through advertisements before a pod containing an advertisement for the same brand name, advertisers were using pull-through advertisements as primers. Furthermore, when advertisers used pull-through advertisements after a pod, the advertisement in the pod would act as a primer for an up-coming pull-through advertisement. Thus, the use of pull-through advertisements in combination with pod advertisements to prime television viewers for advertised brand names could be an effective method for advertisers to communicate messages to consumers (cf. Yi, 1990, 1993).
Primed

Use of priming can take on two forms (Bruce, Carson, Burton, & Kelly, 1998). The first form is the use of context as a prime where contextual material surrounding an advertisement is processed at the same time as the target advertisement and indirectly affects meaning of the target advertisement (Soldow & Principe, 1981; Yi, 1993). Effects of context were examined in Experiment Two. The second form is that under examination here, where priming materials precede a target advertisement (Yi, 1990). In this form, ideas are repeated due to a delay between prime and target advertisement. For example, a pull-through advertisement would be executed prior to an upcoming pod containing an advertisement for the same brand featured in the pull-through advertisement. Hence, the pull-through advertisement would act as a primer for the upcoming advertisement in the pod. As there is repetition for a stimulus between primer and target advertisement, the more appropriate term to describe priming used in this manner is “repetition priming” (Bruce et al., 1998; Eysenck & Keane, 2000).

According to Fiske and Taylor (1984), repetition priming is a phenomenon that permits recently activated ideas to come into mind more readily than ideas not previously activated. These repeated ideas permit increases in item recognition after earlier exposure to that item (Bruce, et al., 1998). Item recognition is found to operate within implicit rather than explicit memory (Eysenck & Keane, 2000), which indicates that effects of priming tend to operate automatically and without conscious awareness (Eysenck & Keane, 2000; Ferguson, Bargh, & Nayak, 2005; Fiske & Taylor, 1984; Stafford, 2000). The study in chapter five found pull-through advertisements could be processed without conscious awareness. Thus, the use of pull-through advertisements as repetition primers might be a method of increasing advertisement effectiveness.

However, repetition priming represents more of an encoding process than one of retrieval (Fiske & Taylor, 1984). This means that the context in which information is initially presented is important for priming to be effective. In fact, in order to produce strong priming effects, Fiske and Taylor (1984) found contexts in which primes were initiated had to be relevant, to allow priming of descriptive as well as evaluative meanings to occur. Here it seems pull-through advertisements used as repetition primers might struggle to achieve effectiveness.
Pull-through advertisements do not provide a large volume of information in their advertising message. Furthermore, the context of the television program in which pull-through advertisements are executed tends not to be directly relevant to the brand advertised. This lack of relevance might reduce the descriptive and evaluative meanings repetition priming needs to draw upon in order for priming to achieve its effects.

However, the study in chapter five found a Pavlovian effect emerged for processing pull-through advertisements and context. This Pavlovian effect resulted in people pairing an exciting context with the brand advertised in the pull-through advertisement. This pairing led to a positive formation of $A_b$. Hence, it could be that placing a pull-through advertisement as a primer in an exciting context might be sufficient to permit repetition priming effects to emerge and increase advertisement effectiveness.

Priming Effects and Advertisements

Work on priming effects within advertising has tended to focus on measures of memory such as recall, recognition, comprehension, and levels of processing for advertisement information (Bruce et al., 1998; Krishnan & Shapiro, 1996; Lord, Kim, & Putrevu, 1997; Stephens & Johnson, 2000). Findings from these works have indicated priming effects increased memory and provided opportunities for advertisement information to be processed at deeper levels. Thus, increasing the number of brand exposures through priming was found to improve advertisement effectiveness by increasing cognitive processing of advertising information.

However, findings from the study conducted in chapter five (focusing on context) indicated that increased memory or cognitive processing for pull-through advertisement information resulted in decreased $A_b$. Thus, using pull-through advertisements as primers to increase memory and deepen levels of advertisement information processing might result in deleterious effects on $A_b$. Furthermore, as positive relationships were found to exist between $A_b$ and purchase intent (PI) (Brown & Stayman, 1992; Lutz, MacKenzie, & Belch, 1983), any decrease in $A_b$ would also decrease PI.

Examination of the effects of the use of pull-through advertisements as primers under affective processing conditions is required. Affect-based priming was found to facilitate liking or familiarity for a stimulus through repetition of that
stimulus (Krishnan & Shapiro, 1996). The context study described in chapter five found that affective processing of pull-through advertisements could occur under specific contexts, (i.e., exciting contexts). Furthermore, this study found affective processing resulted in positive attitude formation. As affective processing was measured through $A_{ad}$ and $A_{b}$, it could be that effects of using pull-through advertisements as primers, when processed affectively, might also be able to produce positive $A_{ad}$ and $A_{b}$. From the standpoint of practical utility it would be useful to determine whether priming through use of pull-through advertisements can produce positive $A_{ad}$ and $A_{b}$ to increase pull-through advertisement effectiveness. Furthermore, given the $A_{b}$ relationship with PI, it would also be useful to investigate effects of priming using pull-through advertisements on PI.

Prior research found $A_{b}$ and PI evaluations and judgements could be enhanced through use of repetition priming (Keller & Aaker, 1992; Pryor & Brodie, 1998; Yi, 1990). Hence, using pull-through advertisements for repetition priming (particularly as they are executed under conditions that promote positive affective judgements), should enhance $A_{b}$ and PI judgements made by consumers.

Apart from the relationship between PI and $A_{b}$, PI is useful in that it is an indication of behavioural intent. The inclusion of inspection of people’s PI can provide useful information to advertisers on consumers’ likely intent for product purchase and provide a forecast for a product’s sales. However, it is unrealistic to assume that after exposure to one treatment condition from this study, results of PI could be generalised with confidence. Purchase intent was included for completeness for this study, and to provide insight into likely outcomes in terms of behavioural intent when pull-through advertisements were used in combination with commercial break advertisements.

Hence, investigation is warranted to determine the effect of repeated brand exposures through use of pull-through advertisements in combination with commercial break advertisements when pull-through advertisements are executed in conditions promoting affective information processing. This study sought to focus upon effects of priming on $A_{b}$ and PI using pull-through advertisements when used in combination with commercial break advertisements.
Research Purpose

The purpose of this study was to explore the effects of repetition priming on advertisement effectiveness when pull-through advertisements are used in combination with advertisements in commercial breaks to advertise the same brand.

