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Examining the mere exposure effect in a marketing context

being a

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Abstract

The *mere exposure effect* (MEE) was first identified by Zajonc (1968:1) who observed that, "the mere repeated exposure of the individual to a stimulus is a sufficient condition for the enhancement of his attitude towards it. By 'mere exposure' is meant a condition which just makes the given stimulus accessible to the individual's perception." Since then, this robust experimental phenomenon has been demonstrated in over 300 studies in the psychology literature; most often in relation to changes in affective response to abstract, novel stimuli (for reviews see Harrison, 1977; Bornstein, 1989; Bornstein and Craver-Lemley, 2004). Given that it provides a theoretical and empirical framework within which to explore and explain the attitudinal effects of repeated, fleeting communication that receives minimal attention and elaboration, it has been deemed to be most important to the fields of marketing and consumer behaviour (Bornstein and Craver-Lemley, 2004). Indeed, it may be considered to be particularly relevant in the context of a contemporary consumption environment that is largely characterised by a proliferation of brands, media and messages, the fragmentation of traditional channels and audiences, and thus low levels of consumer attention, engagement and involvement. Under such conditions, it may be argued that the MEE constitutes a potentially important means by which to study, understand and shape the effects of simple, repeated brand communication.

However, it is important to acknowledge that the nature of marketing stimuli, consumption-based evaluation and decision-making, and the context in which this occurs is often quite different from the laboratory conditions in which the MEE has been demonstrated in psychological research. As such, there is a need to robustly test the assumptions that may be drawn from four decades of experimental research in psychology before they can be confidently applied in the specific domain of marketing. At the same time, however, it is important to stress that the MEE represents just one of an array of potential influences on real-world consumer processing and decision-making. Furthermore, and within the constraints of current methodological alternatives, it is arguably impossible to isolate, identify and examine this phenomenon alone in such

a complex natural environment. As such, it is necessary to take an incremental approach to the extension of abstract psychological research in the marketing domain; to carefully bridge the gap between pure psychological understanding and that which relates specifically to consumer behaviour. A relatively small body of experimental marketing research has endeavoured to begin this process; although (it will be argued) current findings regarding the occurrence and nature of the marketing-based MEE are somewhat limited, often equivocal and subject to some important limitations.

The purpose of this thesis, therefore, is to underpin and extend the incremental development of first-principles mere exposure research in the marketing domain. To this end, it provides a comprehensive review of both the state of current psychological understanding and the degree to which it has been applied in the marketing literature, prior to a robust examination of the existence, size and nature of this phenomenon in a marketing context. This is achieved by marrying the highly controlled experimental methods of psychological mere exposure research with the use of typical marketing stimuli, brand-related evaluation and a relatively large sample (as is common in the broader field of marketing research but not, as yet, with regard to the MEE in particular).

The results of this empirical work are somewhat surprising and challenge previous assumptions regarding the influence of recognition memory and the direction of the exposure-induced affect-bias. Taken together, they support a ‘dual-processing’ model of mere exposure, incorporating two forms of the MEE that are underpinned by the processes of implicit and explicit memory respectively. This model has potentially significant implications for theory, practice and further research in the fields of both psychology and marketing; all of which are discussed in the final part of the thesis.

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“With the sophisticated mental apparatus we have used to build world eminence as a species, we have created an environment so complex, fast-paced, and information-laden that we must increasingly deal with it in the fashion of the animals we long ago transcended”

Robert B Cialdini (2007)

Chapter 1

Introduction and Overview

1.1. Introduction

In the concluding chapter of his acclaimed work on the psychology of persuasion, Robert Cialdini (2007: 275) observes that, as human beings;

> "we are unchallenged in the ability to take into account a multitude of relevant facts and, consequently, to make good decisions. Indeed, it is this information-processing advantage over other species that has helped make us the dominant form of life on the planet. Still, we have our capacity limitations too; and, for the sake of efficiency, we must sometimes retreat from the time-consuming, sophisticated, fully informed brand of decision-making to a more automatic, primitive, single-feature type of responding."

This thesis is concerned with a phenomenon that reflects just such a retreat. The *mere exposure effect* (Zajonc, 1968) refers to the enhancement of attitudes and preferences simply on the basis of brief, repeated exposure to a given stimulus in isolation. Specifically, its purpose is to examine the occurrence, size, direction and nature of this phenomenon in a marketing context, and the consequences of mere exposure for consumer decision-making and the effectiveness of marketing communication. The primary aims of this introductory chapter, therefore, are to highlight the relevance and importance of the *mere exposure effect* (MEE) in the marketing domain and provide an overview of the purpose and structure of the thesis. As a basis for this, however, the chapter begins with a brief definition and explanation of the phenomenon itself.

1.2. The Mere Exposure Effect: A concise explanation

As early as 1968 Zajonc observed that, "the mere repeated exposure of the individual to a stimulus is a sufficient condition for the enhancement of his attitude towards it" (Zajonc, 1968: 1). Since that time, the *mere exposure effect* (MEE) has proven to be a robust phenomenon in the psychology literature, having been researched in over 300 empirical studies and in relation to nine different types of stimuli (for reviews see Bornstein, 1989; Bornstein and Craver-Lemley, 2004). In this body of research, the enhancement of affective and cognitive response towards a stimulus has consistently been observed following repeated mere exposure; even (and perhaps, especially) in the absence of recognition memory (for reviews see Harrison, 1977; Bornstein, 1989; Bornstein and Craver-Lemley, 2004). On this basis, it is widely regarded to be a product of the non-conscious processes of implicit memory that persists over time and is not mediated by socio-demographic factors (see Bornstein and Craver-Lemley, 2004).

In a real-world environment that is characterised by rapid, fleeting exposure to a multitude of stimuli, the mere exposure effect may thus be seen as a common and naturally occurring phenomenon. As Bornstein and Craver-Lemley (2004: 215) observe:

> "there are numerous everyday instances of increased liking following repeated exposure to a stimulus . . . not only does repeated exposure affect our attitude regarding a stimulus, but the process is so subtle that in most cases we are unaware that mere exposure played a role in altering our judgments and feelings."

Furthermore, in a recent review of the MEE, Bornstein and Craver-Lemley (2004) stress that it is particularly relevant to the fields of marketing communication and consumer behaviour; a proposition that appears well-grounded, as will be explained below.

1.3. The relevance and importance of the MEE in marketing

In the context of marketing, the primary relevance and importance of the MEE lies in the fact that it provides a framework within which to understand and explain marketing communication effects under conditions of low attention and involvement (see Grimes 2008). Such conditions have become increasingly common in a contemporary consumption environment that is characterized by the rapid proliferation of brands, messages and media, and increases in the speed and volume of communication and consumer decision-making (Ha and Litman, 1997; Skinner and Stephens, 2003). Furthermore, and on the basis of a perceived parity between the functional performance of brands, Heath (2004: 60) claims that consumers "no longer feel the need to seek out information about brands, which in turn inhibits any desire to pay active attention to advertising." In doing so, he extends earlier observations that the propagation of communications 'clutter', and the fact that consumers are often involved in tasks that occupy attention and limit communication processing (MacInnis *et al.*, 1991), gives rise to the likelihood that most marketing communication does not receive any active processing at all (Shapiro *et al.*, 1997).

Faced with this environment, Heath (2004) observes two distinct responses from marketing and advertising practitioners. The 'traditional' response views attention as an essential and controllable effect of marketing communication, and sees the solution as making executions more 'attention-grabbing'. However, Heath (2004: 61) argues that this is "a pointless exercise, because the advertising usually focuses so much on waking the audience up that it fails to communicate anything about the brand." The alternative response is to view attention as "an incurable ailment", that is not due to any deficiency in advertising but rather the effectiveness of branding, resulting in the perception amongst consumers that most advertising can be ignored. The solution to a lack of attention is therefore to create communication with strong affective associations that can be processed incidentally and does not require significant levels of attention to be effective:

> "Certain types of advertising can operate at very low levels of attention, creating brand associations and emotive values which endure long after the advertising itself has been forgotten. These associations and values can exert powerful influence on brand choice. Hence we find consumers choosing advertised products yet unable to recall the advertising and strenuously denying that it has influenced their choice." (Heath, 2004: 60).

It is against this background, therefore, that the MEE might be considered to be of significant theoretical relevance to an understanding of affective response to marketing communication; and in particular the formation of attitudes, preferences and decisions at low levels of attention and involvement. Given that these conditions largely characterise the current marketing and media environment, this phenomenon might therefore be considered to be extremely pertinent to contemporary marketing practice. In this respect, the most obvious commercial application of the MEE is in improving the effectiveness

of brief, repeated exposures to simple marketing stimuli, and in particular those relating to the brand (e.g. names, logos and other imagery). Specifically, research into the MEE may have implications for the selection, design, organisation and placement of marketing stimuli, and the integration of these in multiple channels, across multiple media and between external and point-of-purchase environments (as will be discussed in chapter 8). In addition to its potential application by marketing practitioners, however, it is important to recognise that the MEE is a naturally occurring phenomenon; i.e. it happens in cluttered, dynamic environments even when there is no proactive attempt to manipulate exposure to a particular stimulus. From a public policy perspective, therefore, a deeper understanding of the nature and extent of the MEE in marketing communication may be required to assess, and if necessary minimise, the potential for negative and undesirable impacts on consumer behaviour. For example, regulation might be deemed to be necessary with regard to the placement and style of marketing communications in certain contexts, whilst consumer education may be considered appropriate in facilitating greater awareness, understanding and conscious control over the formation of preference-based decisions.

Given the relevance of the MEE to both marketers and consumers alike, therefore, it is perhaps unsurprising that an emerging body of research has sought to explore and explain this phenomenon in the specific context of marketing communication. In this respect, the importance (and indeed necessity) of this domain-specific work should be acknowledged; particularly in light of the fact that purely scientific, laboratory-based investigations have traditionally used abstract stimuli (e.g. irregular polygons) and

context-free evaluations that are untypical of those encountered in the marketing environment. What is somewhat surprising, however, is that this stream of the marketing literature has remained limited in both scope and volume since Obermiller's (1985) initial extension of psychological mere exposure research in this domain. Furthermore, the relatively small collection of marketing research that might be considered to provide evidence for the MEE is subject to significant theoretical and methodological constraints (as will be discussed in chapter 4). In light of this, the work in this thesis is designed to strengthen both the theoretical and empirical basis on which the principles of mere exposure may be understood, explained and applied in the context of marketing communication. In this respect, the intended contributions - and the means by which they will be achieved - are outlined more specifically in the following section.

1.4. Thesis overview: Purpose, aims, structure and content

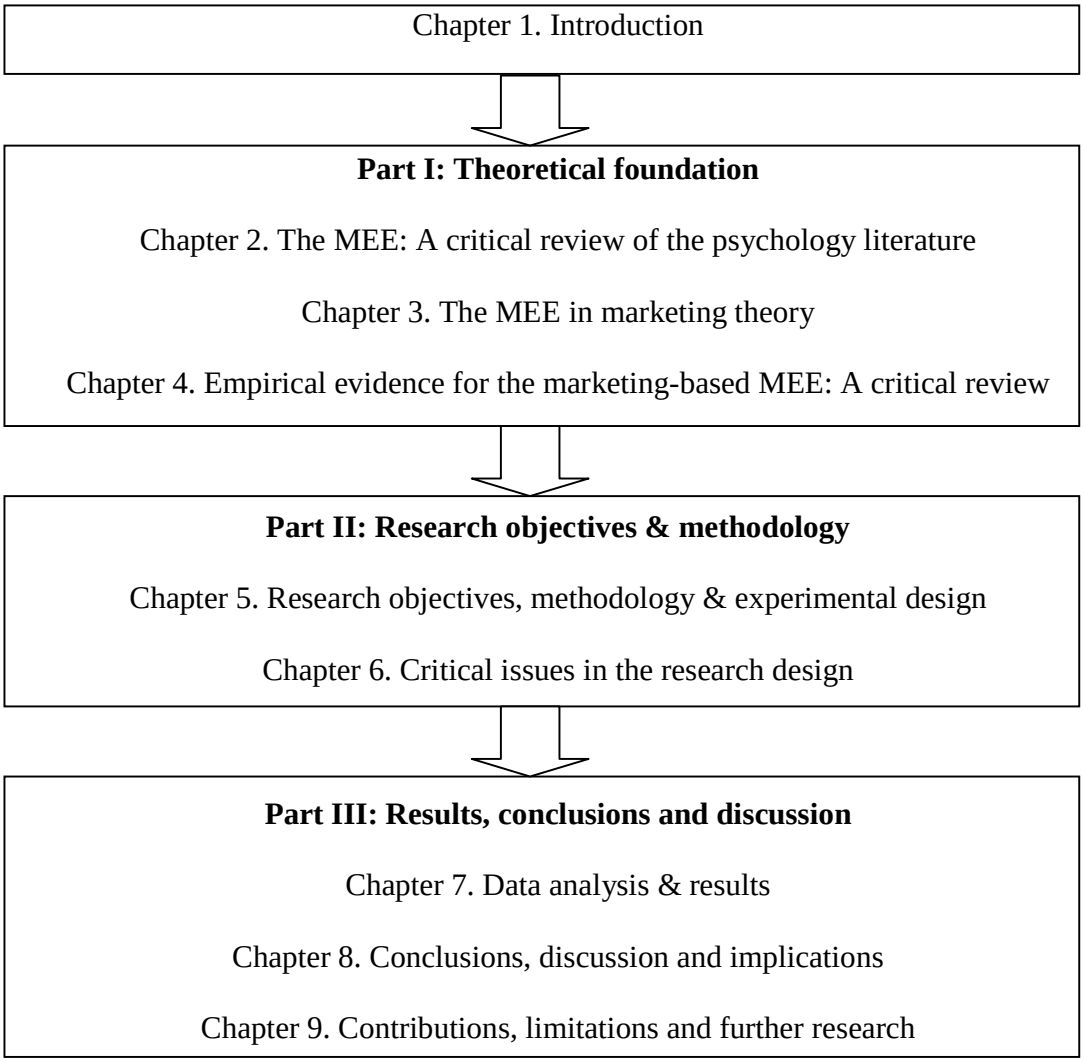
The purpose of this thesis is to extend the relatively small body of marketing-specific mere exposure research, and to provide a detailed and robust examination of the MEE in this domain. As such, the overall aims of the thesis are to:

1. provide a detailed review of current knowledge and understanding of the MEE in the discipline of psychology
2. clarify how the MEE should be conceptualised in marketing theory
3. critically review current evidence for the MEE in the marketing literature
4. provide a robust empirical examination of the existence, size and nature of the MEE in a marketing context

5. extend theoretical understanding of the MEE in a marketing context
6. identify the potential implications of the MEE for marketing practitioners and consumers

To this end, the thesis is divided into three parts (as illustrated in figure 1.1). The first of these is intended to provide a comprehensive theoretical basis for empirical investigations of the MEE in a marketing context. It therefore begins with a detailed review of current knowledge and understanding of the MEE in the psychology literature (chapter 2). The purpose of this is to develop a broad foundation on which to critique previous conceptualisations of the MEE in marketing theory (in chapter 3) and current empirical evidence in the extant marketing literature (in chapter 4).

Figure 1.1: Thesis structure



The critical review undertaken in chapter 2 also provides a detailed theoretical basis for the research design in this thesis. Specifically, three fundamental propositions are distilled from the extant psychology literature that, it is argued, are central to understanding the nature of the MEE. These essentially reflect the notion that the MEE relates primarily to the unreinforced, enhancement of affect and is moderated by explicit memory of the stimulus exposure. On this basis, an empirical study is developed with a view to providing a detailed examination of the occurrence, size and direction of the

MEE in a marketing context; and specifically to test the fundamental propositions distilled from the psychology literature in a marketing context. As will be explained in part II, this is achieved by marrying the highly controlled experimental methods of psychological mere exposure research with the use of typical marketing stimuli and a relatively large sample (as is common in the broader field of marketing research but not, as yet, with regard to the MEE in particular). Furthermore, the empirical work in this thesis addresses theoretical and methodological issues that appear to be overlooked in previous mere exposure research; most notably the potential confounding influence of the *false familiarity effect* (Whittlesea, 1993) and *affective modulation bias* (Phaf and Rotteveel, 2005).

In part III, the results of the study are presented and interpreted (chapter 7), prior to the development and discussion of conclusions and implications (chapter 8) and a summary of the main contributions, limitations and directions for further research (chapter 9). The results are somewhat surprising in that, whilst validating the proposition that mere exposure influences affective response to marketing stimuli, they challenge previous assumptions regarding the influence of recognition memory and the direction of the affect-bias. In contrast to the expectation that stimulus recognition would consistently result in a smaller (but nonetheless identical) MEE, the positive influence of mere exposure in the presence of this factor is actually found to be reversed in its absence; i.e. the results indicate that mere exposure without subsequent recognition may, in fact, *negatively* bias affective response to the stimulus when it is subsequently encountered. Furthermore, the two effects appear to be mediated differently by factors such as

perception, subjective recollection and stimulus-type; indicating that they are qualitatively different.