The key hypothesis under consideration is:

\[ H_1: \text{Pull-through advertisements used as repetition primers should increase } A_b \text{ and } PI. \]

Method

Subjects

Subjects for this experimental study were again recruited from clubs and organisations throughout Gold Coast, Australia. Subjects consisted of a broad cross-section of people from various community groups (e.g., service clubs, cultural organisations, and sporting clubs). Subjects for this study were 245 residents of the Gold Coast (103 males and 142 females); their age ranged from 17-86 years (\( M = 48.2, SD = 18.7 \)). Thirty percent (30%) of the subjects held a university degree, 38% had experienced some tertiary education, and 32% reported only a high school education. Average family income reported was AUD $47 900 (\( SD = $23 900 \)).

Design

In order to determine whether effects of repetition priming affect advertisement effectiveness when pull-through advertisements were used in combination with pod advertisements an experimental research design was employed. Eight videotapes were made for this study. The sport programme was the same used in previous experiments described in this thesis (i.e., a game from the International Rugby Board (IRB) Rugby Seven’s Tournament). Each videotape contained the same television programme. Seven of the videotapes contained either a pull-through advertisement or an advertisement for the target brand. Within each of these seven videotapes, a different combination of pull-through advertisement and pod advertisement for the same target brand was inserted. These represented the repetitive primes. For completeness, not all videotapes contained a repetitive prime. In other words, some videotapes might only have contained one pull-through advertisement without a target brand pod advertisement or a pod advertisement with no pull-through advertisement. The pod contained three advertisements, as there were three used in
the actual sport programme recorded. The first and third advertisements in the pod were kept in the study while the target pod ad replaced the second or middle advertisement. Where the experimental design called for no pod advertisement the original advertisement remained. As a result, a series of advertisement combinations were formulated. Table 19 (see next page) illustrates the series of advertisement combinations constructed for this study and highlights their placement.

Table 19 illustrates that where two or more advertisements were combined (i.e., pull-through advertisement and repeat pod advertisement) it was expected that the first or preceding advertisement would act as a primer for the repeat advertisement that followed. For example, in Advertisement Combination One, the pull-through advertisement would serve to prime the repeat pod advertisement; whereas in Advertisement Combination Two, the pod advertisement would serve to prime the repeat pull-through advertisement. Advertisement Combination Three would see the pull-through advertisement prime the repeat pod advertisement, which in turn would further prime repeated pull-through advertisements appearing after the pod. Hence, this advertisement combination had three exposures of the target brand.

To clarify further, Advertisement Combination Three has three brand exposures due to three advertisement exposures; hence, testing for repetition effects through statistical analysis would require testing of a three-way interaction. Advertisement Combinations One, Two, and Seven have two brand exposures in each advertisement combination. Testing for repetition effects through statistical analysis of these advertisement combinations would require inspection of two-way interactions. As there are three advertisement combinations, each with two advertisements, therefore, three two-way interactions were examined.

Eight videotapes were made using the Pinnacle Studio DC-10 Plus editing software program. The advertisement message speed contained within each pull-through advertisement was set at 150 wpm (Hill, Green, & Chalip, 2002), which was the message speed found in chapter four to promote optimum brand recall, recognition, and message comprehension. As the context study in chapter five found best results were achieved for A_b when pull-through advertisements were executed in exciting contexts, all pull-through advertisements requiring insertion into a particular advertisement combination were inserted into an exciting context.
Table 19

*Advertisement Combinations and Their Placement*

<table>
<thead>
<tr>
<th>Ad. Comb.</th>
<th>Priming advertisement order</th>
<th>No of exposures</th>
<th>Before commercial pod first half of game</th>
<th>Commercial pod</th>
<th>After commercial pod second half of game</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 RP</td>
<td>Primer pull-through advertisement executed in first half of game followed by a repeat advertisement in the commercial break</td>
<td>2</td>
<td>Pull-through advertisement</td>
<td>Pod advertisement</td>
<td></td>
</tr>
<tr>
<td>2 RP</td>
<td>Primer pod advertisement followed by pull-through advertisement executed in second half of game</td>
<td>2</td>
<td>Pod advertisement</td>
<td>Pull-through advertisement</td>
<td></td>
</tr>
<tr>
<td>3 RP</td>
<td>Primer pull-through advertisement executed in first half of game followed by repeat pod advertisement followed by another repeat pull-through advertisement executed in the second half of the game</td>
<td>3</td>
<td>Pull-through advertisement</td>
<td>Pod advertisement</td>
<td>Pull-through advertisement</td>
</tr>
<tr>
<td>4</td>
<td>Pod advertisement, no pull-through advertisements</td>
<td>1</td>
<td>Pod advertisement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Pull-through advertisement executed in first half of game only, no pod advertisement</td>
<td>1</td>
<td>Pull-through advertisement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Pull-through advertisement executed in second half of game only, no pod advertisement</td>
<td>1</td>
<td>Pull-through advertisement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 RP</td>
<td>Primer pull-through advertisement executed in first half of game with repeats pull-through advertisement executed in second half of game. No pod advertisement</td>
<td>2</td>
<td>Pull-through advertisement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>No pull-through advertisements and no pod advertisements</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RP = denotes repetitive priming condition
Where a pull-through advertisement required insertion before the pod (whether or not an advertisement for the target brand was contained in the pod) the same exciting context was used as the insertion point. Similarly, where a pull-through advertisement required insertion after the pod, this same exciting context was used as the point of insertion for the pull-through advertisement.

The exciting contexts were again deemed as points in the Rugby game where tries or touchdowns were scored. As pull-through advertisements needed to be inserted in exciting contexts before and after the pod, this also represented pull-through advertisements being inserted during the first and second halves of the Rugby game. Even though the insertion point of pull-through advertisements was deemed to be in exciting contexts, the visual imagery could not be duplicated exactly. However, the same player in both exciting contexts was the try or touchdown scorer, with both tries and touchdowns being scored in a similar manner.

A familiar brand of breakfast cereal was again used as a target brand. However, a different target brand from that used in previous studies was adopted. For this study the familiar brand of breakfast cereal was Weet-Bix, which, is made by the company Sanitarium. Sanitarium, like Uncle Toby’s, also adopted an individual brand name strategy allowing it to give specific brand names to respective products within their product mix. Permission was sought and granted by Sanitarium to use their Weet-Bix brand in this thesis.

Weet-Bix was used instead of Vita Brits primarily for practicality. A pod advertisement for the Weet-Bix brand of breakfast cereal featuring sport celebrities had recently been released. These sport celebrities were cricket and Rugby players. The Rugby players in the advertisement were players from the Australian Rugby fifteens team (the mainstream game), not players from the Australian team playing in the Sevens Rugby tournament (hybrid game). As the advertisement for Weet-Bix included the use of Rugby sport celebrities, a link with rugby existed. As a result, the Weet-Bix brand was selected so this advertisement could be combined with pull-through advertisements to be executed during the Rugby television program.