In conclusion, therefore, it will be argued (in chapter 8) that the findings support a dual-processing model of mere exposure, incorporating two forms of the MEE that are underpinned by the processes of *implicit* and *explicit* memory respectively. Specifically, the *explicit* MEE occurs when audiences exhibit objective recognition memory for having been previously exposed to marketing stimuli, and can lead to positive affect-bias when these stimuli are subsequently encountered. The *implicit* MEE occurs when consumers do not exhibit conscious, accurate memory for the marketing stimuli to which they have been repeatedly and fleetingly exposed (e.g. brand names), and can lead to negative affect-bias when these stimuli are subsequently encountered. From a theoretical perspective, it will be proposed that this model facilitates a more detailed conceptualisation of the MEE for marketers; incorporating the potential for both positive and negative effects of mere exposure, and defining the conditions under which each might be expected to occur. Moreover, it may be considered to have far-reaching implications for the explanation of this phenomenon in a broader psychological context; potentially accommodating a number of seemingly conflicting theories.

With regard to marketing practice in particular, the thesis serves to restate the potential importance of the MEE to identifying, understanding, measuring and influencing marketing communication effects under conditions of low attention and involvement. Furthermore, it highlights the fact that the positive effects of mere exposure may be

dependent on the establishment of recognition memory during extremely brief encounters with marketing stimuli. In this respect, the conclusions of this thesis clearly distinguish the MEE from the somewhat discredited notion of *subliminal advertising*. Moreover, they gives rise to specific implications for the selection, design, presentation and integration of marketing stimuli, as a means of ensuring attention, ease of processing and recognition memory for extremely fleeting exposures. All of these will be discussed in detail during chapter 8, at which point it will also be argued that, given the inherent fluency (and thus recognition) advantages that are associated with familiar and salient stimuli (see Moray, 1959; Nielson and Sarason, 1981; Kurilla and Westerman, 2008), the positive effects of mere exposure might be most relevant to the maintenance of favourable attitudes towards well-known brands in large consumer markets. This proposition challenges the previous supposition that a lack of knowledge, experience and established brand attitudes are consistently conducive to the MEE in a marketing context (e.g. Chung and Szymanski, 1997; Baker, 1999; Fang *et al.*, 2007).

Finally it will be acknowledged that, whilst this thesis may serve to allay concerns that the application of mere exposure principles in marketing communication constitutes a revival of subliminal persuasion tactics, it highlights the potential for other negative consequences from a consumer perspective. Specifically, the conclusion that attention and recognition may underpin the positive effects of the MEE implies that the commercial application of mere exposure principles could result in an increasingly intrusive and inexorable barrage of marketing communication. Should this be the case, it is argued that the primary challenge for public policy-makers may be to protect consumer privacy rather than prevent subliminal manipulation.

1.5. Summary and conclusion

In summary, therefore, this thesis aims to strengthen the foundations of the slowly emerging bridge between the realms of psychology and marketing with regard to the MEE. To this end, it endeavours to provide a thorough, critical and interdisciplinary review of the extant literature, and a robust experimental study of the MEE in a marketing context. On this basis, a novel theoretical model will be proposed; the implications of which will be discussed in detail prior to a thorough consideration of directions for further research. With this in mind, it should be noted that the empirical work in this thesis is not necessarily intended to constitute an applied study of the MEE in the natural marketing environment. Indeed, it will be argued that until such time as a robust methodological means of distinguishing between the MEE and other, similar priming effects (such as classical conditioning) is established, the validity of such research will be significantly compromised. Rather, it follows the tradition of an emerging stream of marketing research in this field; aiming to provide a particularly detailed and robust 'first principles' experimental study of the existence, size and nature of the MEE in relation to typical marketing stimuli. As a foundation for this, the thesis begins with a comprehensive review of current knowledge and understanding of the MEE in the realms of psychology.

Part I

Theoretical Foundation

Chapter 2

The Mere Exposure Effect:

A critical review of the psychology literature

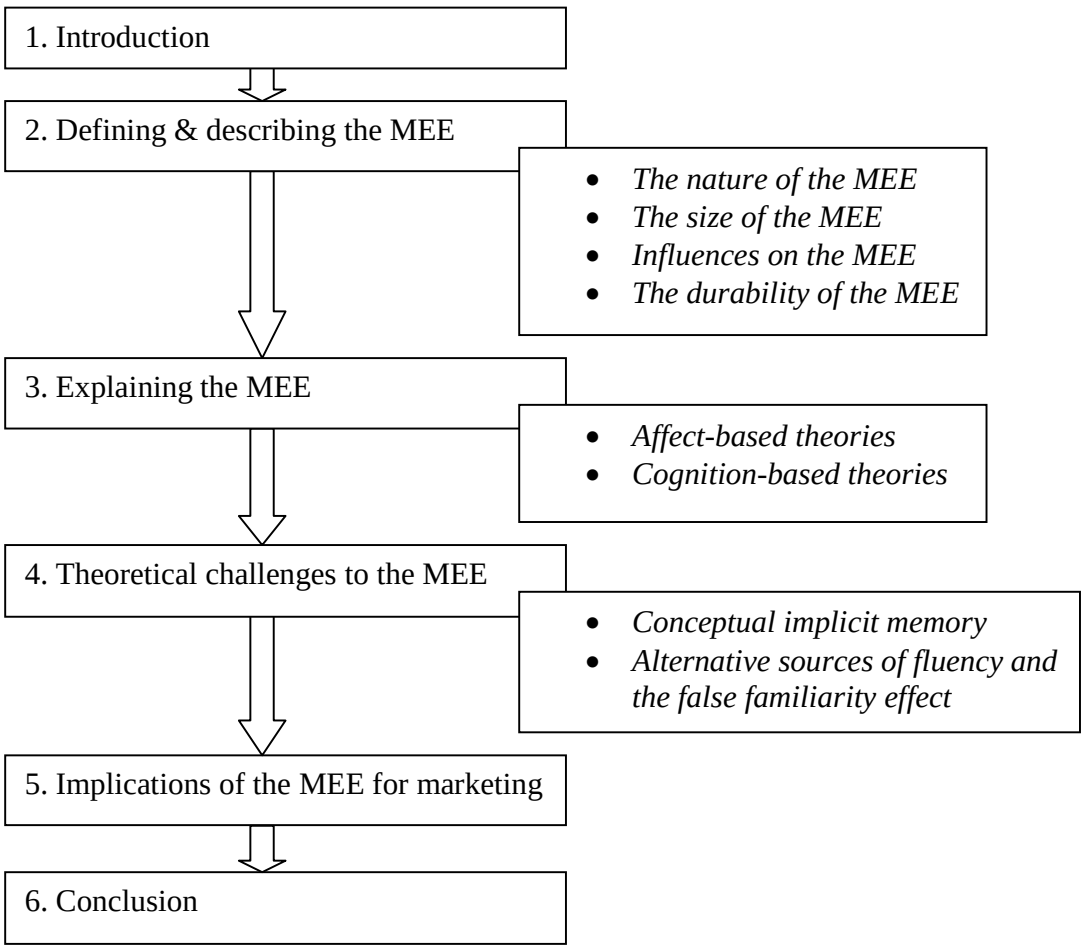
2.1. Introduction

Whilst the mere exposure effect (MEE) is the subject of over 300 experimental studies in psychology, it is important to recognise that it is a common and naturally occurring phenomenon (Bornstein and Craver-Lemley, 2004). Furthermore, the field of marketing was identified in the most recent scientific review as a context for "the most obvious applications of MEE principles" (Bornstein and Craver-Lemley, 2004: 218). With this in mind, detailed reviews of how the MEE has been conceptualized and empirically studied in the marketing literature will be provided in chapters 3 and 4 respectively. In the process it will be argued that, whilst this phenomenon has long been considered to be relevant by marketing theorists, accurate conceptualizations have until recently been hampered by the emerging nature of psychological theory. More importantly, however, empirical studies in the marketing domain are relatively limited in volume and scope, and subject to a number of theoretical and methodological limitations. However, in order to critique the basis on which this phenomenon has been comprehended, explored and interpreted by marketing researchers it is first necessary to develop a thorough appreciation of the current state of knowledge and understanding of the MEE within the discipline of psychology.

As illustrated in figure 2.1., the initial aim of this chapter is thus to review the extant psychology literature regarding the existence, extent and nature of the mere exposure effect. This is followed by an overview of the various theoretical explanations that have been proposed in relation to this phenomenon, and a discussion of current challenges

and controversies regarding the existence, explanation and efficacy of the MEE. Finally, the chapter is drawn to a close with a discussion of the implications of this critical review for the extension and application of mere exposure research in a marketing context.

Figure 2.1: Structure of Chapter 2



2.2. Defining and describing the MEE

The mere exposure effect (MEE) was first defined by Zajonc (1968: 1) who observed that:

> "the mere repeated exposure of the individual to a stimulus is a sufficient condition for the enhancement of his attitude towards it. By 'mere exposure' is meant a condition which just makes the given stimulus accessible to the individual's perception."

Subsequently, the MEE has come to be recognized as a robust phenomenon in the psychology literature and the size, nature and durability of this phenomenon has been subject to a great deal of research (for reviews see Harrison, 1977; Bornstein, 1989; Bornstein and Craver-Lemley, 2004). The key aspects of this literature are summarized in the following subsections, prior to a review of the various competing explanations of the MEE in section 2.3 (page 36).

2.2.1. The nature of the MEE

In terms of the qualitative characteristics of the MEE, three important themes are evident in the psychology literature. The first of these relates to the affective versus cognitive nature of the outcome, and has important implications for theoretical explanations of the phenomenon (as will be discussed in section 2.3). The second is concerned with the *direction* of the outcome, whilst the third relates to the non-conscious nature of the processes that underpin the MEE. These themes are discussed in more detail below.

2.2.1.1. Affective versus cognitive response

Since Zajonc's (1968) seminal monograph, the vast majority of empirical research has focused on the relationship between exposure and *affect*. Indeed, Bornstein's (1989) meta-analysis includes more than 200 studies of this particular manifestation of the MEE, prompting the author to conclude that; "the first 20 years of research on Zajonc's (1968) mere exposure effect leaves little doubt that the exposure–affect relationship is a robust, reliable phenomenon" (Bornstein, 1989: 278). Given this, it is perhaps unsurprising that most theories of the MEE have specifically sought to explain the influence of exposure on affective response (e.g. Berlyne, 1970; Stang, 1975; Zajonc, 1980; Winkielman and Cacciopo, 2001). As will be discussed in section 2.3, however, these theories have largely been eclipsed by those that accommodate the notion that mere exposure can also influence *cognitive* response (e.g. Mandler *et al.*, 1987; Bornstein and D'Agostino, 1992, 1994). Empirical evidence for this is provided by Mandler *et al.* (1987), who found that mere exposure to a stimulus not only enhanced subsequent affective response but also (cognitive) judgments of brightness and darkness. This is in line with implicit (i.e. subconscious) memory research, in which prior exposure has been found to influence perceptions of truthfulness (Begg and Armour, 1991), sound volume (Jacoby *et al*., 1988) and fame (Jacoby *et al.*, 1989). As such, it would appear that the impact of mere exposure is not limited to the affective component of attitude, but may also be observed in relation to cognitive evaluations.

2.2.1.2. Positive versus negative influence

Within the psychology literature, mere exposure has almost universally been found to positively influence adult response. However, findings to the contrary (i.e. an exposure-induced novelty bias) have been proffered in relation to food preferences (Stang, 1975) and high (versus) low-density matrices (Lee, 1994). Interestingly, although neither the stimulus nor the nature of evaluation is specifically related to marketing communication, the second of these studies is published in the marketing literature. As such, it will be critically reviewed in more detail during chapter 4.

By contrast, mixed findings are evident with regard to the direction of the MEE in children. Whilst some studies have revealed a classic, positive MEE amongst this group (e.g. Jenrenaud and Linford, 1969; Sluckin *et al.*, 1973; Heingartner and Hall, 1974), the majority have found a reverse MEE (Cantor, 1968; Leckart *et al.*, 1968; Rabinowitz and Robe, 1968; Cantor and Kubose, 1969; Freeman, 1972; Siebold, 1972; Lemond and Nunnally, 1974; Hutt, 1975; Eson *et al.*, 1977; Linford and Linford, 1977; Busse and Seraydarian, 1978). This exposure-induced novelty bias in children has proven to be robust across a number of measurement techniques, including forced-choice (e.g. Freeman, 1972; Cantor and Kubose, 1969), categorical choice (e.g. like versus dislike; Siebold, 1972) and interval scale ratings (e.g. Cantor, 1968). Furthermore, the directional difference of the MEE in adults and children is supported by meta-analysis, "which shows an overall negative relationship between exposure and affect in children and a positive relationship between exposure and affect in adults" (Bornstein, 1989:

278). The reason for this difference is not yet understood but, importantly, it challenges the almost universal assumption amongst marketing theorists (see chapter 3) and researchers (see chapter 4) that the MEE systematically enhances positive attitudes to a given stimulus, and highlights the need for context-specific studies of this phenomenon in the marketing domain.

2.2.1.3. The MEE: A non-conscious phenomenon

One of the most striking characteristics of the MEE is that it remains apparent even in the absence of stimulus recognition. The first notable demonstration of this was provided by Wilson (1979) who, by way of a dichotic-listening task, demonstrated enhanced affective response for unattended melodies at low and chance levels of recognition. These findings were quickly supported by those of Kunst-Wilson and Zajonc (1980), who observed enhanced liking for irregular polygons following repeated visual exposures of just one millisecond. Specifically, the results of 2-factor forced-choice tests revealed that participants preferred the exposed stimuli over novel alternatives 60% of the time, whilst recognition did not differ significantly from chance (i.e. 50%). Using similar techniques, these findings have subsequently been replicated on numerous occasions (e.g. Seamon *et al.* 1983a; Bonanno and Stillings, 1986; Barchas and Perlaki, 1986; Mandler *et al.*, 1987; Murphy and Zajonc, 1993). Furthermore, Bornstein (1989) presents meta-analytic evidence of a significantly *larger* MEE in those studies that have employed a subliminal exposure phase to eliminate the possibility of subsequent stimulus recognition. On this basis, the MEE has been characterised as a

non-conscious phenomenon that is hindered by the influence of explicit memory for prior exposure (Bornstein and D'Agostino, 1992, 1994). Whilst the grounds for this assumption are somewhat questionable – as will be discussed in section 2.2.3.3.1 (page 29) – it nonetheless remains a central element of the influential 'misattribution' theories of mere exposure (Mandler *et al.* 1987; Bornstein and D'Agostino, 1992, 1994); as will be explained in section 2.3.2.2 (page 45).

However, it should be noted that, whilst the fleeting nature of mere exposure is such that it does not facilitate a great deal of attention, elaboration and encoding, nor does it necessarily eliminate the possibility of stimulus perception and recognition. Indeed, the vast majority of research in the psychology literature has demonstrated exposure-induced changes in affective response under just such conditions (see Bornstein, 1989; Bornstein and Craver-Lemley, 2004). Nevertheless, Bornstein and Craver-Lemley (2004: 230) stress that the MEE should still be considered to be a non-conscious phenomenon on the basis that:

> "even in situations where participants are aware of having been exposed to stimuli, they rarely attribute their liking for a stimulus to repeated exposure, instead believing that some property of the stimulus is particularly attractive or interesting."

Although the precise processes by which the MEE occurs remain subject to debate, therefore, it is perhaps fair to conclude that the phenomenon is broadly assumed to be non-conscious in nature. This assumption, however, will be revisited subsequently in this chapter in the light of new and emerging evidence of the influence that recognition memory might be expected to exert on the size of the MEE (see page 32). As a context

for this, however, it is first necessary to consider the literature regarding the magnitude of the MEE, and the factors that have been found to moderate this, from a broader perspective.

2.2.2. The size of the MEE

In his seminal meta-analysis Bornstein (1989) observed that the overall magnitude of the MEE (as measured by the correlation coefficient *r*) was a moderate 0.26. In a more recent review, Bornstein and Craver-Lemley (2004: 217) note that this has subsequently been confirmed by further empirical studies, but stress that even small statistical effects may be substantively significant in a real-world context:

> "[For example]. . . studies suggest that frequency of exposure is a significant determinant of the number of votes garnered by a candidate for elected office, even when other factors (e.g. popularity of the candidate's policy positions are controlled for statistically (Bornstein, 1989). The impact of repeated exposure on election outcome is not just statistically significant, but ecologically significant aswell: The 5-10% shift attributable to candidate familiarity is enough to alter the outcome of many real world elections."

With this in mind, and in a marketing context, one might contend that a 5-10% shift in product sales due to the MEE might appear to be relatively small but could constitute significant increases in revenue for global fmcg brands. Indeed, this very argument is made by Shapiro and Krishnan (2001) with regard to the influence of implicit memory on brand choice (a key factor in explanations of the non-conscious MEE, as will be explained in section 2.3):

> "Although it may appear that implicit memory results are relatively small (in our study, an overall increase in brand choice of 11% relative to the baseline), small changes in market share can equate to billions of dollars in

> sales. For example, 11.2% of the soft drink market is equal to $6.5 billion in sales."

In essence, therefore, whilst marketing researchers should not necessarily expect to find large MEEs in an experimental setting, small but significant effects may nonetheless reflect substantial influences in a real-world context. However, whilst the average size of the experimental MEE provides an important benchmark for further research, it is important to note that this has been found to be influenced by a number of factors. Perhaps the most important of these is *stimulus recognition* (as will be explained in detail on page 29), although a number of other factors are worthy of note in this respect. These are categorized by Bornstein and Craver-Lemley (2004) as *stimulus*, *exposure* and *individual* variables; each of which are briefly outlined in the following section.

2.2.3. Influences on the MEE

Detailed reviews of the factors that have been found to moderate the size of the experimental MEE are provided by Bornstein (1989) and Bornstein and Craver-Lemley (2004). For the purposes of this thesis, however, it is important to provide a brief overview of these and, in particular, a critical discussion of the influence that recognition memory might be expected to exert on the MEE; an issue that is at the heart of the theoretical debate as to how this phenomenon occurs (as will be discussed in section 2.3, page 36).

2.2.3.1. Stimulus variables

The two main moderating variables in this first category concern the *type* and *complexity* of the target stimulus. Although the vast majority of research has utilised visual and auditory cues, the MEE has been found to be robust across a range of different stimulus types, as Bornstein and Craver-Lemley (2004: 219) observe:

> "Nine different types of stimuli have been used in MEE research: nonsense words, meaningful words, ideographs, photographs, drawings, auditory stimuli, gustatory (i.e. food) stimuli, actual people, and objects (e.g. toys). Studies contrasting the magnitude of the MEE as a function of stimulus type have generally found no consistent differences across stimulus classes."

During his meta-analysis, however, Bornstein (1989: 269-270) observes that "photograph, meaningful-word, and polygon stimuli produce moderate to strong exposure effects, whereas ideograph, nonsense-word, and real person/object stimuli produce somewhat smaller effects." Furthermore, the author notes that drawings, abstract paintings and matrices have been found to produce an extremely weak MEE. However, it should perhaps be acknowledged that, within the marketing literature, Lee (1994) found *directional* differences in the MEE on the basis of matrix density. In this respect, a positive effect was observed in relation to low-density matrices, while a reverse (i.e. negative) MEE was apparent for high-density matrices. This study is critically reviewed in the context of other consumer research into the MEE in chapter 4.

Further to the moderating influence of stimulus-type, stronger MEEs have been found in relation to complex as opposed to simple stimuli, but only in studies that utilize a within-subjects design (e.g. Berlyne, 1970; Saegert and Jellison, 1972; Heyduk, 1975).

In the only comparative study to use a between-group design, Zajonc *et al.* (1972) found no such differences, prompting Bornstein (1989: 271) to suggest that:

> "It may be that subjects' differential ratings of simple and complex stimuli depend on their being able to compare reactions to both types of stimuli over the course of repeated exposures . . . That is, complex stimuli may produce stronger exposure effects in part because they are compared to simple stimuli and deemed more interesting or pleasing."

In the context of marketing-based research and application of the MEE, therefore, it should be noted that the size of the effect may vary according to the specific characteristics of the stimulus in question. For example, brand names commonly take the form of either real-word (e.g. Mars) or pseudo-word stimuli (e.g. Twix), and may thus be subject to the meta-analytic differences in effect size observed in relation to 'meaningful' and 'nonsense' words by Bornstein (1989; see previous page). However, moderating variables in relation to the MEE are not confined to the properties of the stimulus in question. The nature of exposure has also been found to be influential in this respect; as discussed in the following section.

2.2.3.2. Exposure variables

The key moderating factors in this second category are related to the *frequency***,** *sequence* and *duration* of exposure. Firstly, with regard to the number of exposures, Bornstein and Craver-Lemley (2004: 220) observe that, "in most MEE studies researchers observe an increase in liking ratings through 10 stimulus exposures, after which ratings plateau and gradually decline to baseline." That is not to say that the MEE

will necessarily be restricted to 10 exposures in the natural environment, but rather that in a closed experimental setting this is the point at which the effect begins to decline; most likely as a result of boredom and fatigue (Bornstein *et al.*, 1990). Secondly, Bornstein (1989) observed that random (heterogeneous) exposure sequences produced an effect size of r = 0.3, whilst 'massed' (homogenous) exposure did not result in any substantive effect (r = -0.02). Finally, Bornstein and Craver-Lemley (2004: 220) observe that:

> "There is an inverse relationship between stimulus exposure duration and magnitude of the exposure effect (Bornstein, 1989). Studies that use stimulus exposures of less than 1 second produce an overall MEE (r) of 0.41, whereas studies that use stimulus exposures between 1 and 5 seconds produce a [small] MEE of 0.16, and those that use longer exposures produce a [very small] MEE of 0.09. Individual studies comparing MEEs for identical stimuli presented at different exposure durations support this meta-analytic result." (Parentheses added)

As an overview, therefore, it may be concluded that the size of the experimental MEE is likely to be enhanced by a small number of extremely fleeting exposures in a randomized sequence. This is in line with Zajonc's (1968) original conceptualization of mere exposure as that which is *just perceptible* (see page 18). Moreover, the fact that these conditions obviate the influence of attention, elaboration and explicit memory provide support for the argument that the MEE is essentially a non-conscious phenomenon that is hindered by conscious processing (see page 22).

2.2.3.3. Participant variables

Whilst Bornstein and Craver-Lemley (2004) observe that the MEE has generally proven to be robust across a range of participant variables (e.g. need for approval, anxiety,

tolerance of ambiguity and sensation seeking), boredom and fatigue have been found to limit and even eliminate the experimental MEE (Bornstein *et al.*, 1990). However, the lack of evidence for socio-demographic and cultural factors appears to reflect a dearth of comparative research in this respect; symptomatic perhaps of the fact that the processes of implicit memory on which the dominant theories of mere exposure are founded (e.g. Mandler *et al.*, 1987; Bornstein and D'Agostino, 1992, 1994) have been consistently demonstrated to be equivalent across such variables (see page 48).

Whilst not acknowledged in the literature, however, it may be argued that the assumption of a universally standard MEE (underpinned by the generic processes of implicit memory) is undermined by consistent findings of a difference in both the size and direction of this effect between adults and children (see page 20). In this respect, a relatively small novelty bias (i.e. reverse MEE) is evident in child participants, whereas a larger preference bias for previously exposed stimuli is usually found in adults (see Bornstein, 1989). In this respect, the fact that developmental factors appear to mediate the direction of the MEE poses significant problems for an assumption that is generally apparent in the extant marketing literature (see chapters 3 and 4); namely, should this phenomenon influence consumer attitudes it will do so in a way that is invariably positive. Not only do the findings in developmental psychology indicate that this is unlikely to be the case amongst children but, in a broader sense, they draw attention to the fact that this phenomenon is not necessarily context-free; highlighting the need for domain-specific research into the specific impact of mere exposure on consumer attitudes to marketing stimuli.

Finally, perhaps the most important influence on the size of the MEE is that of stimulus recognition; a factor that arguably constitutes a central point of departure for the various competing explanations of the MEE that have emerged in recent decades (see section 2.3; page 36). In this respect, the 'misattribution' theories of mere exposure (Mandler *et al.*, 1987; Bornstein and D'Agostino, 1992, 1994) have come to prominence largely as a result of their ability to accommodate meta-analytic evidence that recognition moderates the MEE (Bornstein, 1989); as will be explained in section 2.3.2.2 (page 45). However, while this assumption remains prevalent in the psychology literature (see Bornstein and Craver-Lemley, 2004), it may be challenged on a number of grounds. These are elucidated in the following section, as part of a critical discussion of the influence that recognition memory might be expected to exert on the MEE.

2.2.3.3.1. The influence of stimulus recognition on the MEE

The vast majority of experimental research into the MEE has not sought to isolate affective response from recognition. Indeed, of the 208 experiments included in Bornstein's (1989) seminal meta-analysis, just nine explore the influence of mere exposure in the absence of stimulus recognition; all of which employ subliminal mere exposure as a means by which to eliminate the possibility of subsequent explicit memory. Nonetheless, it is this body of work that has provided the basis for the assumption that recognition memory moderates the size of the MEE in the contemporary psychology literature (see Bornstein and Craver-Lemley, 2004). Specifically, this is

founded on Bornstein's (1989) meta-analytic finding that the size of the MEE is almost twice as large in studies that have employed a subliminal exposure phase; prompting the following conclusion:

> "Not only is stimulus recognition unnecessary for the production of typical exposure effects, but comparison of recognized versus unrecognized briefly presented stimuli suggests that stimulus recognition may actually inhibit the exposure effect." (Bornstein, 1989: 275)

Given the methodological approach by which this enhanced form of the effect has been demonstrated, it may be tempting to refer to it as the *subliminal* MEE. However, it is important to stress that, within the dominant misattribution theories of mere exposure (Mandler *et al.*, 1987; Bornstein and D'Agostino, 1992, 1994), subliminal perception is not regarded as a necessary condition for the enhancement of affective response in the absence of recognition at test. These theories will be discussed in more detail during section 2.3. (page 36), although at this point it is perhaps useful to note that they are founded on the assumption that preference is an *illusion* – the product of misattributed processing fluency in the absence of explicit memory for the source of this (i.e. stimulus exposure). Under experimental conditions, subliminal presentation is simply deemed to be an effective means by which to stimulate this process, as Lee (2001a:32) explains:

> "The key . . . is not in the subliminality of the stimuli, but rather the lack of awareness of the relationship between the exposure phase and the affective judgment phase, and subliminal exposure is merely one way of achieving it."

As such, subliminal perception is considered to enhance the MEE in the same way as other factors that serve to limit the influence of explicit memory (e.g. extending the period of delay between exposure and test, Stang, 1975; Seamon *et al.*, 1983b). In

support of this, Bornstein and Craver-Lemley (2004) observe that the non-conscious nature of the MEE is also evidenced by neuroscientific findings of exposure-induced affect in patients with deficits that preclude explicit memory (Halpern and O'Connor, 2000). With this in mind, it is perhaps more appropriate to consider exposure-induced affect in the absence of recognition as a *non-conscious*, rather than subliminal, phenomenon.

However, it should be noted that this subsequent interpretation of Bornstein's (1989) results differs from that which was initially proposed. Indeed, Bornstein (1989) originally speculated that the reason for the observed differences in effect size may reside in the fact that subliminal presentation greatly reduces the likelihood of boredom and fatigue during exposure; two factors that have since been found to limit the size of the MEE (Bornstein *et al.*, 1990). Indeed, the distinction between the subliminal and non-conscious nature of this form of the MEE has yet to be empirically demonstrated. As such, it is not currently possible to rule out the notion that it is the nature of perception during exposure, rather than memory at test, that is responsible for previously observed increases in the size of the MEE. This is a particularly pertinent issue in the marketing domain where a clear and important distinction between subliminal and non-conscious advertising effects has emerged (see Chartrand, 2005). It will therefore be discussed in detail during the next chapter, and addressed in the empirical phase of this thesis.

Furthermore, it should be noted that, whilst the meta-analytic findings of Bornstein (1989) have been afforded great importance in the psychology literature (see Bornstein and Craver-Lemley, 2004), direct empirical comparisons of the MEE in the presence and absence of recognition memory are relatively scarce, and somewhat equivocal. For example, Seamon *et al.* (1983b) observed that, during two-factor forced-choice tests, rising rates of target preference (between 60-65%) were accompanied by falling rates of recognition (between 55-50%), when the delay between exposure and measurement was extended from a few minutes to one day and one week. These results are in line with the more recent findings of Bornstein and D'Agostino (1992) and may be taken as further evidence of a stronger MEE in the absence of explicit memory for stimulus exposure. On a cautionary note, however, it should be acknowledged that Seamon *et al*. (1984) found similar increases in the rate of positive affective response (to approximately 60%) under conditions of both enhanced and chance recognition. Furthermore, evidence has begun to accumulate that, following supraliminal mere exposure, recognition memory may in fact *enhance* the size of the MEE (Newell and Shanks, 2007); particularly when it is accompanied by the subjective experience of clear, confident, contextualised recollection (Lee, 2001b; Wang and Chang, 2004).

In summary, therefore, whilst the results of Bornstein's (1989) meta-analysis continue to provide a foundation for the assumption that recognition memory moderates the size of the MEE (see Bornstein and Craver-Lemley, 2004), this may be subject to challenge in two respects. Firstly, the results of direct empirical research are somewhat equivocal; with initial supporting evidence (Seamon *et al.*, 1984; Bornstein and D'Agostino, 1992)

contradicted by more recent findings (Lee, 2001b; Wang and Chang, 2004; Newell and Shanks, 2007). Secondly, the body of research that serves to underpin this assumption is almost universally characterised by the use of subliminal exposure to eliminate the possibility of subsequent recognition memory. By contrast, recent contradictory evidence is founded on the examination of affect-bias in the presence and absence of stimulus recognition, following supraliminal mere exposure (Lee, 2001b; Wang and Chang, 2004; Newell and Shanks, 2007). As such, it is not yet clear whether it is stimulus perception or recognition memory that is responsible for the differences in effect size in Bornstein's (1989) seminal meta-analysis. Whilst it is acknowledged that the moderating influence of recognition memory remains a central assumption in contemporary theories of mere exposure (see Bornstein and Craver-Lemley, 2004), therefore, it may be concluded that an unequivocal acceptance of this is no longer appropriate. As a result, future research into the nature and size of the MEE should seek to empirically test the proposition that memory will moderate the magnitude of this phenomenon. The implications of this for the empirical work in this thesis will be revisited later in section 2.5 (page 61). Before this, however, consideration will be given to the durability of the MEE (in the following section); prior to a detailed critique of current theoretical explanations of this phenomenon (in section 2.3., page 36).

2.2.4. The durability of the MEE

The length of time for which mere exposure effects endure is subject to some debate, although it has been found that this may be much longer than those created by elaborative processing. As Nordhielm (2002: 380) observes:

> "One key issue is how time influences the relationship between feature repetition and affective response. Research that has investigated perceptual and conceptual priming suggests that the effects of prior exposure on affective response can actually last as long as one year when the stimuli are processed in a shallower manner, whereas when these stimuli are elaborated upon, these positive effects can diminish within as little as a few minutes."

Empirically, and as a by product of their exploration of the moderating effects of delay between exposure and test, the MEE in particular has been found to persist for at least one week (Seamon *et al.*, 1983b) and two weeks (Stang, 1975). Further to this, and in light of the automatic processes that are theorized to underpin the non-conscious MEE (as will be discussed later in this chapter), a more detailed perspective is perhaps provided by evidence that implicit memory is relatively stable and persistent over time (see Roediger and McDermott, 1993). However, it should be noted that there is some disagreement regarding the durability of implicit memory, with findings ranging from less than two hours (Graf and Mandler, 1984), to one day (Kolers, 1976), to one week (Landrum, 1997), two weeks (Tulving *et al.* 1982), one year (Kolers, 1976), and even up to sixteen months (Sloman *et al.*, 1988).

2.2.5. A summary description of the MEE

In summary, therefore, mere exposure has been consistently found to produce moderate but robust experimental effects throughout four decades of psychological research. During this time, the focus has largely been on the relationship between exposure and affect (for reviews see Bornstein, 1989; Bornstein and Craver-Lemley, 2004), although there is evidence to suggest that cognitive response may also be influenced by mere exposure (e.g. Mandler *et al.*, 1987). Although somewhat isolated in the literature, these findings are worthy of note as they may have important implications for theoretical explanations of the MEE (as will be discussed in the following section). Whatever the nature of participant response, the direction of this is almost universally positive in adults. However, whilst a number of studies have made similar findings with children, the majority present evidence of a *reverse* MEE in this group (i.e. a tendency to prefer novel over previously exposed stimuli).

Whilst the average size of the experimental MEE is relatively small (Bornstein, 1989), it appears to be to be moderated to some extent by a number of factors. These include the type and complexity of the stimulus, the frequency, sequencing and duration of exposure, and the degree to which participants experience boredom or fatigue. Perhaps the most influential findings in this respect, however, have been those of Bornstein's (1989) meta-analysis, which appear to demonstrate that the size of the MEE is significantly reduced by stimulus recognition. Although originally attributed to an absence of boredom and fatigue under conditions of subliminal exposure, this has

subsequently been interpreted as evidence that the MEE is underpinned by the non-conscious processes of implicit memory; the influence of which is hindered by conscious encoding and retrieval of prior exposure (Bornstein and D'Agostino, 1992, 1994). In the absence of direct, unequivocal empirical support, however, it may be argued that the moderating influence of recognition memory remains a proposition; the validation of which is central to the question of *how* mere exposure alone might influence attitudes and choice behaviour. As will be explained in the following section, the debate in this respect is characterised by a number of competing theoretical explanations; each of which incorporate assumptions as to the role of memory.