As Weet-Bix was selected to represent the target brand, a new advertisement message was constructed for use in the pull-through advertisements. To assist with the pull-through advertisements working in combination with a pod advertisement, key words from the Weet-Bix pod advertisement were included in the pull-through
advertisement message. Hence, the advertisement message contained in pull-through advertisements for use in this study was:

"Weet-Bix the 100% Australian owned Breakfast of Champions"

The pull-through advertisement was also designed in accordance with the mean number of characters of pull-through advertisements as found in the ecological validity study (chapter four). The number of characters of the advertisement message for this study was 57 characters. The number of characters made the message length to be within three characters of the mean number of characters, (i.e., 54).

Similar to the study in chapter five this study used only a familiar brand. This was because results from the study in chapter four found familiar brands scored consistently better than unfamiliar brands in terms of advertisement effectiveness.

To achieve a level of statistical power of .80 with an $\alpha = .05$ (Maxwell & Delaney, 1990) twenty-five subjects needed to be assigned to each of the eight different advertisement combinations and control tape. In some conditions, this number of required subjects was slightly exceeded, as more respondents than expected volunteered to participate in the study. As a result, 245 subjects participated in the study.

Instrumentation and Materials.

Subjects were randomly assigned to view one of the videotapes made for this experiment. As in previous studies a distracter video segment followed the sport programme. In Experiments One and Two, the distracter video segment was included to allow measures of memory (i.e., recall and recognition) to be recorded from long term rather than short term memory. In Experiment Three, no measures of memory were included as Experiment Two found them to be redundant as increased memory for pull-through advertisements reduced $A_b$, which is not a desired outcome for marketers. This result also suggested that pull-through advertisements were more effective if processed through affect rather than cognition. Hence, Experiment Three focused on affective processing of pull-through advertisements. However, to provide consistency among studies and control for confounding variables the distracter video segment remained.
After viewing one of the videotapes, subjects were asked to complete a questionnaire. Measures of attitude toward the brand ($A_b$), purchase intent (PI), and brand familiarity were collected, along with demographic measures. Each measure is discussed below.

The use of $A_{ad}$ as a measure of affect in this study would pose validity problems. With the use of a pull-through advertisement as a primer for the repeat pod advertisement, the measure for $A_{ad}$ would be confounded, as it would be unclear whether respondents were answering to the pull-through advertisement or the pod advertisement. Furthermore, as a control group was used in this study, it would be unclear as to which criterion people used to respond to $A_{ad}$ measures when not exposed to an advertisement. For example, people might be responding to $A_{ad}$ measures through frustration, anger, confusion, or boredom as they searched for an appropriate target advertisement in memory that did not exist. Thus, any $A_{ad}$ results would not provide an accurate or consistent assessment of attitude that could be compared with $A_{ad}$ formations found in other treatment conditions.

The study in chapter five found $A_b$ was the dependent variable where the greatest positive effects emerged. As a result, in that study, $A_b$ emerged as the major dependent variable of analysis. As it was felt that measures of $A_{ad}$ would be confounded, and $A_b$ has emerged as a major dependent variable of analysis, $A_{ad}$ measures for this study were eliminated from further discussion and analysis. Furthermore, as $A_{ad}$ was removed as a measure from this study, measures of $A_{rel}$ would become redundant; thus, as a result, $A_{rel}$ was also removed from this study.

Measures

**Attitude toward the brand ($A_b$).** Attitude toward the brand was measured using a three-item, seven-point semantic differential scale. Scale items were anchored with favourable/unfavourable; bad/good; and negative/positive. Scores for the three items were aggregated to form an overall measure of attitude toward the brand ($A_b$). Prior work shows this scale to be reliable, with Cronbach’s alphas ranging from $\alpha = .93$ (Muehling & Lacziak, 1988) to $\alpha = .96$ (Kinney & McDaniel, 1996).

**Purchase intent (PI).** Purchase intent was measured using a three-item, seven-point semantic differential scale. Scale items were anchored with
improbable/probable; unlikely/likely; and impossible/possible. Scores for the three items were aggregated to form an overall measure of purchase intent. Prior work shows this scale were also found to be reliable, with Cronbach’s alphas ranging from \( \alpha = .92 \) (Machleit & Wilson, 1988) to \( \alpha = .95 \) (Kinney & McDaniel, 1996).

*Brand familiarity.* Brand familiarity was measured using a three-item, seven-point semantic differential scale. Scale items were anchored with Familiar/Unfamiliar; Inexperienced/Experienced; and Knowledgeable/Not knowledgeable. Scores for the three items were aggregated to form an overall measure of brand familiarity. Use of this scale in prior work conducted by Machleit, Allen, and Madden (1993) and Kent and Allen (1994) demonstrated reliability by reporting a Cronbach’s alpha as \( \alpha = .85 \).

*Demographic measures.* Demographic measures included age, gender, ethnicity, education, and income.

**Questionnaire Design, Administration, and Procedures**

Questionnaire design, administration, and procedures followed the same formats as described in chapters four and five. Measures for A\textsubscript{b} preceded PI as this would be the logical manner in which people make purchase decisions. Brand familiarity was after PI, so answering questions about brand familiarity would be less likely to prime people's attitudes toward A\textsubscript{b}. If measures of brand familiarity preceded A\textsubscript{b}, answering questions on brand familiarity might prime answers to measures of A\textsubscript{b}. Upon completion the questionnaires were collected and respondents thanked for their assistance.

**Results**

The key hypothesis under consideration is:

\[ H_1: \text{Pull-through advertisements used as repetition primers should increase A}_{b} \text{ and PI.} \]

Data collected were entered into the SPSS – version 10 data analysis software programme. Data points were inspected for extreme scores and outliers, while tests of normality revealed no assumptions had been violated.
Manipulation Checks

*Gender.* To check whether associations existed for gender among the seven advertisement combinations and control group, a cross-tabulation was conducted. Chi-square analysis showed no significant associations, \( \chi^2 = 4.918 \) (df, 7) \( p > .05 \).

*Age.* To determine whether significant differences existed for age of respondents among the seven advertisement combinations and control group, a univariate analysis of variance was conducted. Univariate analysis of variance demonstrated no significant differences for age among the seven advertisement combinations and control group.

*Brand familiarity.* As the target brand used in this study was deemed a familiar brand of breakfast cereal, a one-sample t-test was conducted to check target brand familiarity. A one-sample t-test revealed the target brand used in this study was significantly familiar to respondents \( t(244) = 30.426, p < .05 \).