2.3. Explaining the MEE

Whilst the existence of the MEE is not disputed, the mechanism by which it occurs is subject to extensive, and as yet unresolved, debate. In the continued absence of a generic theory of mere exposure a number of competing explanations have been proposed. As Bornstein and Craver-Lemley (2004: 225) observe:

> "Since the publication of Zajonc's seminal (1968) paper, more than a dozen theoretical frameworks have been developed to explain the processes that underlie the MEE (see Bornstein, 1989, 1992; Seamon *et al.*, 1998; Whittlesea and Price, 2001; Zajonc, 2001). Five of these models have been particularly influential."

The five theories referred to in this quote are those of *arousal* (Berlyne, 1970), *the primacy of affect* (Zajonc, 1980, 2000), *non-specific activation* (Mandler *et al.*, 1987), *two-factor theory* (Stang, 1975) and *perceptual fluency/attribution* (Bornstein and D'Agostino, 1994). However, two other theories are also worthy of note in this

discussion; *uncertainty reduction* (Sawyer, 1981) and *hedonic fluency* (Winkielman and Cacioppo, 2001). All of these explanations may be categorized on the basis that they assume the MEE to be the product of either affective or cognitive processing (see Bornstein and Craver-Lemley, 2004). A summary of this categorization is provided in table 2.1, prior to a discussion of the theories contained within.

Table 2.1: Summary of current theoretical accounts of the MEE

Affect-Based	**Cognition-Based**
Arousal (Berlyne, 1970)	Two-Factor Theory (Stang, 1975)
Primacy of Affect (Zajonc, 1980)	Uncertainty reduction (Sawyer, 1981)
Hedonic Fluency (Winkielman & Cacioppo, 2001)	Non-specific Activation (Mandler *et al.*, 1987)
	Perceptual Fluency/Attribution (Bornstein & D'Agostino, 1994)

As Winkielman and Cacioppo (2001: 990) observe, cognition-based explanations of the MEE (to be discussed in section 2.3.2, page 42), "assume that the effects of processing facilitation on evaluations can be explained by the same mechanism as the effects of processing facilitation on other 'nonaffective' judgments (e.g., fame, truth, clarity)." Whilst the authors acknowledge that this is a reasonable assumption, particularly in the light of the range of judgment effects discussed in section 2.2.1.1. (page 19), it is important to note that a number of theories are based on the premise that the MEE arises on the basis of affective response occurring prior to, or in the absence of, cognition (e.g. Berlyne, 1970; Zajonc, 1980). Whilst this proposition remains contentious, it may be

supported to some extent by initial neuroscientific findings of separable neural substrates for affect and cognition (e.g. Elliott and Dolan, 1998; LeDoux, 1995). The purpose of this section, therefore, is to discuss the main affect-based explanations of the MEE, prior to a review of the more widely accepted cognition-based theories (see Bornstein and Craver-Lemley, 2004; Butler and Berry, 2004).

2.3.1. Affect-based theories

Firstly in this respect, Berlyne's (1970) *arousal* theory is founded on the premise that exposure to a novel stimulus produces high levels of unpleasant physiological arousal. As the stimulus is rendered increasingly familiar (via the process of repeated mere exposure), this arousal is experienced to a lesser degree. In response to this, a "rebound effect" occurs whereby the participant experiences positive affective response for a stimulus that was once unknown but is now familiar. To some extent, this theory is empirically supported by findings that unfamiliar, and therefore unpredictable, stimuli lead to enhanced arousal (Kruglanski and Webster, 1996). However, Bornstein and Craver-Lemley (2004) contend that it cannot account for the moderating effects of stimulus complexity and randomized exposure sequences, and is thus incomplete.

At this point, it is perhaps helpful to note that Berlyne's (1970) theory of the MEE is very similar to that of *uncertainty reduction* (Sawyer, 1981). This cognition-based explanation posits that uncertainty about unfamiliar stimuli results in a feeling of tension. In this context, exposure is seen to reduce uncertainty, ease tension and thus

enhance positive affective response to the stimulus. However, the emergence of Bornstein's (1989) meta-analytic evidence that stimulus recognition *hinders* (rather than facilitates) the MEE is potentially problematic for the theories of Berlyne (1970) and Sawyer (1981). Indeed, whilst it was previously acknowledged that this assumption may be challenged on the grounds that direct empirical evidence for this remains relatively scarce and somewhat equivocal (see page 32), the persistence of it in the contemporary psychology literature (see Bornstein and Craver-Lemley, 2004) may also undermine the most recent affect-based explanation of mere exposure; the theory of *hedonic fluency* (Winkielman and Cacioppo, 2001). This is founded on the premise that the processing fluency created by mere exposure *always* gives rise to a genuine, positive affective reaction towards a stimulus. It is in line with earlier claims that processing fluency inherently constitutes a pleasant experience as it may, for example, relate to a feeling of confidence in having appropriate knowledge to deal with the stimulus (Bless and Fiedler, 1995; Schwarz, 1990), or a sense of achievement at having successfully recognized and interpreted it (Carver and Scheier, 1990; Vallacher and Nowak, 1999). In support of their *hedonic fluency* theory, Winkielman and Cacioppo (2001) present empirical evidence that processing fluency gives rise to a brief, unmediated positive (but not negative) affective response; pointing to the fact that this in line with the conclusions of Reber *et al.* (1998) and Seamon *et al.* (1998). Once again, however, and whilst acknowledging the potential fragility of this claim, a potential limitation of this explanation is that it does not account for the fact that the size of the MEE may be limited, rather than enhanced, by a conscious sense of recognition for prior stimulus exposure (see Bornstein, 1989; Bornstein and D'Agostino, 1992). Furthermore, the

consistent and robust evidence of a reverse MEE in children (i.e. a novelty preference bias) indicates that processing fluency is not always associated with positive affective response. In light of these criticisms, and the limited scope and impact of previous empirical work into the concept of hedonic fluency, it would seem that there is a need for far greater evidence for this theory before one can dispute the authors' own observation that, "in sum, the available research is inconclusive regarding the positive marking of processing fluency" (Winkielman and Cacioppo, 2001: 997).

As such, and in light of the non-conscious nature of the MEE (see page 21), the most influential affect-based explanation may be considered to be the *primacy of affect* (Zajonc, 1980). The basis of Zajonc's (1980) theory is that affective response to a stimulus can occur prior to, or even in the absence of, cognition and thus drive the decision-making process. Furthermore, affect may occur instantaneously, automatically and without high levels of conscious attention and elaboration (Zajonc, 1980, 2000). Zajonc (1980) proposes that the reason affect and recognition (used in this context as an indicator of *cognition*) can occur separately is that they are reactions to different elements of the stimulus. In short, he argues that affect occurs as an holistic, gestalt response to global features of the stimulus (termed 'preferenda'), whilst recognition occurs in relation to specific sub-features of the stimulus (termed 'discriminada').

Although emerging indications that the size of the MEE may in fact be enhanced by explicit memory (e.g. Lee, 2001b; Wang and Chang, 2004) are potentially problematic for the *primacy of affect* theory, it nonetheless serves to provide a potential explanation

for previous evidence of a larger MEE under conditions of subliminal perception (see Bornstein, 1989; Bornstein and D'Agostino). Furthermore, it may be supported by neuroscientific findings of a physiological basis for the independence of cognition and emotion (e.g. Elliott and Dolan, 1998; LeDoux, 1995). However, Vanhuele (1994) observes that the *primacy of affect* theory is yet to be validated in direct empirical research. Moreover, he draws attention to a particular limitation with regard to Zajonc's (1980) explanation of the MEE. Essentially this relates to the fact that *recognition* was widely used as an indicator of cognition in the empirical work that gave rise to the primacy of affect theory (e.g. Wilson, 1979; Kunst-Wilson and Zajonc, 1980; Zajonc, 1980). However, more recent research in the field of implicit memory has demonstrated that, in the absence of recognition, mere exposure can lead to enhanced performance in purely cognitive tasks, such as perceptual identification of degraded stimuli, accurate word completion and lexical decision tasks (for a review see Bornstein, 1989). This leads Vanhuele (1994: 265) to conclude that:

> "the identification of cognition with recognition, one of the bases of Zajonc's argument, no longer seems justified in light of this recent research. Thus, it is possible that cognitive processing is responsible for the mere exposure effect."

In support of this, a similar conclusion is subsequently drawn by Lee (2001a: 30) who, with reference to the independence of affect and cognition, observes:

> "That mere exposure effects can be found not just with affective judgments lessens the viability of Zajonc's (1980, 1984) independence hypothesis . . . If mere exposure effects can be found with other types of judgments, then certainly, it would not be reasonable to postulate that a separate system is responsible for each type of response."

Such criticism, and the absence of compelling empirical evidence for Zajonc's (1980) theory, prompts Butler and Berry (2004: 475) to conclude that, "the largely descriptive primacy of affect framework seems ill-equipped to account for the wide variety of findings in the mere exposure literature." In light of this, it is perhaps unsurprising that cognition-based explanations of the MEE have come to dominate the psychology literature during the last two decades; as will be discussed in the next section.

2.3.2. Cognition-based theories

Contrary to affect-based theories of mere exposure, most of the contemporary psychology literature in this field has sought to explain the MEE as the result of a two-step cognitive process, one consequence of which is an 'illusory' affective response (Bornstein and Craver-Lemley, 2004). In general terms, Winkielman and Cacioppo (2001: 990) explain this as follows:

> "As a first step, processing manipulations lead to a change in a cognitive experience of the stimulus. As a second step, participants explain the change in the experience by relating it to evaluative or other features of the stimulus."

However, the specific nature of these steps is subject to debate, as illustrated in the following review of the main cognition-based theories of the mere exposure effect.

2.3.2.1. Two-factor theory

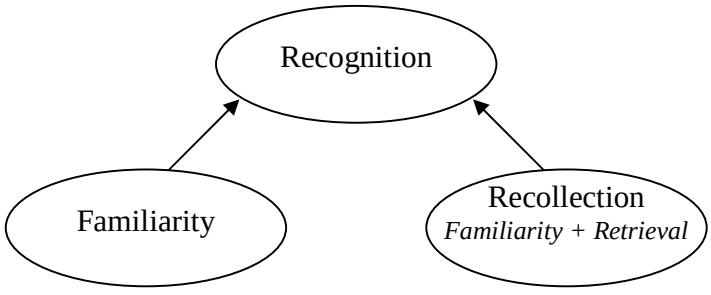
In his *two-factor theory*, Stang (1975) posits that the MEE occurs as a result of enhanced cognitive arousal during the *learning* of novel stimuli at low levels of exposure frequency. In this way, he also seeks to explain the reversal of this effect at high exposure frequencies on the basis that cognitive arousal is vastly reduced once *boredom* occurs. The first of these stages may be seen to be similar to Berlyne's (1970) arousal theory (see previous section), but Stang (1975) stresses that positive affective response is the result of heightened *cognitive* arousal rather than a reduction in physiological arousal. Bornstein and Craver-Lemley (2004) note that this proposition is supported by empirical evidence that the MEE is enhanced by relatively complex stimuli (Bornstein, 1989) and reduced by boredom and fatigue (Bornstein *et al.*, 1990).

Importantly, therefore, Stang (1975) contends that enhanced affective response is based on a conscious, subjective feeling of familiarity for stimuli that were 'new' but are now perceived as 'old.' Whilst this may be supported by emerging indications that the MEE is enhanced by the subjective experience of memory for prior exposure (Lee, 2001b; Wang and Chang, 2004), it would appear to be at odds with the influential results of Bornstein (1989), and the subsequent interpretation that the MEE is, in fact, *constrained* by stimulus recognition (see Bornstein and D'Agostino, 1992). Given the persistence of this assumption in the extant psychology literature (see Bornstein and Craver-Lemley, 2004), it may therefore be subject to the same criticism as the theories of Berlyne

(1970), Sawyer (1981) and Winkielman and Cacioppo (2001); as outlined in the previous section (page 38-39).

In defence of Stang (1975), however, and indeed all those who propose that the instigation of exposure-induced familiarity is a necessary process factor in the creation of the MEE (e.g. Berlyne, 1970; Sawyer, 1981; Winkielman and Cacioppo, 2001), prior evidence of the moderating influence of recognition may be accommodated by a more detailed consideration of this factor. In this respect, Mandler (1980) proposed that recognition can occur on the basis of either *familiarity* or a combination of this and precise retrieval that, taken together, might be termed *recollection* (see figure 2.2). On this basis, it might be contended that, whilst a sense of familiarity is conducive to the MEE (e.g. Stang, 1975), the clear, conscious experience of recollection is not (e.g. Bornstein and D'Agostino, 1992, 1994).

Figure 2.2: The two bases of recognition memory (Mandler, 1980)



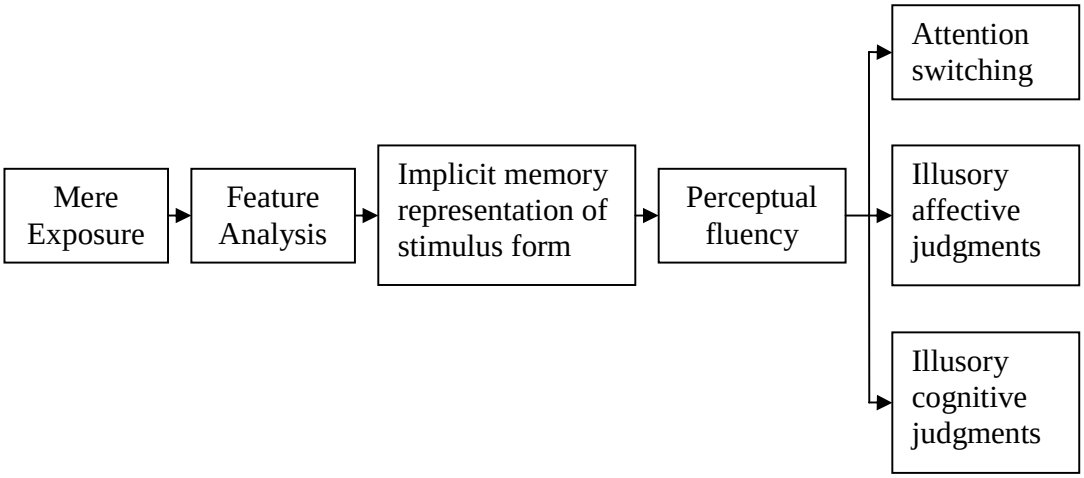
As a caveat to this, however, it should be noted that recent empirical challenges to the assumption that memory moderates the MEE, also incorporate evidence of a positive correlation between the size of this effect and the degree to which participants experience a subjective sense of confident, contextualised recollection; regardless of recognition accuracy (Lee, 2001b; Wang and Chang, 2004). In line with the earlier recommendation (on page 33) that future research should endeavour to test (rather than accept) the assumption that the MEE is hindered by recognition, therefore, the same might be proposed with regard to the moderating influence of *recollection* in particular. Nevertheless, the provision of empirical evidence for the proposition that the MEE is facilitated by familiarity in the absence of recollection, but moderated by clear, contextualised memory for prior exposure, would potentially resolve the apparent disparity between Stang's two-factor theory (1975) and the subsequent 'misattribution' theories that have risen to prominence in the contemporary literature; details of which are outlined in the following section.

2.3.2.2. Misattribution theories of the MEE: *Non-specific activation* and *Perceptual fluency/attribution*

The theories of *non-specific activation* (Mandler *et al.*, 1987) and *perceptual fluency/attribution* (Bornstein and D'Agostino, 1992, 1994) share a great deal of common ground. Both posit that the non-conscious MEE is akin to *repetition priming*; "the facilitation or bias in the processing of a stimulus as a function of a recent encounter with that stimulus" (Butler and Berry, 2004: 468). Furthermore, this is

purported to occur subconsciously on the basis of implicit memory of the prior exposures. Specifically, both theories are based on the premise that mere exposure reinforces a mental image of the stimulus features that facilitates easier processing (termed *fluency*) when it is subsequently encountered (Mandler *et al.*, 1987; Bornstein and D'Agostino, 1992, 1994). In the absence of conscious recollection, the source of this processing fluency is mistakenly attributed to the inherent characteristics of the stimulus. In research into repetition priming this has been found to include perceptions of truthfulness (Begg and Armour, 1991) and sound volume (Jacoby *et al.*, 1988). Moreover, in the context of the MEE, enhanced processing fluency has been widely misattributed to affective and, to a lesser degree, cognitive judgments (see section 2.2.1.1). This process is illustrated in figure 2.3. below:

Figure 2.3: An implicit perceptual priming model of the MEE



At this point, it is perhaps important to briefly define and discuss the nature of implicit memory to the extent that it contributes to an understanding of the MEE. A full review of the implicit memory literature is beyond the scope of this thesis (for detailed discussion of this see Bowers and Marsolek, 2003). However, a number of basic theoretical principles from this literature are central to the 'misattribution' theories of the non-conscious MEE, and are thus worthy of note here. As a starting point for this discussion, the difference in explicit and implicit memory processes is neatly summarized by Krishnan and Chakravarti (1999: 9) as follows:

> "Explicit memory processes involve conscious recollection and are seen as stemming from a declarative or episodic system. Implicit memory processes are ascribed to procedural or semantic systems (Squire & Cohen, 1984; Tulving, 1983) and can show learning facilitation or preference change without conscious awareness."

The distinction between explicit and implicit memory is supported by a large body of empirical research that has found functional dissociations in performance on different kinds of tests. Much of this work was undertaken with amnesic patients who have been found to exhibit impairment in relation to explicit memory, whilst showing no such impairment in tests of implicit memory (e.g. Moscovitch *et al.*, 1986; Squire *et al.*, 1993). Similarly, clinical research in other areas has found that, whilst explicit memory is impaired, implicit memory remains unaffected by factors such as normal ageing (Light and Singh, 1987; Parkin, 1993), mental retardation (Lorsbach and Worman, 1989, 1990), schizophrenia (Schwartz *et al.*, 1993), learning disabilities (Lorsbach *et al.*, 1992), and depression (Hertel and Hardin, 1990). In addition, and within the broader field of memory research, factors such as depth of processing (Jacoby and Dallas, 1981; Roediger *et al.*, 1992), length of retention intervals (Kolers, 1976; Tulving *et al.*, 1982)

and division of attention (Eich, 1984; Parkin and Russo, 1990) have all been found to influence explicit, but not implicit, memory. Furthermore, implicit memory is widely cited in the literature to differ from explicit memory in that it is immune to interference from additional learning, either before or following the stimulus exposure (see reviews by Roediger and McDermott, 1993; Rovee-Collier, 1997; Schacter *et al.*, 1993). In a similar vein, implicit memory has been found to be unaffected by instructions for directed forgetting, whilst explicit memory is impaired by this factor (Basden *et al.*, 1993; Paller, 1990; Russo and Andrade, 1995). Given the large body of work in this area, implicit memory is widely accepted as a robust phenomenon that is equivalent across diverse populations, including children (e.g. Landrum, 1997), university students (e.g. Graf and Mandler, 1984), amnesics (e.g. Shimamura, 1986; Squire *et al.*, 1987) and the elderly (Light and Singh, 1987). Furthermore, unlike explicit memory, it has been found to be relatively stable and persistent over time; although, as noted previously, it should be acknowledged that there is ongoing debate as to exactly how long implicit memory effects might endure (see page 34).

Whilst the existence and influence of implicit memory is not in dispute, however, the nature of the mental processes by which it occurs is subject to a great deal of debate. In this respect, the earlier definition of Krishnan and Chakravarti (1999; see page 47) is somewhat controversial as it presupposes that this phenomenon is "ascribed to procedural or semantic systems." On the one hand, this may be seen to incorporate the emerging contention that implicit memory has a conceptual dimension (see Rueckl, 2003). However, the traditional (and arguably dominant) perspective in the psychology

literature is that implicit memory does not incorporate semantic or associative processing and is, in fact, no more than a *perceptual representation system* (Schacter, 1990; Tulving and Schacter, 1990). For this reason the process illustrated in figure 2.3. (and that which may be seen to underpin the misattribution theories of mere exposure) is limited to the creation and influence of *perceptual* representations of the stimulus form. The possibility of conceptual implicit memory, however, may have important implications for the nature and scope of the MEE, particularly in a marketing context, and will thus be discussed in more detail subsequently (see section 2.4.1, page 53).

At this point, however, it is useful to maintain a focus on the two theoretical explanations of the MEE that are the subject of this section; *non-specific activation* (Mandler *et al.*, 1987) and *perceptual fluency/attribution* (Bornstein and D'Agostino, 1992, 1994). Thus far, these theories have been discussed in terms of their great similarity. Indeed, perhaps the only significant difference between them is the degree to which they explain the impact of processing fluency on subsequent affective and cognitive response. As Lee (2001a: 32) observes:

> "Comparing the nonspecific activation account and the perceptual fluency/attributional model, it is apparent that the two are very similar and may be two sides of the same coin. The consequence of activation in memory is greater accessibility and hence quicker processing (Collins & Loftus, 1975; Anderson, 1983). Greater processing speed is also implied by greater ease of processing and perceptual fluency, in fact, is often indexed by reaction time (e.g. Whittlesea. 1993). [However] the perceptual fluency/attributional model, unlike the nonspecific activation account, is more explicit about the process that leads from stimulus encounter to affective judgment."

In this respect, both Mandler *et al.* (1987) and Bornstein and D'Agostino (1992, 1994) elucidate a process whereby the fluency that is created by mere exposure is then attributed to "the most parsimonious and reasonable explanation of the experience" (Bornstein and D'Agostino, 1994: 106-107). Importantly, however, Bornstein and D'Agostino (1992, 1994) also identify a *correction mechanism* whereby the degree to which misattribution occurs is reduced by explicit memory of the stimulus exposure. This enables their theory to account for evidence that the MEE is hindered by the presence of stimulus recognition (Seamon *et al.*, 1983; Bornstein, 1989; Bornstein and D'Agostino 1992). Whilst, the validity of this assumption may be challenged on the basis of emerging empirical evidence (e.g. Lee, 2001b; Wang and Chang, 2004; as discussed in section 2.2.3.3.1, page 29), its persistence in the contemporary literature leads Butler and Berry (2004: 479) to claim that the theory of *perceptual fluency/attribution* currently, "offers the best hope of a comprehensive explanation for the mere exposure effect."

It may be interesting to note, however, that whilst the theory of *perceptual fluency/attribution* was coined by Bornstein and D'Agostino (1992, 1994), it is also apparent in the work of Jacoby *et al.* (1992: 803):

> "memory for prior experience automatically influences the processing and interpretation of later events. One ubiquitous effect of past experience is to make current processing more efficient, rapid, or fluent. Such fluent processing is then unconsciously attributed to a source, thereby giving rise to a particular subjective experience. Errors in this attribution process can result in a variety of memory-based illusions."

In support of this claim, the authors provide illustrations of such illusions in relation to noise judgments and the *false fame effect* (Jacoby *et al.* 1989); a phenomenon whereby prior exposure to non-famous names gives rise to a feeling of familiarity that, in turn, enhances the frequency with which they are mistakenly judged to be famous. In the same vein, the MEE is explained as an illusory affective response that occurs on the basis of misattributed processing fluency, in the absence of recollection for prior exposure. Importantly, however, Jacoby *et al.*, (1992) also draw attention to the possibility that processing fluency could enhance subjective judgments of familiarity in the absence of objective recognition for prior stimulus exposure; as Whittlesea (1993: 1248) explains:

> "Jacoby and his associates (e.g., Jacoby, Kelley, & Dywan, 1989) argued that feelings of familiarity are attributions of current processing fluency to some source that seems likely. That is, when the past appears to be a likely source of current ease of processing, a feeling of familiarity will emerge. When the present is regarded as a more likely source of the same fluency, a feeling of some present quality will emerge."

This has important implications for the concept and measurement of recognition in mere exposure research, and indeed for whether mere exposure is necessary at all for the creation of fluency-based effects. It is therefore discussed in more detail during the following section, alongside another potential challenge to current conceptualizations of the MEE arising from the debate over the nature of implicit memory.

2.4. Theoretical issues and challenges to the MEE

In the previous section it was acknowledged that, in the absence of a generic theory of mere exposure, two competing schools of thought have given rise to affect-based and cognition-based theories respectively. Of these, the latter – and particularly those founded on the notion of implicit memory and misattribution – have come to represent the most influential explanations of the MEE (see Bornstein and Craver-Lemley, 2004; Butler and Berry, 2004). The assumptions on which these are founded, however, are subject to challenge in three areas that, respectively, may have important implications for how the MEE is explained, the degree to which it may occur in the natural environment and, indeed, the efficacy of this phenomenon as a route to attitude change. The first relates to the impact of the conscious experience of memory for prior exposure; an issue that was discussed at length in section 2.2.3.3.1 (page 29) and referred to throughout section 2.3. The second is concerned with the question of whether implicit memory has a conceptual dimension or is entirely perceptual in nature, and the third emerges from the relatively recent conceptualisation of the *false familiarity effect* (Whittlesea, 1993); a phenomenon whereby fluency that is entirely unrelated to previous exposure exerts an influence on subsequent cognition and affect in a similar way to that proposed in theories of the MEE. Building on previous discussion with regard to the first of these three issues (see page 29), therefore, this section is designed to elucidate the potential implications of the other two for the exploration and explanation of mere exposure effects.

2.4.1. Conceptual implicit memory

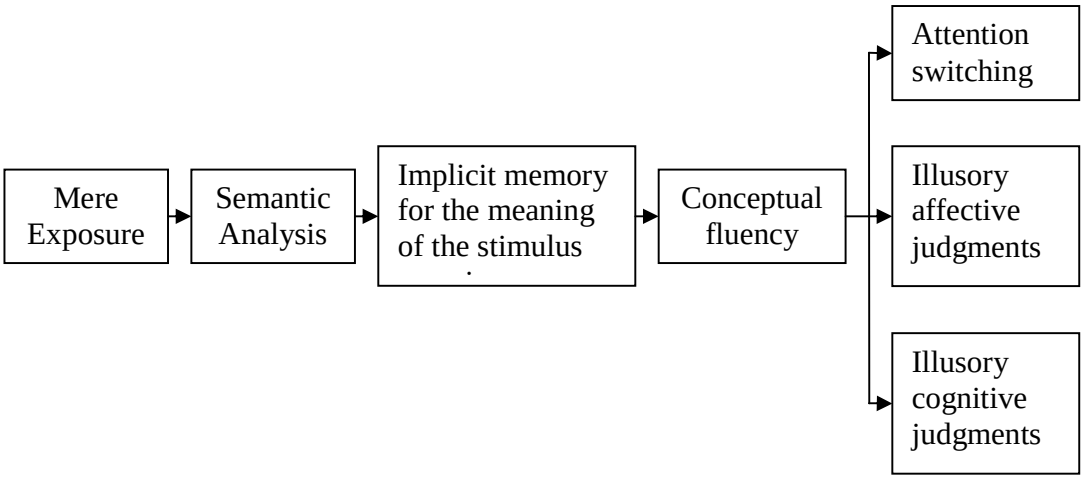
The dominant misattribution theories of mere exposure (Mandler *et al.*, 1987; Bornstein and D'Agostino, 1992, 1994) are based on the assumption that implicit memory is entirely perceptual in nature, with semantic processing occurring only on the basis of conscious, elaborative encoding and retrieval. This is well-supported in the psychology literature (Jacoby, 1983; Graf and Mandler, 1984; Schacter, 1990; Tulving and Schacter, 1990) and implies that replication of perceptual stimulus features is a necessary condition for the MEE. Whilst it remains contentious, however, there is some support for the theory that implicit memory also has a *conceptual* dimension (see Rueckl, 2003). This is based on the notion that the 'spreading activation' underpinning semantic memory for the meaning of a stimulus may occur automatically and implicitly (Neeley, 1977; Posner and Snyder, 1975; Swinney, 1979, 1982); a proposition that is supported by the finding that amnesic patients are capable of learning semantic information whilst exhibiting impaired explicit memory (e.g. Graf and Schacter, 1985). Further to this, Ferraro *et al.* (2003) argue that semantic memory is to some extent implicit in that certain relationships already exist in long-term memory as *implicit knowledge*.

In the context of the MEE, a key implication of conceptual implicit memory is that automatic semantic analysis might occur during exposure; embedding the stimulus in a pre-existing semantic network. On this basis, it may be argued that the MEE could occur on the basis of misattributed *conceptual fluency* for the stimulus meaning, even when the perceptual features of the stimulus are not replicated at test. This fluency could, for

example, be triggered by the activation (i.e. presentation) of associated cues in the semantic network or the use of an analogous cue in a different modality (e.g. the auditory presentation of a word that was previously presented visually).

The notion of conceptual implicit memory could thus have significant implications for both theories and applications of the MEE. Firstly, it would require that the influential theory of perceptual fluency/attribution (Bornstein and D'Agostino, 1992, 1994) be extended to include the possibility of an MEE that is based on automatic semantic analysis, implicit memory for the stimulus meaning and conceptual fluency at test (as illustrated in figure 2.4). Secondly, by removing the need for perceptual matching between exposure and test, implicit conceptual memory would provide a foundation for the MEE to occur across modalities in the natural environment. In the context of marketing communication, for example, visual exposure to the brand name via above-the-line advertising may not only result in perceptual fluency effects when the same stimulus is seen on, say, product packaging, but also when it is verbalised in other elements of the promotions mix (e.g. TV, radio, word-of-mouth, personal selling). Theoretically, therefore, the notion of an MEE that is not dependent on implicit perceptual processing significantly broadens the frequency with which it might be expected to influence attitudes and decision-making in the natural environment.

Figure 2.4: An implicit conceptual priming model of the MEE



Within the strict confines of the MEE paradigm, however, there remains no robust empirical evidence that this phenomenon can arise on the basis of conceptual fluency alone. This is perhaps due to the fact that such research is fraught with methodological difficulties. In perhaps the most prominent study of this nature, for example, Whittlesea (1993) utilised an exposure phase in which participants read a phrase presented on a computer screen with the final word missing, e.g. 'The waves gently rocked the . . .' The final word of the sentence was then presented immediately afterwards on a separate screen. This word was manipulated to be either congruent (e.g. boat) or incongruent (e.g. leaf) with the sentence, with congruent words preferred relatively more often. The author explains this finding with reference to enhanced conceptual fluency as a result of the predictive context of the preceding phrase, i.e. the expected nature of these words made their meaning easier to process and this enhanced fluency subsequently gave rise to positive affect. However, Lee (2001a) argues that such an interpretation is not necessarily appropriate in the context of the MEE; a phenomenon that relates

specifically to the influence of *unreinforced* repeated exposure to the target stimulus alone. Contrary to this, she argues that the predictive nature of the preceding sentence in Whittlesea's (1993) experiment could lead to a feeling of expectation that is then reinforced by congruent words, giving rise to positive affect.

Indeed, Whittlesea's (1993) study, and the subsequent criticism of Lee (2001a), highlights an important distinction between the MEE and *classical conditioning* (Pavlov, 1927); a similar phenomenon whereby affective response to a given stimulus is influenced by repeated association with other stimuli. As will be discussed in chapter 4, Baker (1999: 32) specifically compares the influence of mere exposure and classical conditioning on consumer attitudes; finding similar effects via different mechanisms, and concluding that the advantage of the MEE in marketing communication is that it is "less difficult to implement . . . but may produce an identical effect." In the context of this discussion, however, the critical distinction to note is that the MEE relates to repeated, *unreinforced* exposure to a given stimulus in isolation. By contrast, classical conditioning relates to the *reinforcement* of stimulus meaning by the context in which it is repeatedly presented. In relation to semantic memory, classical conditioning might therefore be considered to be based on the creation of associations between two or more external stimuli. Conversely, a conceptually-based MEE would relate to the embedding of the newly encountered stimulus into an existing semantic memory network. It should be stressed, however, that the concept of an MEE that is based on semantic analysis and conceptual fluency remains highly contentious. Indeed, the received wisdom in psychology continues to be underpinned by Schacter's (1996) assertion that semantic

memory is dependent on conscious elaboration and deep level processing. As such, it is perhaps prudent for marketing research (and particularly that which constitutes the empirical phase of this thesis) to be developed on the assumption that the MEE is underpinned by implicit perceptual representations of the exposed stimuli; in line with the theories of Mandler *et al.* (1987) and Bornstein and D'Agostino (1992, 1994).

2.4.2. Alternative sources of perceptual fluency and the 'false familiarity' effect

As discussed in section 2.3.2.2 (page 45), the dominant misattribution theories of mere exposure (Mandler *et al.*, 1987; Bornstein and D'Agostino, 1992, 1994) posit that the MEE essentially constitutes an illusory affective or cognitive response, arising on the basis of misattributed processing fluency in the absence of recollection for the source. Inherent in this explanation is the premise that the source of this fluency is prior exposure. This assumption, however, may be undermined by research indicating that enhanced processing fluency can occur as a result of both past exposure and the inherent characteristics of the stimulus (in the present). Furthermore, in the absence of recollection for prior exposure, this fluency might be misattributed in the same way regardless of the basis on which it occurs (Whittlesea, 1993). Empirical evidence for this is provided by Reber *et al.* (1998: 48), who manipulated processing fluency via three mechanisms; visual priming, figure-ground contrast and exposure duration. On the basis that a subsequent affect-bias was observed in each case, the authors concluded that:

> "preference for neutral stimuli can be enhanced by manipulations of fluency in the perceptual domain, independently of stimulus repetition . . . We assume that this facilitation leads to a subjective experience of processing fluency, which is then attributed to the quality of the stimulus, as proposed by the two-step account of mere-exposure effects."