*Reliability analysis.* Reliability analysis was conducted on the scales used in this study. Examination for reliability of items contained within the scale used to measure \( A_b \) reported Cronbach's alpha as \( \alpha = 0.95 \). Examination for reliability of items contained within the scale used to measure PI reported Cronbach's alpha as \( \alpha = 0.91 \). Finally, items measuring reliability for brand familiarity achieved a Cronbach’s alpha score of \( \alpha = 0.70 \).

Effects of Repetition Priming

A 2 x 2 x 2 (before pod first half x pod x after pod second half) MANOVA was conducted on two dependent variables \( A_b \) and PI. With the use of Wilks’ Lambda criterion, results of the MANOVA displayed a significant three-way interaction among the independent variables, \( F(2, 233) = 4.847, p < .05 \). However, inspection of between-subject effects for the two dependent variables \( A_b \) and PI found no significant results; \( A_b F(1, 234) = .144, p > .05 \) and PI \( F(1, 234) = 3.701, p > .05 \).

The three-way interaction represented Advertisement Combination Three, the before pod pull-through advertisement, pod advertisement, and after pod pull-through advertisement (i.e., three exposures). As no significant effects were found this
advertisement combination was removed from the MANOVA model and MANOVA was re-run, however, this time with the remaining seven advertisement combinations. The MANOVA this time specified two-way interactions and main effects. Wilk’s Lambda criterion found two significant two-way interactions. The significant effects were for Advertisement Combination Seven (before and after pod pull-through advertisements but no same brand pod advertisement) $F(2, 234) = 4.294, p < .05$ and Advertisement Combination One (before pod pull-through advertisement and pod advertisement) $F(2, 234) = 11.765, p < .001$.

Inspection of between-subject effects on the dependent variables $A_{ab}$ and PI revealed that Advertisement Combination Seven (before and after pod pull-through advertisements but no same brand pod advertisement) had a significant effect on $A_{ab}$ $F(1, 235) = 5.081, p < .05$. Advertisement Combination One (before pod pull-through advertisement and pod advertisement) significantly affected both $A_{ab}$ and PI; $A_{ab}, F(1.235) = 22.699, p < .001$ and PI, $F(1, 235) = 16.118, p = .001$.

Advertisement combination seven (before and after pod pull-through advertisement but no same brand pod advertisement – two brand exposures) Inspection of Figure 1 illustrated a disordinal interaction occurred between before and after pod pull-through advertisements. A disordinal interaction indicated the levels of change between independent variables were not the same. Hence, Figure 1 illustrates that $A_{ab}$ for the before pod pull-through advertisement did not change at similar levels as those found for the after pod pull-through advertisement. Furthermore, Figure 1 indicates an additional exposure of a pull-through advertisement actually reduces $A_{ab}$.

To determine whether significant differences exist between independent variables, a series of simple effects analyses were conducted. Table 20 provides results of simple effects analyses.
Before and After Pod Pull-through Advertisement Interaction on AB

*Figure 1. Before and After Pod Pull-through Advertisement Interaction on A*B*

Table 20

*Simple Effects Analysis for Before and After Pod Pull-through Advertisement on A*B*

<table>
<thead>
<tr>
<th>Condition</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control v after pod pull-through</td>
<td>1</td>
<td>13.518</td>
<td>6.350*</td>
</tr>
<tr>
<td>Control v before pod pull-through</td>
<td>1</td>
<td>30.076</td>
<td>14.127*</td>
</tr>
<tr>
<td>Before pod pull-through v before and after pod pull-through advertisements</td>
<td>1</td>
<td>21.213</td>
<td>9.964*</td>
</tr>
<tr>
<td>After pod pull-through v before and after pod pull-through advertisements</td>
<td>1</td>
<td>4.655</td>
<td>2.187</td>
</tr>
<tr>
<td>After pod v before pod pull-through advertisements</td>
<td>1</td>
<td>20.790</td>
<td>9.765*</td>
</tr>
</tbody>
</table>

*Significant at p < .05.

Simple effects analyses confirmed a significant difference was found between the single exposure (before pod) pull-through and the two exposures (before and after pod) of pull-through advertisements on A*B. This finding, coupled with inspection of Figure 1, indicates an additional exposure of a pull-through advertisement significantly decreased people’s A*B.
Furthermore, simple effects analysis also revealed a significant difference between before pod (single exposure) and after pod (single exposure) pull-through advertisements. Taken together, this finding and inspection of Figure 1, suggests pull-through advertisements executed prior to a pod were able to generate significantly better \( A_b \) than pull-through advertisements executed after a pod, or maybe that the first half context was better than the second half.

**Advertisement combination one (Before pod pull-through advertisement and pod advertisement – two brand exposures).** Inspection of Figures 2 and 3 illustrated significant ordinal interactions for before pod pull-through advertisement and pod advertisement on \( A_b \) and PI. For both \( A_b \) and PI, the levels of the second independent variable pod advertisement did not change at the same levels as the first independent variable before pod pull-through advertisement. Figures 2 and 3 reveal the change in levels of the second independent variable pod advertisement did not have the same effect on \( A_b \) and PI as the change in levels on \( A_b \) and PI on the first independent variable before pod pull-through advertisement. This meant the use of a second exposure in an advertisement combination involving a before pull-through advertisement and a pod advertisement did not further increase \( A_b \) and PI for that particular brand. In fact, closer inspection of Figures 2 and 3 revealed the use of a before pod pull-through advertisement in combination with a pod advertisement reduced \( A_b \) and PI.
To determine whether significant differences exist between independent variables, a series of simple effects analyses was conducted. Table 21 and 22 provide results of simple effects analyses on $A_b$ and PI respectively.
### Table 21

**Simple Effects Analysis of Before Pod Pull-through Advertisement and Pod Advertisement Interaction on $A_b$**

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control v before pod pull-through</td>
<td>1</td>
<td>73.565</td>
<td>34.54*</td>
</tr>
<tr>
<td>Control v pod advertisement</td>
<td>1</td>
<td>74.041</td>
<td>34.777*</td>
</tr>
<tr>
<td>Before pod pull-through advertisement v pod advertisement</td>
<td>1</td>
<td>1.88</td>
<td>0.883</td>
</tr>
<tr>
<td>Before pod pull-through v before pod pull-through and pod advertisement</td>
<td>1</td>
<td>1.8128</td>
<td>0.852</td>
</tr>
<tr>
<td>Before pod pull-through and pod advertisement v pod advertisement</td>
<td>1</td>
<td>2.288</td>
<td>1.075</td>
</tr>
</tbody>
</table>

*Significant at $p < .05$.