Whilst the interpretation of visual priming results in this study might be questioned on the grounds that this effectively constitutes prior exposure, those relating to the other manipulations would certainly appear to provide evidence in support of the authors' conclusion (above). Furthermore, the weight of these findings is enhanced by a growing body of empirical work that specifically supports the proposition that stimulus characteristics in the present may give rise to a mistaken sense of familiarity (i.e. a misattribution to factors in the past). The *false familiarity effect* (Whittlesea, 1993) is empirically supported by research in which the ease with which stimuli are perceptually processed is manipulated to produce a false sense of familiarity in the absence of prior exposure. In this respect, successful manipulations have included the level of stimulus-masking (Whittlesea *et al.*, 1990; Lindsay and Kelley, 1996) and exposure duration at test (Whittlesea, 1993). In addition, a number of studies have demonstrated that the enhancement of conceptual fluency also results in a sense of false familiarity in the absence of prior exposure (e.g. Jacoby, 1983; Roediger *et al.*, 1989). For example, such evidence has been obtained by test manipulations of semantic context (Roediger and McDermott, 1995; Whittlesea, 1993) and by the presentation of words associated with a (non-presented) category 'prototype' (Stadler *et al.*, 1999). In this respect, prior exposure to the words 'bounce', 'rubber' and 'round', for instance, may result in a false feeling that the word 'ball' had also been presented in this list. This is referred to as the prototype-familiarity effect, it has a long history in the scientific literature (since Deese, 1959) and has been replicated on numerous occasions (see McDermott, 1996; McDermott and Roediger, 1998; McEvoy *et al.*, 1999; Whittlesea, 2002).

The *false familiarity effect* (Whittlesea, 1993) may be seen to pose an important challenge to the MEE; particularly, in relation to the fact that the influential misattribution theories of mere exposure incorporate the possibility that (in the absence of recollection) it is the suggestion, rather than the occurrence of prior exposure that leads to an illusion of familiarity (Mandler *et al.*, 1987; Bornstein and D'Agostino, 1992, 1994). As such, even under conditions of mere exposure without recollection there is no guarantee that familiarity is *caused* by this, rather than some inherent characteristic of the stimulus. As Whittlesea (1993: 1236) explains:

> "The relationship between perceptual fluency and familiarity is complicated by the fact that fluency of performance can result from, and can sensibly be attributed to, sources in either the past or the present. Just as prior experience of an object facilitates current processing, so do many factors in the present, including visual clarity, absence of distraction, and coherent organization of the stimuli . . . In consequence, use of the "fluency heuristic" can result in erroneous attributions of an influence of present factors to an influence of the past, or of past influence to present factors."

In the same way that exposure-induced processing fluency may be expected to give rise to affective and cognitive response, therefore, fluency that arises by another means might also be expected to result in the same outcome. Indeed, in addition to false familiarity, illusory affective response has been found in the absence of mere exposure. For example, both Reber *et al.* (1998) and Winkielman and Cacioppo (2001) demonstrate enhanced affective response to stimuli that were presented for longer durations at test, and thus became easier to process.

Taken together, therefore, the studies reviewed in this section indicate that both false familiarity and positive affect may be experienced as a result of processing fluency that arises from stimulus characteristics in the present, rather than exposure in the past. These are synonymous with the effects of mere exposure, and in line with the attribution elements of the theories of *non-specific activation* (Mandler *et al.*, 1987) and *perceptual fluency/attribution* (Bornstein and D'Agostino, 1992, 1994). For this reason, it might be argued that future research into the MEE should incorporate a means by which to specifically link the observed effects to the exposure phase of the study. In addition, direct comparison of the MEE and other fluency effects (e.g. the FFE; Whittlesea, 1993) may constitute an important direction for further research in this field. Indeed, this issue does not seem to have been addressed since Whittlesea's (1993) call for research to examine the relative the size and nature of the MEE and FFE. Such an undertaking may be particularly important in a marketing context to address the question of whether it is desirable, or even necessary, to use mere exposure techniques to enhance fluency effects. Should the MEE and FFE prove to be entirely equivalent, it may be more cost effective to enhance processing fluency by simply selecting brand stimuli that are inherently easier to process, either perceptually, conceptually or both.

Although a detailed exploration of the differences between the MEE and FFE is beyond the scope of this thesis, therefore, it must be acknowledged that evidence for the former may only be apparent if it can be effectively distinguished from the latter. To this end, the empirical phase of this thesis incorporates an important methodological advancement in the sense that it explicitly links observed preference bias to the exposure

phase. One of the means by which this is achieved (i.e. stimulus pretesting) was planned, whilst a second approach emerged as a result of exploratory comparison of preference rates under conditions of subliminal and supraliminal exposure. These elements of the research design will be discussed in detail during part II of the thesis, with the results of comparative analysis then presented in chapter 7 (section 7.5.1, page 338). During the final section of this chapter, however, it is perhaps useful to consider the implications of all the issues discussed above and, more broadly, the current state of psychological understanding for the exploration and application of the MEE in a marketing context.

2.5. Implications for marketing research and application

To this point, the chapter has sought to provide a critical review of the extant psychology literature. In the context of this thesis, however, it is important to bring the chapter to a close with a discussion of the specific implications of this for the exploration and application of the MEE in a marketing context. This is complicated to some extent by the emerging nature of scientific understanding with regard to the MEE; as illustrated by ongoing debates in the literature reviewed in this chapter (e.g. the influence of recognition and recollection, the durability of the effect and, in particular, the absence of a generic theory or mere exposure). However, on the basis of those aspects that would appear to be central to the exploration and explanation of the MEE in the psychology literature, it is possible to distil three *fundamental* propositions; the

testing of which might be expected to facilitate a robust examination of the existence, size, direction and nature of the MEE in a marketing context:

> P1: Mere exposure to a marketing stimulus will influence affective response to that stimulus when it is subsequently encountered (Zajonc, 1968; see pg 18)
>
> P2: The size of the marketing-based mere exposure effect will be hindered by the presence of accurate recognition memory for marketing stimulus exposure (Bornstein, 1989; Bornstein and D'Agostino, 1992; see pg. 30)
>
> P3: The size of the marketing-based mere exposure effect will be hindered by a subjective sense of confident, contextualized recollection for prior exposure to the marketing stimulus; regardless of recognition accuracy (see pg. 45)

Additionally, however, it should be noted that the marketing stimuli to which participants are exposed, and required to make judgments upon, in the empirical phase of this thesis are novel brand names (as will be explained in chapter 5, page 189). As noted previously (on page 26), such stimuli commonly take the form of either real or pseudo-words in the natural marketing environment and may thus be subject to the meta-analytic effect size differences observed by Bornstein (1989); although it should be noted that this has yet to be empirically tested in a marketing context. As such, an *additional* proposition may be deemed to be both relevant and necessary to the empirical work in this thesis:

> P4: The marketing-based mere exposure effect will be significantly larger for real-word brand names than it will for pseudo-word brand names

Importantly, in each of the above propositions 'mere exposure' is defined as *brief, repeated exposure to a stimulus in isolation*; reflecting the original definition of Zajonc (1968; see page 18) and highlighting the unreinforced nature of direct priming that distinguishes the MEE from similar phenomena (e.g. classical conditioning). Furthermore, however, it is perhaps useful to qualify the basis on which these propositions might be expected to provide a foundation for the extension of mere exposure research in the marketing domain; and in particular that which is the focus of this thesis.

Firstly, in this respect, whilst proposition 1 is supported by a great deal of evidence from abstract psychological experimentation (as discussed throughout this chapter), it is important to specifically investigate the extent to which these findings may be replicated in a marketing context. Secondly, in light of occasional evidence for a reverse MEE in adults (e.g. Crandall *et al.*, 1973; Heyduk, 1975), and in particular the fact that one such study is published in the marketing literature (Lee, 1994), it may be argued that robust testing of the *direction* of the mere exposure effect remains an important task for marketing researchers at this juncture. For this reason, proposition 1 is carefully worded to accommodate the possibility of both positive and negative affect-bias as a result of mere exposure. Thirdly, whilst the premise that the MEE is hindered by recognition memory - and in particular that which is based on confident, contextualised recollection of prior exposure - underpins the influential misattribution theories of mere exposure (Mandler *et al.*, 1987; Bornstein and D'Agistino, 1992, 1994), direct empirical findings

in this respect are relatively scarce and somewhat equivocal (see page 32). As such, it was previously noted that future mere exposure research should endeavour to test the proposition that memory moderates the MEE, rather than make assumptions in this respect. To this end, propositions 2 and 3 are designed to provide a comprehensive examination of what is arguably one of the most important, interesting and increasingly controversial aspects of the MEE.

Finally, it has been stressed that previous supporting evidence for the moderating influence of recognition memory is primarily based on the use of subliminal exposure as a means by which to eliminate subsequent conscious memory in the experimental setting (Bornstein, 1989; Seamon *et al.*, 1983; Bornstein and D'Agostino, 1992; see page 29). As such, it is as yet unclear as to whether the enhancement of the MEE in these studies is a consequence of subliminal perception or the intermediate non-conscious processes of implicit memory. Whilst this may represent an important direction for future MEE research in the psychology literature, it is of particular relevance in the context of marketing. In this domain, subliminal advertising has come to be regarded as inconsequential following the debunking of initial 'evidence' of its substantive influence (see Broyles 2006). At the same time, however, empirical support for the effects of non-conscious intermediate processing following supraliminal perception has become increasingly common in the consumer literature (see Chartrand, 2005). For example, non-conscious goal activation (Chartrand *et al.*, 2005), behavioural mimicry (Dijksterhuis *et al.*, 2005) and the marketing placebo effect (Shiv *et al.*, 2005) have all been found to influence consumer behaviour in the absence of conscious awareness (and

following supraliminal perception); as will be discussed in detail during chapter 3. In light of this, it may be argued that resolution of this issue might have significant implications for the conceptualization, application and impact of the MEE in the marketing domain. For example, evidence to support the original speculation of Bornstein (1989) that increases in the size of the MEE are due to the experience of subliminal perception (and an accompanying absence of boredom and fatigue) may be seen to provide the first, robust evidence of how subliminal advertising may have a substantive effect on audience attitudes and preferences. Given the serious ethical challenges to this form of persuasive communication, widespread public concern and opposition, and thus the reluctance of advertisers and marketers to adopt subliminal techniques, however, the most likely implication of this finding would be to marginalize the concept of mere exposure in marketing theory. By contrast, a *non-conscious* MEE would contribute to the growing literature on consumer behaviour in the absence of awareness, regardless of the nature of perception (as will be discussed in chapter 3).

As such, it may be argued that, if the MEE is to assume an influential role in marketing theory and practice, an important challenge for marketing-based mere exposure research (and thus one of the primary aims of this thesis) is to provide a demonstration – or, more accurately perhaps, an examination - of the *non-conscious* MEE in particular; i.e. that which occurs in the absence of recognition (and perhaps, more specifically, *recollection*) following supraliminal perception. Not only might this be expected to make a significant contribution to the broad theoretical understanding of the MEE (in the realms of psychology), it addresses what is arguably one of the most important factors in the extent to which this phenomenon may be deemed to be relevant, acceptable and

applicable by marketing academics and practitioners alike. Furthermore, it is directly in line with Zajonc's (1968: 1) original definition of the MEE; i.e. that which is "just accessible to the individual's perception." With this in mind, the operational definition of 'mere exposure' in the propositions above (see page 62) should perhaps be further refined as the *brief, repeated exposure of a stimulus in isolation, at a level that is just perceptible to the audience*.

2.6. Conclusion

The purpose of this chapter has been to provide a detailed review of the extant psychology literature, incorporating the large body of research that has so far sought to examine and explain the existence, size and nature of the MEE. In this respect, it is important to recognize that, whilst the existence of this phenomenon is not in dispute, a generic theory of mere exposure remains elusive. In its absence, a number of competing explanations have emerged that may be categorized on the basis that they emphasise the role of affect or cognition. Whilst the latter have come to be acknowledged as the most likely source of a unified theory of mere exposure (see Butler and Berry, 2004), the assumptions on which these accounts are founded are nonetheless subject to a number of emerging theoretical (and occasionally empirical) challenges that may have important implications for the explanation, exploration and efficacy of the MEE.

Firstly, the fact that stimulus recognition may occur on the basis of familiarity and/or recollection has potentially important implications for both theories of mere exposure and the empirical measurement of this phenomenon. Furthermore, recent indications that

recognition – and, in particular, the subjective experience of this – might be expected to enhance, rather than moderate, the MEE (Lee, 2001b, Wang and Chang, 2004; Newell and Shanks, 2007) highlight the importance of addressing, rather than accepting, the influence of memory in future mere exposure research. Secondly, the possibility that implicit memory has a semantic dimension that facilitates non-conscious conceptual fluency may not only require revision of the dominant misattribution theories of mere exposure (see page 45), but may also increase the scope by which the MEE might be expected to occur across modalities in the natural environment. However, it should be noted that, in the continued absence of widespread theoretical acceptance of conceptual implicit memory (and robust empirical evidence), it cannot yet be regarded as a strong foundation on which to explore the effects of mere exposure in an applied context (such as marketing). Finally, the emergence of the *false familiarity effect* (Whittlesea, 1993) challenges the notion that exposure is required to produce both perceptual and conceptual fluency effects; indicating instead that this may simply be the product of inherent stimulus characteristics. This work is potentially important as it suggests that, whilst mere exposure may be sufficient for creating processing fluency (and thus subsequent affective and cognitive response), it may not be necessary and, indeed, might not be the most influential factor in previous demonstrations of the MEE. In light of this, it may be argued that future empirical studies - including that which is the focus of this thesis - must seek to distinguish this phenomenon from the FFE (Whittlesea, 1993) by specifically linking the observed effects to the exposure phase of the study.

In conclusion, therefore, this chapter has sought to provide a comprehensive review of the vast and complex psychology literature that has emerged over four decades of research into the *mere exposure effect* (Zajonc, 1968); with the intention of establishing a detailed theoretical foundation on which to extend mere exposure research in the marketing domain. In this respect, it is argued that the essential characteristics of the MEE - or at least those factors that are at the heart of the various theoretical explanations of this phenomenon - may be encapsulated in three *fundamental* propositions. Alongside these, one *additional* proposition is formulated in acknowledgment of the potential for stimulus-specific differences when real-word and pseudo-word brand names are the subject of empirical research into the MEE (as they will be in this thesis). The central question for marketers is whether each of these propositions can be robustly supported in the context of marketing communication. In order to assess the extent to which this has so far been achieved, a critical review of the extant empirical research in the marketing domain will be undertaken in chapter 4. Prior to this, however, and on the basis of the discussion so far, the following chapter provides a critical review of how the MEE has been, could be, and perhaps should be conceptualised in the context of marketing theory.

Chapter 3

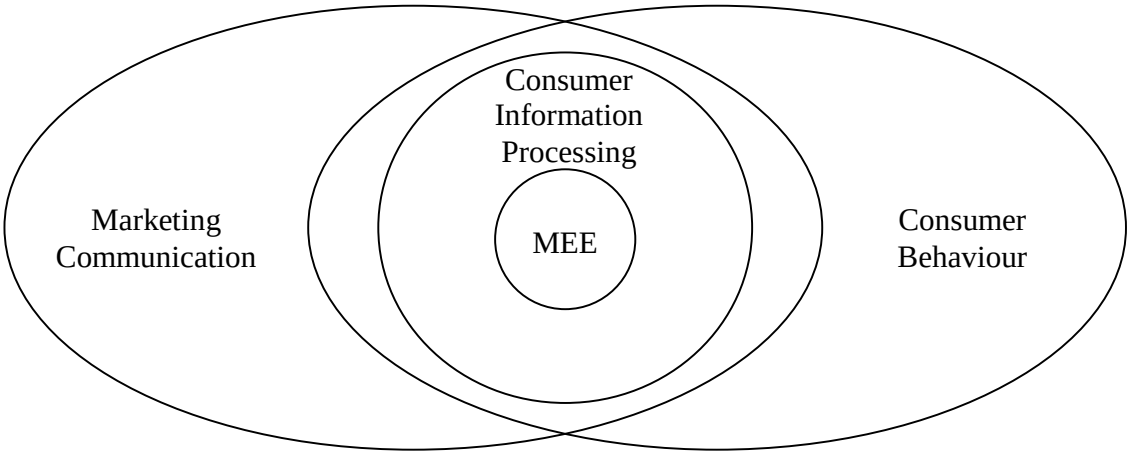
Conceptualising the MEE in Marketing Theory

3.1. Introduction

At the heart of this thesis is an exploration of how marketing communication influences attitudes at extremely low levels of attention and engagement; conditions that characterize a large proportion of the current media and consumption environment (Ha and Litman, 1997; MacInnis *et al.*, 1991; Skinner and Stephens, 2003). Traditionally, models of decision-making and advertising effects have been rooted in the notion that consumers pay attention to, and consciously process, product, brand and company information prior to making informed decisions. However, these models are likely to be of limited use in the contemporary context of minimal conscious attention, processing and mindful analysis/evaluation. By contrast, it is argued that the mere exposure effect (MEE) provides a relevant paradigm within which to understand the influence of marketing communications under such conditions (Bornstein and Craver-Lemley, 2004).