### Table 22

**Simple Effects Analysis of Before Pod Pull-through Advertisement and Pod Advertisement Interaction on PI**

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control v before pod pull-through</td>
<td>1</td>
<td>27.9155</td>
<td>13.112*</td>
</tr>
<tr>
<td>Control v pod advertisement</td>
<td>1</td>
<td>27.066</td>
<td>12.713*</td>
</tr>
<tr>
<td>Before pod pull-through v pod advertisement</td>
<td>1</td>
<td>2.187</td>
<td>1.027</td>
</tr>
<tr>
<td>Before pod pull-through v before pod pull-through and pod advertisement</td>
<td>1</td>
<td>1.853</td>
<td>0.871</td>
</tr>
<tr>
<td>Before pod pull-through and pod advertisement v pod advertisement</td>
<td>1</td>
<td>1.004</td>
<td>0.472</td>
</tr>
</tbody>
</table>

*Significant at $p < .05$.

Tables 21 and 22 showed significant differences between the control group and primer pull-through advertisement and the control group and pod advertisement. Tables 21 and 22 revealed no significant differences between the pod advertisement and a primer pull-through advertisement, or pod advertisement and primer pull-through and repeat pod advertisement combinations on $A_b$ or PI. This means no significant differences emerged for having an additional exposure of an advertisement.
Tables 21 and 22 further indicate that advertisement combinations are able to achieve significantly different $A_b$ and PI from the control group. These findings suggest advertisement messages were effective in their communication. To check that advertisement messages were in fact effective, a one-sample $t$-test was conducted on $A_b$ and PI for a primer pull-through advertisement to determine whether results differed significantly from the point of indifference.

One-sample $t$-tests confirmed significant differences emerged for primer pull-through advertisement and the point of indifference, which was zero for both $A_b$ $t(26) = 3.988, p < .001$ and PI $t(26) = 4.162, p < .05$. These findings indicate the use of a pod advertisement or a pull-through advertisement or a combination of both was significantly effective in generating favourable $A_b$ and creating PI. However, priming seems to slightly depress $A_b$ and PI when compared to a single exposure.

Discussion

Two of three two-way interactions revealed repetition priming affected $A_b$ and PI; however, the effects of repetition priming were not those expected. According to Yi (1990) repetition priming should increase $A_b$ yet, inspection of the two-way interactions indicated repetition priming decreased $A_b$ and PI. Thus, $H_1$ is rejected.

Fiske and Taylor (1984) indicated that for repetition priming to be effective, the context in which the prime is presented, needs to be relevant to allow development of descriptive and evaluative meanings about the prime by consumers. As pull-through advertisements are executed in contexts that are not relevant, it could be that the encoding process of advertisement information is hindered by the non-relevant contextual information surrounding the primer pull-through advertisement. Thus, the priming process is negated, as little descriptive and evaluative meanings can be derived from the prime.

Gibson (1996) suggested two exposures of an advertisement in broadcast media were necessary to allow salient effects to emerge. However, these salient effects might not always be those desired by advertisers as “possible effects of a single additional exposure [were] huge – from very positive to very negative” (p. 16). As a result of the possible variance in effects of an additional advertisement exposure, Gibson (1996) demonstrated that “a single additional exposure of a TV commercial
can change brand attitude for established brands and literally hurt the advertised brands by driving down their share of choice” (p. 16) among consumers. Findings from the significant two-way interactions support Gibson’s (1996) claim that an additional exposure of an advertisement can reduce A_b and PI and that in some instances multiple exposures of a television commercial are not necessary, as one exposure can be effective. Thus, the use of pull-through advertisements to create two advertisement exposures is not necessary, as a second advertisement exposure is damaging the brand being advertised by reducing A_b and PI. It is encouraging, however, to note that a pull-through advertisement can have the same effect as a pod advertisement, with significantly less cost to the advertiser.

A simple effects analysis further revealed that one exposure of an advertisement was enough to achieve desired results and that additional exposures become detrimental to already established effects. For the advertisement combination that used before and after pod pull-through advertisements, simple effects analysis not only revealed a second exposure significantly reduced A_b, but the before pod pull-through advertisement also differed significantly on A_b from the after pod pull-through advertisement. This finding suggests pull-through advertisements executed prior to a pod were able to generate significantly better A_b than pull-through advertisements executed after a pod. This finding is interesting given both before and after pod pull-through advertisement was executed in similar contexts.

Two reasons could possibly explain the difference between A_b for the two pull-through advertisements. Firstly, the decrease in A_b for the after pod pull-through advertisement could be a result of the pull-through advertisement following a number of advertisements found in the pod. Here, people might deem the after pod pull-through advertisement as advertising clutter and are responding in accordance with the number of advertisements to which they have been exposed. The before pull-through advertisement has no lead up advertisement, thus people might be processing this advertisement information void of any notion of advertisement clutter. Secondly, upon closer inspection of the exciting context in which the before and after pod pull-through advertisements were executed, subtle differences in the visual imagery of the television program at the point of execution for each pull-through advertisement were apparent.

Even though both pull-through advertisements were executed when "tries" or "touchdowns" were scored, the positioning of the pull-through advertisement with
respect to the player carrying the ball were different in each context. At the point of execution for the before pod pull-through advertisement, the player carrying the ball appeared to dive in amongst the words of the pull-through advertisement. For the after pod pull-through advertisement, the player with the ball moved to the top of the screen (away from the words of the pull-through advertisement). Perhaps then, with the after pod pull-through advertisement, increased effort was needed to process both words of the pull-through advertisement and view the player with the ball at the same time.

This increased effort required by people to process the advertisement information may have resulted in decreased $A_b$, as more cognitive conscious information processes were used to process advertisement information which reduced $A_b$ (as was found in the study of context effects described in chapter five). Further investigation is warranted to determine which effects are impacting upon processing of information in these two exciting contexts that would lead to differences in terms of $A_b$. Perhaps the use of "eyes on the screen" analysis might be useful in this regard.

For the second two-way interaction (before pod pull-through advertisement x pod advertisement) no significant differences were found between an advertisement in a pod and a pull-through advertisement executed prior to the pod. This finding needs to be treated with some caution as, on face value, this finding suggests advertisers do not need to go to the expense of producing pod advertisements, as much less costly pull-through advertisements could generate similar $A_b$ and PI as pod advertisements.

This study used a significantly familiar brand name. It would be expected that this brand familiarity was developed over time through the use of more traditional means of advertising (such as pod advertisements and perhaps other forms of media). As was found in Study Two (chapter five), using pull-through advertisements to communicate messages about unfamiliar brands to consumers resulted in negative $A_b$. Thus, pull-through advertisements used in isolation as a communication tool without prior assistance from other more traditional forms of marketing to generate favourable $A_b$ and PI, does not provide practical utility. However, pull-through advertisements could be useful in maintaining $A_b$ and PI once other forms of marketing have generated favourable levels of $A_b$ and PI. Thus pull-through advertisements could provide practical utility when used as a marketing tactic in an overall advertising strategy.
For example, pod advertisements could initially be used to generate $A_b$ and PI for a particular brand. Once desired levels of $A_b$ and PI have been generated, pod advertisements could cease to be executed and pull-through advertisements then employed to maintain similar levels of $A_b$ and PI. By using pull-through advertisements in an advertising strategy after desired levels of $A_b$ and PI have been reached, the costs of advertising would be reduced without significantly reducing the effectiveness of the advertising strategy.

Conclusion

Repetition priming using advertisements is an effective method of developing favourable attitudes toward brands. However, the use of pull-through advertisements in repetition priming was found not to be effective in increasing $A_b$. Nonetheless, pull-through advertisements used by themselves (and not in combination with other advertisements) were found to offer advertisers an alternative to promote brands once desired levels of $A_b$ had been established through the use of traditional methods of advertising. Hence, pull-through advertisements used as part of a marketing tactic could reduce advertising costs.
CHAPTER 7

Overall Discussion and Conclusions

This thesis investigated the manner in which a stimulus (pull-through advertisements) competed for processing attention among stimuli. Three key elements: speed; contextual stimuli surrounding the stimulus; and priming of that stimulus were identified as important for processing the stimulus within the competitive environment. Pull-through advertisements found in sport broadcasts were used as examples to gain insight into competition for processing attention. Overall, the three key elements examined were found to be important for information processing: speed of the stimulus; the environment in which the stimulus was presented; and priming of the stimulus. These were all found to effect information processing in a competitive processing environment; however, the effects found were not always those expected.

To gain a theoretical understanding of effects found, two theories of information processing; feature integration theory -- a cognitive information processing theory, and excitation transfer theory -- an affective information processing theory, were used.

Feature Integration Theory

Feature integration theory is an extension of Broadbent’s (1958) selective filter theory of information processing. Broadbent believed information passed from Stage One onto Stage Two through a selective filter reducing extraneous information to more manageable levels thus allowing more complex processing to occur. He indicated information ignored or rejected in Stage One would not undergo processing.

Feature integration theory, on the other hand, proposed ignored information could in fact be processed prior to Stage Two (an attentive stage) in Stage One through pre-attentive processes. However, feature integration theory proposes information at this pre-attentive stage can be processed but at weaker levels, whereby people might not recall seeing the information. Hence, the theory proposes information processed in this pre-attentive stage occurs at a non-conscious level.

Evidence was found supporting propositions made by feature integration theory that non-conscious processing of information could occur where people were exposed to it but did not recall seeing the information. In the second experimental
study significant differences between subjects’ ability to recall seeing the advertisement and their advertisement processing level were found. Nevertheless, closer inspection of findings revealed that people who did not recall seeing the advertisement (but were exposed to it) were capable of processing advertisement information, albeit at much weaker levels than found for those who did recall seeing words. This means that even though people did not recall seeing the pull-through advertisement, advertisement information was processed but at much weaker levels than for people who did recall seeing words. Thus, findings give support to the propositions made by feature integration theory that information can be processed non-consciously at levels much weaker than information processed in Broadbent’s Stage Two. Hence, suggesting that non-conscious processing of pull-through advertisements is likely to occur in Stage One, the pre-attentive stage of the information processing system, are valid.

Feature integration theory further proposes that readily distinguishable features are processed within the pre-attentive stage. Early experiments testing the theory used simple features such as lines and letters of the alphabet while more recent complex tests of the theory explored capabilities for pre-attentively processing a word. Findings from experiments conducted in this thesis suggest that not only are capabilities demonstrated for a word to be pre-attentively processed, but also, a number of words making-up an advertisement phrase. This suggests an extension of the context of the theory.

Debate, however, surrounds the idea that words can be pre-attentively processed, thus it would be expected such debate would surround the suggestion for pre-attentive processing of an advertisement phrase. Treisman and Gelade (1980) indicated processing of letters from the alphabet can occur pre-attentively under conditions of low perceptual demand (when task processing was low), while on the other hand Rees, Russell, Frith, and Driver (1999) found under high perceptual load conditions (when task processing was high) pre-attentive processing of words did not occur even when subjects were looking directly at the word. It appears, therefore, the effort required at the time of information processing is key for pre-attentive processing.

Fowles (1993) and Krugman (1980, 1971) suggested viewing and processing television programmes and advertisements mostly occurred with minimal effort and a low level of involvement. Television viewing therefore is regarded as a task requiring
low perceptual demands and, as a result, television is a medium providing conditions promoting pre-attentive processing.

According to Krugman (2000), the right brain is regarded as responsible for perception of images, processing television information, and low involvement activities, while the left brain is responsible for reading, speaking, processing of print, and highly involved activities. Krugman (1980) further indicates that the right brain is mostly used for processing television information as it “shows almost no fatigue” (p. 65) and is therefore capable of allowing people to watch hours and hours of television, while left brain attention quickly tires and can only be used sparingly for television information processing. Krugman (2000, p.53) draws a “tempting conclusion” that the right brain appears responsible for the rapid screening of information to select what left-brain should focus attention on. Hence, Krugman suggests that pre-attentive processing of information most likely occurs in the right brain in a non-conscious manner while the left-brain is responsible for salient conscious information processing.

It then appears that pre-attentive processing of advertisement information communicated through television is possible, as right brain activity appears to provide conditions that promote pre-attentive processes. Hence, with support from results of experiments conducted in this thesis and the knowledge television viewing can provide appropriate conditions, it is suggested that pre-attentively processing an advertisement phrase is possible. Thus, this research extends the context in which propositions of feature integration theory could occur.

However, it appears it might not be as simple as suggesting that pre-attentive processing occurs in right brain while more focused processing occurs in left brain. Hanna, Wagle, and Kizilbash (1999) indicated people might have preferred processing advertisement information in the left brain, as this was their more dominant information-processing hemisphere. Hence, further investigation is warranted to explore brain dominance as a factor in processing pull-through advertisements.

Not only do results of experiments conducted in this thesis support propositions of feature integration theory about pre-attentive processing, but results also support propositions that information is processed in two stages. Stage One being a stage that rapidly screens all stimuli so focused attention can be drawn in Stage Two to a relevant stimulus warranting deeper processing. As all stimuli within Stage One
are rapidly screened, even rejected stimuli deemed not needed for further processing in Stage Two have undergone some level of processing. It appears however, the level of this processing is so weak it falls below conscious awareness and is unable to be recalled. But not so weak that rejected stimuli cannot be recognised later or affect people’s attitudes.