A critical review of empirical research into the marketing-based MEE will be undertaken in the following chapter. Prior to that, however, it is perhaps important to provide a detailed discussion as to the relevance and role of this phenomenon in marketing theory. In this respect, the MEE is arguably most germane to the specific field of consumer information processing; a boundary-spanning tradition of research at the interface between consumer behaviour and marketing communication (as illustrated in figure 3.1 below).

Figure 3.1.: Contextualising the MEE in the marketing domain

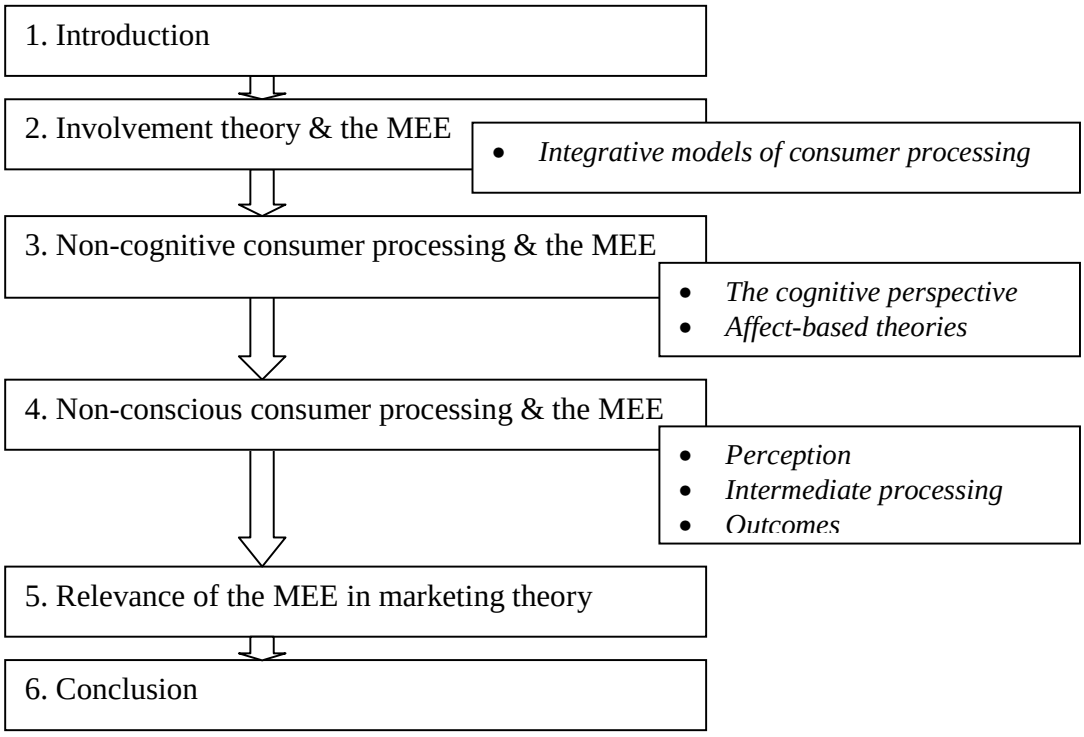


The purpose of this chapter, therefore, is to contextualise the MEE in relation to marketing theory, and specifically that pertaining to consumer information processing (CIP). The field of CIP has been of great interest to researchers seeking to understand the influence of marketing communication on consumer attitudes and behaviour; resulting in a very large, complex and multi-disciplinary body of work (for a review see Kitchen and Spickett-Jones, 2003). The discussion in this chapter is not intended to provide an exhaustive review but rather to facilitate a critical discussion of how the MEE is currently understood in this domain. In this respect, previous attempts to contextualise this phenomenon are evident in three streams of the CIP literature:

a) Involvement theory and the 'integrative models' of information processing to which this has given rise;
b) Non-cognitive consumer processing (i.e. the generation and influence of affect and emotion in consumer decision-making); and
c) Non-conscious consumer processing

In order to facilitate a critical review of the relevance of mere exposure research in CIP theory the chapter is divided into three main sections; addressing each of the above areas in turn (as illustrated in figure 3.2.). On this basis, it aims to develop a clear understanding of how the MEE has been, could be and perhaps should be conceptualised in marketing theory. In conjunction with chapter 2, this chapter is designed to provide a comprehensive theoretical foundation on which to develop a critical review of marketing-specific studies of the mere exposure effect (chapter 4), and indeed the forthcoming empirical work in this thesis. The chapter begins, therefore, with a review of the MEE in the context of involvement theory, prior to a discussion of this phenomenon with regard to affective and non-conscious consumer processing respectively.

Figure 3.2: Structure of chapter 3



3.2. Involvement theory and the MEE

Simply stated, consumer involvement can be seen as the willingness and ability to identify and process detailed, issue-relevant information in relation to a consumption decision. It is mediated by the degree of perceived risk and personal relevance inherent in the decision (Bloch, 1981; Celsi and Olsen, 1988; Germunden, 1985; Laurent and Kapferer, 1985; Zaichowsky, 1985). However, this 'entry' into the concept masks some of the different perspectives given to it in the literature. For example, in behavioural terms it has been considered in terms of information search activities (Richins *et al.*, 1992; Roselius, 1971; Stone, 1984), motivation to provide information and opinions to others (Bloch and Richins, 1983; Feich and Price, 1987; Richins and Root-Schaffer, 1988), cognition (e.g. enhanced processing of detailed information via engagement of the left cerebral hemisphere; Stone, 1984; Vaughn, 1980; 1986), and affect (Park and Young, 1983). The question as to what consumers are 'involved' with has also been approached from a number of different perspectives. For example, involvement has been defined with regard to advertisements, products and purchase decisions (Zaichowsky, 1986), and as both enduring and situational (Bloch and Richins, 1983; Houston and Rothschild, 1978; Laurent and Kapferer, 1985; Richins and Bloch, 1986).

However, perhaps the most pertinent conceptualisation in the context of this thesis is that of *audience* versus *actor* involvement, whereby "the audience is engaged in acquiring knowledge, [whilst] the actor executes performance based on already acquired knowledge" (Greenwald and Leavitt, 1984: 583). In this respect, actor involvement

relates to the extent to which consumers seek, pay attention to, and cognitively process detailed, issue-relevant information throughout the decision-making process. By contrast, *audience* involvement is specifically concerned with processing responses to marketing communications; closely reflecting the original observations of Krugman (1965: 352) that the largely passive processing of increasingly repetitive advertising had resulted in a situation whereby, "much of the impact of television is in the form of learning without involvement." Audience involvement is thus specifically defined as:

> "the allocation of attentional capacity to a message source, as needed to analyze the message at one of a series of increasingly abstract representational levels" (Greenwald and Leavitt, 1984:591).

Taken together therefore, the concepts of audience and actor involvement span the boundaries of consumer behaviour and marketing communications, encompassing the full range of information processing that occurs between advertising exposure and brand choice. In this respect, audience involvement may be seen to directly mediate advertising effects in which "the practical concern is more with the consumer's acquiring (rather than using) knowledge" (Greenwald and Leavitt, 1984: 583). By contrast, actor involvement is a critical mediator of the extent to which advertising effects subsequently influence consumer decision-making and product/brand choice.

It is in these terms, therefore, that the relevance of the MEE to the field of consumer information processing might be most clearly understood. Specifically, it may be argued that the MEE provides a paradigm for exploring, understanding and influencing the processing of marketing communications under conditions of extremely low *audience* involvement. As a result, it has implications for the design, planning and execution of

marketing communication (as will be discussed in chapter 8). However, it should be acknowledged that subsequent effects on brand choice may be magnified by situations in which consumers are unable or unwilling to consciously retrieve and utilize detailed information from explicit memory in the decision-making process, i.e. in the context of low *actor* involvement. With echoes of Stang's (1975) two-factor theory of mere exposure (see chapter 2, page 43), Janiszewski (1993: 390) explains this as follows:

> "In the event a consumer has subjective advertising information and discounts it, familiarity becomes one of the few remaining cues for decision-making. Hence, whenever consumers do not actively use recognition or frequency information to discount the influence of familiarity, familiarity is likely to exert a bias."

In summary, therefore, involvement theory may provide an important and mutually dependent context in which to understand the relevance of the MEE to consumer information processing. In the following section it will be argued that the lowest points of the involvement spectrum (as defined by Petty and Cacioppo, 1981; Greenwald and Leavitt, 1984; MacInnis and Jaworski, 1989) effectively describe the conditions under which the marketing-based MEE might be expected to occur. At the same time, mere exposure provides a paradigm within which to explore, understand and influence communication effects at the very lowest levels of involvement. This is perhaps best illustrated by a series of 'integrative models' (Petty and Cacioppo, 1983; Greeewald and Leavitt, 1984; MacInnis and Jaworski, 1989) that have sought to explain the mediating role of involvement in consumer processing and decision-making. A critical discussion of how each of these accommodates the MEE is provided in the subsection below.

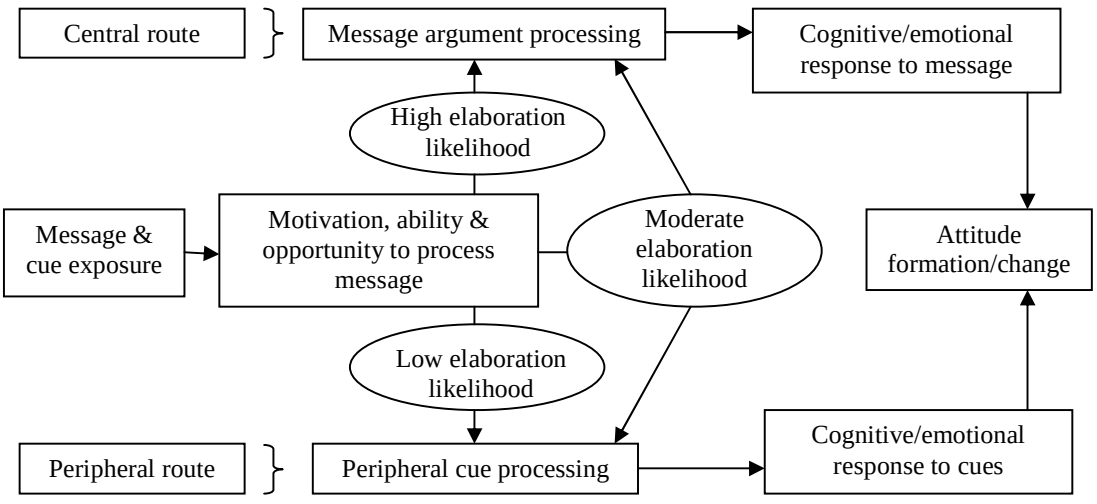
3.2.1. The MEE and integrative models of consumer involvement and processing

The earliest and, arguably, most influential theory of how involvement mediates communication effects is the Elaboration Likelihood Model (Petty and Cacioppo, 1983; see figure 3.3 below). As MacInnis and Jaworski (1989: 15) observe:

> "Petty and Cacioppo's Elaboration Likelihood Model (ELM) added considerable parsimony to attitude research by suggesting that various attitude formation processes could be classified into two general types; those that take considerable effort/cognitive resources and those that require little thinking."

Significantly, the ELM incorporates the notion that perceived risk moderates the degree of involvement and in turn the likelihood of 'elaboration'; elaboration being the degree to which consumers engage in detailed information search, purposeful processing and proactive dissemination in relation to the decision context.

Figure 3.3: Routes to attitude formation and consumer decision-making: The ELM



(Source: Shimp, 1997)

On the basis that risk/relevance moderates involvement, and that this subsequently moderates elaboration, Petty and Cacioppo (1981) identify the message forms that are likely to be effective at different levels of involvement. They argue that the effectiveness of the message form rests on two general routes to attitude change. The central route includes informational cues, the strength of arguments and the quality of evidence, and is proposed to be the route by which highly involved consumers actively move towards consumption decisions. By contrast, the peripheral route is characterized by the use of simple decision-rules, triggered by cues such as imagery, brand names and music, to move passively [and rapidly] towards a consumption decision.

The ELM has clear implications for the message forms that are likely to be effective for consumers at different levels of involvement. In this respect, highly involved consumers are seen to be receptive to rich, relevant informational cues that enable them to assess the quality and strength of the message content, develop and resolve counter-arguments, and thus reduce their level of perceived risk (Bloch *et al.*, 1986; Chaiken, 1980, 1987; Fishbein and Ajzen, 1981; Houston, 1979). In addition to habits and routines, low involvement consumers will, it is claimed, seek to utilise peripheral cues, such as music, imagery, endorser characteristics and source credibility, likability or attractiveness (Petty and Cacioppo 1979, 1981, Petty *et al.*, 1983; Yalch and Elmore-Yalch 1984; see Petty and Cacioppo 1986). The relatively low level of perceived risk that low involvement consumers experience enables them to form attitudes more quickly and effortlessly using simple heuristics (Petty *et al.*, 1983). Importantly, however, the nature of the cue itself does not necessarily determine its role in a central or peripheral route to

attitude formation (Petty *et al.*, 1983)**.** Rather, the essential factor is the extent to which the cue facilitates mindful information processing [via the central route] or simple decision shortcuts [via the peripheral route]:

> **"**The critical feature of the central route to persuasion is that an attitude change is based on a diligent consideration of information that a person feels is central to the true merits of an issue or product. This information may be conveyed visually, verbally, or in source or message characteristics.**"** (Petty *et al.*, 1983: 144)

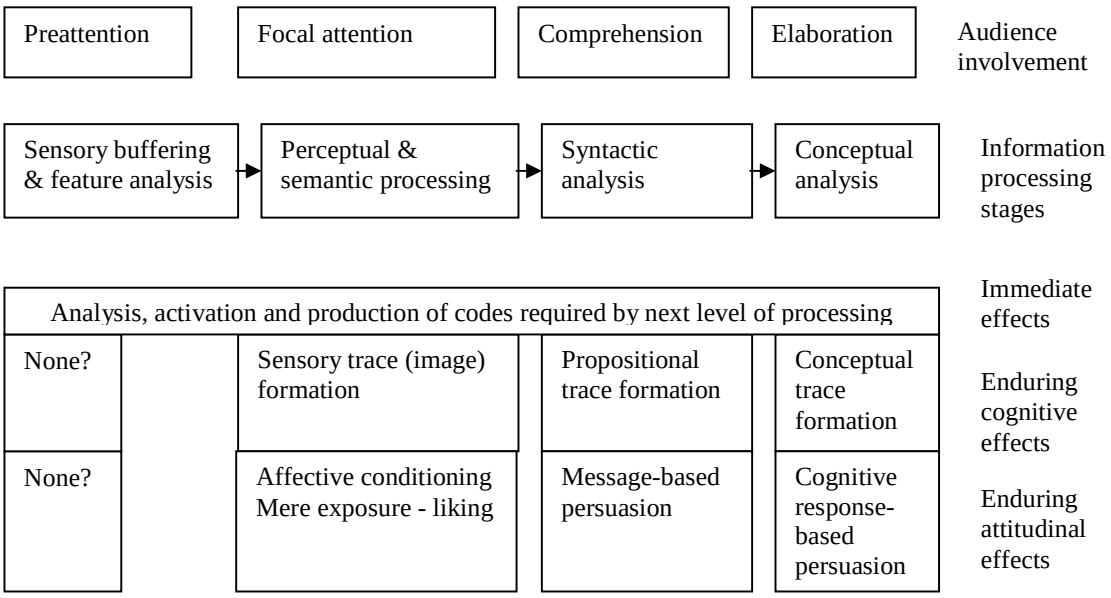
On this foundation a clear distinction has emerged between high and low involvement processing in consumer behaviour. Furse *et al.* (1984), for example, asserted that consumers only engage in systematic cognitive processing when they are highly involved; a situation that is anything but the norm according to Chaiken (1987). In situations of low involvement consumers may not elaborate on information, their needs or their purchase intentions (Belk, 1985). Nor will they engage in extensive information search and evaluation, or receive information in anything more than a passive way (Krishnan and Shapiro, 1999). Nonetheless, advertising may still influence affective response (Petty and Cacioppo, 1985) and brand attitudes (Batra and Ray, 1986; Droge, 1989) under these conditions.