In summary, when processing a pull-through advertisement through cognition it appears likely that recollection of a pull-through advertisement suggests processing occurs in Stage Two of information processing where processing of information occurs in a serial manner; hence, pull-through advertisements become conscious to viewers. It appears this conscious awareness of pull-through advertisements, even though useful for storing advertisement information, creates deleterious effects on attitude toward the brand and purchase intent.

On the other hand, and in accordance with feature integration theory, non-recollection of a pull-through advertisement indicates that pre-attentive processing of pull-through advertisement information occurred in Stage One of the information processing system, which suggests information was processed in a non-conscious manner. It appears television viewing provides conditions of low involvement and low processing effort, which is conducive to pre-attentive processing of advertisement information. Results from experiments in this thesis indicate propositions of feature integration theory can be extended to the context of pull-through advertisements.

**Excitation Transfer Theory**

Experimental studies within this thesis also explored propositions derived from excitation transfer theory. It was found through affective information processing favourable attitudes toward the brand could be generated when pull-through advertisements were executed in exciting sport television contexts. Hence, it was suggested that stimuli emanating from the sport context at the time a pull-through advertisement is executed could be paired with brand information displayed within the pull-through advertisement, achieving Pavlovian effects similar to that found in classical conditioning.

Classical conditioning is believed to occur pre-attentively in the right brain (Pizzagalli, Greischar, & Davidson, 2003). The right brain is responsible for processing visual images and processing information in parallel. Hence, it could be that the excitement from the sport television imagery generated both arousal and
emotional responses that were simultaneously processed and paired with the pull-through advertisement within the right brain, creating a favourable response toward the brand advertised. Further research is required to investigate this point more deeply.

Propositions of excitation transfer theory indicate arousal (which would be generated from the excitement context) should not create the favourable response to the brand advertised within the pull-through advertisement as arousal serves only to intensify an individual’s emotive state. Favourable responses would be generated through a favourable emotive state. Results suggest the favourable emotive state was created through the excitement within the sport programme in which the pull-through advertisement was executed. Hence, it appears when people viewed the exciting sport programme the stimuli were able to arouse, and at the same time create, favourable responses (which were intensified by the arousal). Together the arousal stimulus and emotion-laden stimuli were transferred and paired to the brand advertised. In this way, favourable attitudes toward the brand were created when pull-through advertisements were executed in exciting contexts.

It is still unclear as to which elements or attributes within the sport programme were likely to generate favourable responses that were transferred to the brand advertised. Hence, further investigation is warranted on this point allowing marketers to gain a deeper understanding for the stimuli that are likely to affect attitude toward the brand. Further investigation should also explore the effects of types of stimuli on various message types.

Interestingly, propositions of excitation transfer theory indicate a time delay is needed between presentation of an emotive stimulus and an arousal condition for excitation transfer to occur. The closer together the emotive stimulus and arousal condition are presented, the greater degree to which people are aware the arousal causes their heightened emotive response, thus inhibiting excitation transfer. Hence, as an arousal condition and emotive stimuli are presented simultaneously within the television sport programme, it would be expected that excitation would not occur. Yet, results from this thesis indicate the converse.

Results indicate that people can process an arousal condition and emotive stimuli (from the television sport programme) thus transferring the heightened emotive state to an irrelevant stimulus (pull-through advertisement) without conscious awareness. Consequently, excitation transfer occurs under conditions of simultaneous
parallel processing, which supports interpretations of an experiment conducted by Dutton and Aron (1974), who suggest it is possible for excitation transfer to occur in parallel processing conditions.

**Implications**

Results from three experimental studies conducted in this thesis support the contention of the capabilities people have the ability to process information through either cognition or affect. These results raise important issues for advertisers. Subjects demonstrated capacity to cognitively process pull-through advertisements and to have advertisement information stored in memory. Yet, these positive results negatively affected consumers’ attitude toward the brand, which is a key construct for demonstrating a positive relationship with purchase intent. This means consumers can place pull-through advertisement information in memory making these types of advertisements effective in gaining processing attention; but the end result creates a negative attitude toward the brand making it unlikely that consumers would purchase that brand. Clearly, this is not a good outcome for advertisers.

Lutz, MacKenzie, and Belch (1983) showed that antecedent variables processed through cognition and affect can mediate people’s attitudes toward advertisements. They suggested that cognition and affect operate on a continuum; hence attitude toward an advertisement can be mediated exclusively by either cognitive or affective variables or a blend of cognition and affect working in tandem. As attitude toward the advertisement has a positive relationship with attitude toward the brand, which in turn demonstrates a positive relationship with purchase intent, it appears cognition developed through exposure to the pull-through advertisement during the sport programme produced negative cognitive beliefs and those beliefs mediated attitude toward the brand and purchase intent.

The reason for the negative attitude toward the brand when consumers cognitively processed the pull-through advertisement was unclear. Perhaps the intrusion of the pull-through advertisement increased cognitive effort, which distracted viewers from the sport programme, thus irritating viewers. If this were the case, viewers might generate negative attitudes toward the brand due to their reaction to the perceived intrusive nature of pull-through advertisements rather than toward the brand itself. Further research is warranted to explore this issue.
Nevertheless, these contrasting results demonstrate to marketers, even though pull-through advertisements have capabilities of garnering processing attention through cognition (which results in advertisement information stored in memory) this does not mean product purchase will follow. These contrasting results provide support for earlier research (cf. Wells, 1997) suggesting that measures of memory (including recall, recognition, and comprehension) are only useful as raw measures of advertisement effectiveness in terms of gaining processing attention and are not useful for predicting product purchase behaviour. These results further support the notion that measures of attitude provide a better assessment of advertisement effectiveness and purchase intent.

Of concern to advertisers though is the finding that cognitively processing pull-through advertisements could lead to deleterious effects on attitude toward the brand and purchase intent. The ecological validity study (chapter 3) found some pull-through advertisements contained as many as 22 words in the advertisement. It would be expected as the number of words within a pull-through advertisement increased, so too would the effort required to process the advertisement message. This would lead to engagement and increased use of the cognitive information processing system. As a result, attitude toward the brand would be less positive. Hence, to reduce negative attitudes toward the brand and to reduce the activation of the cognitive information processing system, it is suggested that marketers develop pull-through advertisements to promote use of the affective information processing system. Thus, marketers should encourage increased use of brand logos and picture images within pull-through advertisements rather than use of words.

From a marketing perspective, the results of this thesis indicate that increased effectiveness of pull-through advertisements used within television sport programmes can be achieved if advertisers better control advertisement execution points. The ecological validity study described before illustrated the current randomness of execution contexts of pull-through advertisements, which suggests current use of pull-through advertisements is mostly ineffective. If pull-through advertisements can be executed in exciting contexts, data suggest that favourable attitudes toward the brand can be generated, which in turn increases the likelihood of purchase.

Executing pull-through advertisements in exciting contexts appears to make affective rather than cognitive information processing the more dominant information processing system. As a consequence, even though recall for seeing a pull-through
advertisement occurred (which resulted in deleterious effects on attitude toward the brand when advertisements were processed through cognition), recall for seeing a pull-through advertisement under conditions of affective information processing achieved more favourable attitudes toward the brand. Hence, to increase the effectiveness of pull-through advertisements marketers should focus on communicating these advertisements in arousal inducing emotive contexts that promote affective information processing.

Noise

It was suggested by Shelepin, Kharauzov, Krasil’-nikov, and Pronin, (1999) that noise within a communication channel can be processed. Findings from studies conducted in this thesis support the suggestion that noise or non-salient information within a communication channel can be processed. As it appears rapid screening of all stimuli occurs in Stage One of the information processing system it is likely this ignored information is processed in this stage, albeit at weak levels. Hence, unwanted stimuli or noise that is typically ignored is capable of gaining processing attention. According to Reisbeck and Gegenfurtner (1999) noise can take on many forms, for example, one form of noise is motion or speed of a stimulus.

The movement of the pull-through advertisement across the television screen (even i deemed to be noise) appears to assist in processing the advertisement. The second experimental study (Chapter Two) found support for the notion advertisement and programme information could be processed at the same time. Results found that stimuli from a television programme surrounding a pull-through advertisement could be paired with brand information from the advertisement. This pairing could occur due to the movement or speed of the pull-through advertisement affecting discrimination of contrasting information (see Reisbeck & Gegenfurtner, 1999) between the advertisement and the television programme. Hence, advertisement and television programme information were paired together and processed simultaneously. Further investigation should focus on the role that movement of a pull-through advertisement plays and the types of exciting contexts that mediate the pairing effect.

Limitations of the Study

Even though attempts were made to view televisions in environments simulating the natural way consumers would watch it in their own homes, viewing
televisions for the experiment conditions were forced when compared to home viewing settings. Subjects were placed in situations where they were aware they were involved in a research experiment so they participated intently and focused their attention toward the television. This focus might not necessarily be found in home viewing situations. Hence, strength of findings in this study might not be reflective of those likely in home viewing environments. Future research could explore effectiveness of pull-through advertisements on subjects exposed to them in home viewing situations. Methods used by advertisers to test effectiveness of advertisements whereby random telephone calls are made to people could be useful to gain a more realistic insight into effectiveness of pull-through advertisements in home viewing situations.

Apart from visual clutter found among sport television programmes that compete for processing attention there is also the clutter of auditory noise that include, annotations from commentators, crowd noise, referees whistles, and referee and player remarks. This study focused on effects of visual clutter on pull-through advertisements and hence did not address auditory noise. It could be that auditory noise also played a role in effecting processing of pull-through advertisements. Further investigation appears warranted.

Effectiveness of pull-through advertisements was measured within minutes after exposure to treatment conditions. To determine lasting effects of pull-through advertisements and to provide better insight into their effectiveness, subjects could be given questionnaires after a greater time period has elapsed, such as one week. Effects of exposure to advertisements deteriorate as the time period after exposure increases. Future study should therefore compare deterioration rates between pull-through advertisements and traditional advertisements.

This study found stimuli in exciting conditions were positively affecting attitude toward the brand formation. It was suggested that stimuli from the exciting condition was processed simultaneously with brand information in a similar manner to that of classical conditioning. The study here was limited in explaining how this classical conditioning response could have occurred and what types of stimuli from the television sport programme are likely to pair with brand information to generate positive responses. Future work could explore this area and advance explanation of this occurrence.
Furthermore, a consumer’s involvement with the sport of rugby could affect processing of advertisement information. For example, subjects not interested in rugby might be more likely to have their focus and attention wander to the pull-through advertisement, while the more avid rugby fan might be more focused on the game and less on the advertisement, in which case data suggest could promote non-conscious and parallel processing of advertisement and programme information leading to possible message distortion. The scope of this thesis did not include investigation into effects of involvement with the sport of rugby on processing pull-through advertisements as it was limited to gaining an understanding of the way these advertisements were likely processed through the broader processing systems of cognition and affect.

Now that data suggests that context promotes affective processing of pull-through advertisements, this could provide marketers with best advertisement processing effectiveness, further studies exploring effects of consumer involvement on processing pull-through advertisements when these advertisements are executed in broadcast sports containing affective programme content, would be useful to marketers by providing a deeper understanding for the way these advertisements are processed.

Conclusion

Four studies explored how pull-through advertisements used as a target stimulus competed for processing attention among other televised stimuli. Speed of the pull-through advertisement, the television imagery at the time of execution of the pull-through advertisement, and frequency of exposure of the pull-through advertisement were found to be important factors for processing the advertisement within the television medium.

Two information processing theories, feature integration theory—a cognitive information processing theory, and excitation transfer theory—an affective information processing theory, provided deeper explanation of the manner in which pull-through advertisements are processed. Both cognition and affect can be used to process information, hence, use of these two theories provide completeness for gaining an understanding of the way people were likely to process a stimulus in a competitive environment. Results suggest propositions of these two theories can be extended in new contexts.
These results indicate an advertising tool for marketers that can aid in communicating messages to consumers. Conscious and non-conscious processing of advertisement information was found to occur. This means that processing pull-through advertisements was difficult to avoid (even if viewers did not recall seeing the pull-through advertisement but were exposed to them), which is a further boon for marketers as it would increase exposure of advertisements to consumers, thus making advertising more cost effective. However, even though speed of pull-through advertisements appears to assist in gaining processing attention, a problem for marketers is that stimuli surrounding the moving pull-through advertisement is also likely to be processed, which could affect an advertised brand. Thus, marketers would need to ensure that pull-through advertisements were executed in television programme contexts deemed more suitable with advertisement messages and desired outcomes for advertisement effectiveness.

Overall, pull-through advertisements offer marketers a useful tool to communicate advertising messages to consumers as they demonstrate capabilities to gain processing attention by breaking through the clutter of stimuli emanating from a television programme. As production costs are far less than those for commercial break advertisements, pull-through advertisements offer marketers a tactic that is effective both in terms of communicating advertisement messages and cost reduction. However, marketers need to design pull-through advertisements and have them executed in contexts that promote affective information processing.


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