However, the ELM does not explicitly recognise the potential influence of non-conscious processes in consumer information processing. Rather the concepts of low involvement and peripheral processing inherently assume a degree of conscious, attentive processing and thus a likelihood of explicit memory for the stimulus exposure. Indeed, explicit recall constitutes a dependent variable in some empirical studies of the ELM (e.g. Rao and Burnkrant, 1991). In response to this, Greenwald and Leavitt (1984;

see figure 3.4) extend the dichotomous ELM by sub-dividing the basic levels of low and high involvement to create four levels of involvement:

1. Preattention - processing limited to sensory buffering and feature analysis
2. Focal attention – during which perceptual and semantic processing may occur
3. Comprehension – incorporating syntactic analysis; and
4. Elaboration - at which point complex conceptual analysis may occur

Figure 3.4: Immediate and enduring effects associated with 4 levels of involvement



Source: Greenwald and Leavitt (1984)

As illustrated above, Greenwald and Leavitt (1984) provide a model of communication effects that draws specifically on the underlying bases of audience involvement; *attention* and *level of processing*. As the authors explain:

> "The four levels differ in the abstractness of symbolic activity used in the analysis of an incoming message. The progression from preattention (the lowest level) through elaboration (the highest) is assumed to be accompanied by the allocation of increasing [attentional] capacity, which is required for increasingly abstract analyses of incoming information." (Greenwald and Leavitt, 1984: 584)

In this respect, the focus on attention and level of processing as the defining characteristics of involvement, and in particular the acknowledgement that cognitive and attitudinal effects may occur with little or no attentive processing and elaboration, facilitates, for the first time, an explicit acknowledgement of the potential for the *mere exposure effect* (Zajonc, 1968) in advertising. In the light of the review in the previous chapter, however, Greenwald and Leavitt's (1984) categorization of the MEE as essentially the result of focal attentive processing would appear to be out of line with the influential misattribution theories of mere exposure (Mandler *et al.*, 1987; Bornstein and D'Agostino, 1992, 1994; see page 45); both of which indicate that this phenomenon is underpinned by the non-conscious processes of implicit memory. Specifically, these theories are founded on the assumption that the MEE is hindered by explicit memory for previous exposure; as evidenced by findings of a larger effect under conditions of subliminal perception (Bornstein, 1989; Bornstein and D'Agostino, 1992). Whilst it was previously acknowledged that this assumption may be subject to challenge in the light of emerging evidence to the contrary (e.g. Lee, 2001b; Wang and Chang, 2004; see page 32), it remains apparent in the contemporary mere exposure literature (see Bornstein and Craver-Lemley, 2004). From this perspective, therefore, and as the likelihood of conscious recall increases with attentional capacity (see Brown and Craik, 2000), so the size and frequency of the MEE might be expected to diminish. On this basis, the MEE

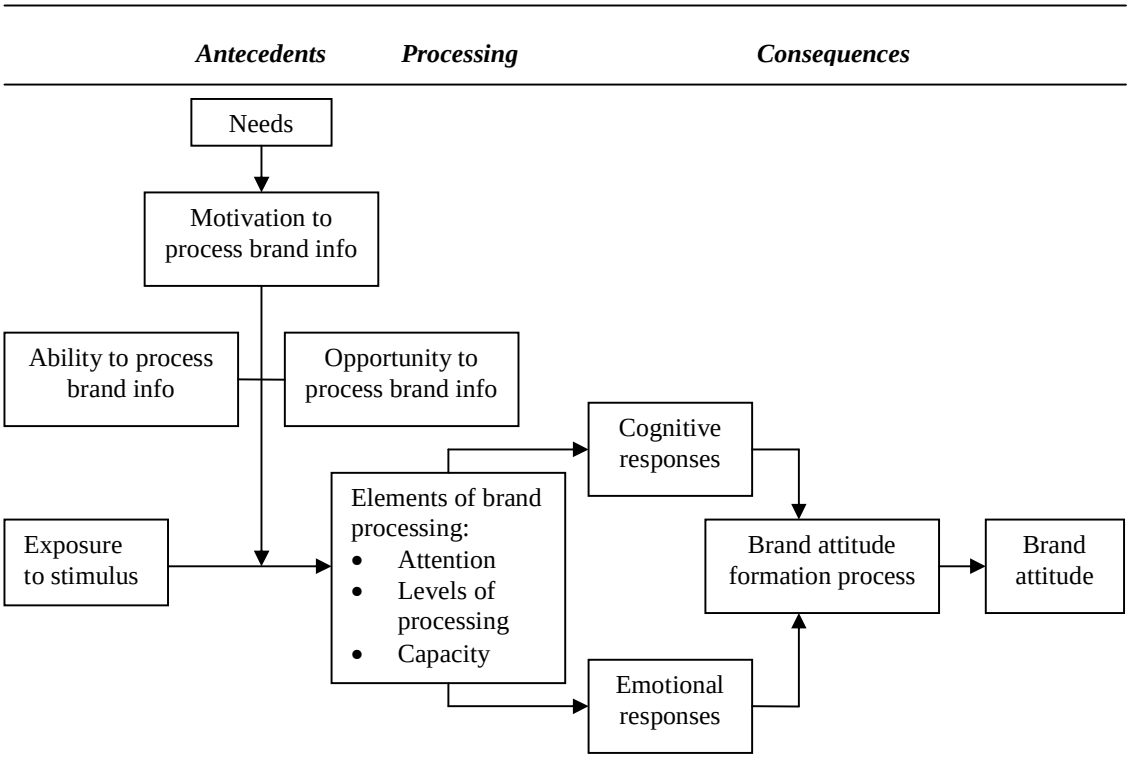
might be more accurately characterized as a function of the first (preattentive) level of processing in figure 3.4 (page 79). Indeed, it should be noted that Greenwald and Leavitt (1984: 587) originally acknowledged the possibility of this, but cited a lack of empirical evidence at the time of publication:

> "The question marks in the rows for enduring cognitive and attitudinal effects of preattention reflect a currently very active controversy as to whether any such effects exist. There continues to be no confidently established support for claims of various types of lasting effects of 'subliminal' communications."

As discussed in chapter 2 (page 21), however, a significant body of empirical research has since shed light on the non-conscious nature of the MEE. Whilst it remains unclear as to whether explicit recollection limits or magnifies the size of the effect (see chapter 2, page 29), it is not disputed that the effect is significantly larger under conditions of subliminal perception (see Bornstein, 1989; Bornstein and Craver-Lemley, 2004). As such, it is perhaps fair to assume that the concerns of Greenwald and Leavitt (1984) have now been allayed, and the MEE may also be categorized as a function of preattentive processes in the context of their model.

Since the work of Greenwald and Leavitt (1984), however, theories of involvement-based advertising effects have largely ignored the mere exposure phenomenon, taking a similar view of low involvement processing to that evident in the ELM (e.g. MacKenzie and Lutz, 1989; Heath, 2004). To a degree, however, an exception may be observed in the work of MacInnis and Jaworski (1989), in which the authors seek to further refine the models of Petty and Cacioppo (1983) and Greenwald and Leavitt (1984) into an integrative framework of information processing (see figure 3.5).

Figure 3.5: An Integrated Model of Information Processing from Advertisements



(Source: MacInnis and Jaworski, 1989)

One of the key aspects of the above model is that it incorporates six levels of processing, reflecting increasing degrees of attention, motivation and feature/semantic analysis. The first of these is particularly relevant in the context of the MEE as it relates to affective response at minimal levels of attention, and in the absence of evaluative processing and semantic analysis. As the authors explain:

> "At low levels of brand processing, the consumer may be aware only of features associated with salient ad cues. Because processing of brand information is negligible, cognitive responses should be unrelated to the message. Though little attention is focused on the ad, emotional responses to attended features are possible even with this processing operation." (MacInnis & Jaworski, 1989: 8)

Figure 3.6: The six levels of consumer processing (MacInnis and Jaworski, 1989)

Antecedents	***Processing***			
Motivation to process	**Attention**	**Capacity**	**Level of processing**	**Representative operations**
Very low	Secondary task only	Very low	1	Feature analysis
Low	Divided	Low	2	Basic categorization
Low -moderate	Ad only	Low -moderate	3	Meaning analysis
Moderate	Ad only	Moderate	4	Information integration
High	Ad only	High	5	Role-taking
Highest	Ad only	Highest	6	Constructive processes

(Source: Extracted from MacInnis & Jaworski, 1989; Table 1)

With regard to figure 3.6, therefore, it would appear that both the first and second levels of processing could potentially provide a context for the MEE; although MacInnis and Jaworski (1989) make no explicit reference to this in their discussion. Indeed, their explanation of the proposed effects at these levels of processing is to some degree at odds with that of the MEE. In what is perhaps the most influential theory of mere exposure, for example, Bornstein and D'Agostino (1992, 1994) argue that feature analysis (be it preattentive or otherwise) results in perceptual fluency that, in the absence of recollection for the exposure, is then misattributed to affective response (see chapter 2, page 45). By contrast, MacInnis and Jaworski (1989: 8-9) propose that the valenced nature of the exposure context will determine the nature of subsequent attitudes to the stimulus; an explanation that is couched in terms synonymous, not with the MEE, but with the similar phenomenon of *classical conditioning* (an important distinction that was discussed in chapter 2, page 56):

> "Brand and ad attitudes are likely to reflect only the halo effect or mood created by emotional and evaluative reactions to the attended features and exposure context (Isen *et al.* 1982). Hence, consumers asked to indicate ad and brand attitudes when the exposure context is negatively

> (positively) valenced are likely to generate negative (positive) brand and ad attitudes."

Similarly, whilst the second level of processing may appear to provide a context for the MEE on the basis of *conceptual implicit memory* (a controversial construct discussed in chapter 2, page 53), the authors' commentary does not necessarily imply this. Although MacInnis and Jaworski (1989) briefly list the MEE as one of the ways in which affective response to the stimulus may have become positively valenced, second-level processing in this model is explained only in terms of activating, not creating, these associations. The MEE, it would appear, is not explicitly considered within the parameters of this model.

Finally, it is perhaps worthy of note that preattentive audience involvement (Greenwald and Leavitt, 1984; MacInnis and Jaworski, 1989) would appear to provide a foundation for the recently proposed 'low involvement processing theory' of Heath (2001: 31):

> "Unlike high involvement processing which is activated by volition, low involvement processing happens automatically, whether we like it or not. This is important because, in a situation where consumers regard brand information as being superfluous to their needs, the tendency is going to be for them to pay very little attention: the value of low involvement processing is that even in a low attention model, brand learning is still processed."

Given this, Heath (2004) suggests that the solution to a lack of attention to marketing communication is to create executions with strong emotive associations that can be processed incidentally and do not require significant levels of attention to be effective. In this respect, he observes that certain types of advertising can create emotional brand associations at very low levels of attention, which are enduring, influential in decision-

making and not available to subsequent explicit recall. Although not overtly acknowledged, the notion that implicit memory underpins advertising effects following low attention exposure, would appear to reflect a domain-specific conceptualisation of the non-conscious MEE.

In summary, therefore, and with regard to the literature reviewed in this section, it may be argued that the role and influence of the MEE in advertising effects should be conceptualised with regard to the very lowest (preattentive) levels of audience involvement (Greewald and Leavitt, 1984; MacInnis and Jaworski 1989; Heath, 2004). In this respect, the MEE provides a conceptual framework within which to explore, understand and influence consumer response to marketing communication in the absence of significant attention, involvement and elaboration; conditions that characterize a large swathe of the contemporary marketing and media environment (Ha and Litman, 1997; MacInnis, *et al.*, 1991; Skinner and Stephens, 2003). In this context, the idea that consumers receive and process information passively has become an important stream of research at what might be considered the 'hyper-low-involvement' end of the spectrum. For example, research into the passive processing of advertising has led to claims that consumers are influenced by information even though they pay no focal attention to it, and may have no conscious recollection of the exposure (e.g. Olshavsky and Granbois, 1979, Heath, 2004, Janiszewski, 1993). Indeed, it is within this context that the broad concepts of *non-cognitive* and *non-conscious* consumer decision-making have been most extensively developed; both of which provide a further

dimension to the conceptualisation of the MEE in marketing theory, and are thus discussed in detail during the remainder of this chapter.

3.3. Non-cognitive consumer processing and the MEE

MacInnis and Jaworski (1989: 1) observe that, "since the 1950s researchers have been developing theories to describe, understand and predict consumers' responses to advertising." These responses may be broadly characterised as *cognitive*, *affective*, and *behavioural* (see Vakratsas and Ambler, 1999; Kitchen and Spickett-Jones, 2003), and together they contribute to the formation of attitudes. The nature and interdependence of these concepts is neatly summarised by Petty *et al*. (1988: 357):

> "We use *affect* as a superordinate construct to encompass emotions and relatively transient moods and feelings. Attitudes, on the other hand, refer to global and enduring evaluations of attitude objects. A person's general evaluations or attitudes can be based on a variety of behavioral, affective, and cognitive experiences, and are capable of guiding behavioral, affective, and cognitive responses."

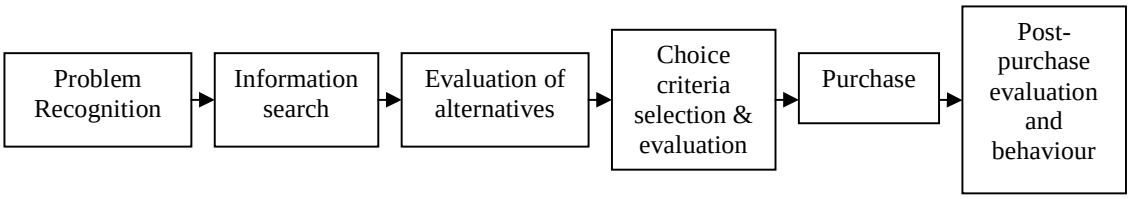
However, the relative influence of cognition (C), affect (A) and behaviour (B) on consumer attitudes and decision-making, and in particular the order in which they occur, has been the subject of some debate in the contemporary consumer processing literature. As a basis on which to explore this issue, it is perhaps useful to acknowledge that traditional theories of consumer decision-making are characterised by two overarching perspectives; cognitivism and behaviourism. A full review of the literature in this respect is beyond the scope of this thesis, but it is important to note that within both paradigms affective response has historically been either ignored or considered to be a

function of cognition and behaviour respectively. This is explained in the following subsection, prior to a discussion of affect-based theories of consumer processing and their relevance to the marketing-based MEE (in section 3.3.2, page 93).

3.3.1. Cognitivism, behaviourism and the subjugation of affective consumer processing

Within the realms of consumer behaviour, the cognitivist perspective places great emphasis on the primary role of attention and cognition, stressing that learning and decision-making involves complex mental processing to arrive consciously and logically at an optimum decision. It is reflected in 'stepwise' models that suggest consumers move sequentially through a series of rational processes, en route to making a reasoned choice (e.g. Howard and Sheth, 1969; Bettman, 1979). Such theories have traditionally dominated the consumer behaviour literature; the most influential perhaps being that of Engel, Blackwell and Miniard (1986), as illustrated in figure 3.7. In line with all of the stepwise models of consumer decision-making, this effectively assumes a cognition-behaviour (C-B) hierarchy, with hardly any role at all for affective response.

Figure 3.7: Simplified version of Consumer Decision-Making Model (Engel, Blackwell and Miniard, 1986)



Schiffman and Kanuk (1991) note that a highly rational, stepwise progression towards utility-maximising decisions has historically pervaded not only the consumer decision-making literature but also that of innovation decisions (knowledge-persuasion-decision-confirmation), innovation adoption (awareness-interest-evaluation-trial-adoption) and promotion (attention-interest-desire-action); the last of which is particularly pertinent to this thesis. In this respect, and in keeping with the literature on consumer decision-making, traditional theories are based on the assumption that advertising works rationally by changing the way in which consumers think about the product, brand or company (cognition). In this respect, it is broadly seen to induce a 'hierarchy of effects'; as Vaktratsas and Ambler (1999: 32) explain:

> "Persuasive models introduced the concept of a hierarchy of effects, that is, an order in which things happen, with the implication that the earlier effects, being necessary preconditions, are more important."

The hierarchy of stages that consumers supposedly move through in their response to advertising was originally classified as *attention, interest, desire* and *action* (Strong, 1925); a movement from cognition to affect to behaviour (C-A-B). The inclusion in this of what might be considered an emotional response (i.e. 'desire') is interesting, given

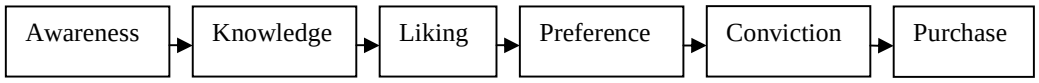
the almost total domination of cognition in ensuing models of consumer processing (e.g Engel, Blackwell and Miniard, 1986; illustrated in figure 3.7). Indeed, in a subsequent explanation of Strong's (1925) hierarchy, Frey (1947) largely ignores this element. In his description, once attention and interest have been secured the next step is to present the appeal "in such a way that, once read, it will lead to consumer acceptance, and better still, consumer-preference or consumer-demand for the merchandise"; a wholly cognitive perspective on *desire.* Furthermore, affective response is either ignored (e.g. Colley, 1961) or afforded a secondary role to that of cognition (e.g. Lavidge and Steiner, 1961) in subsequent hierarchies of effect; as illustrated in figure 3.8, below.

Figure 3.8: Hierarchical models of advertising effects

a) Strong (1925)

b) Defining Advertising Goals and Measuring Advertising Results (Colley, 1961)

c) Lavidge and Steiner (1961)



Source: East (2003)

Indeed, the role of advertising has traditionally been conceptualized as providing information and logical reasons to buy for consumers whose rationality dominates the decision-making process. As Kitchen (2001: 268) observes:

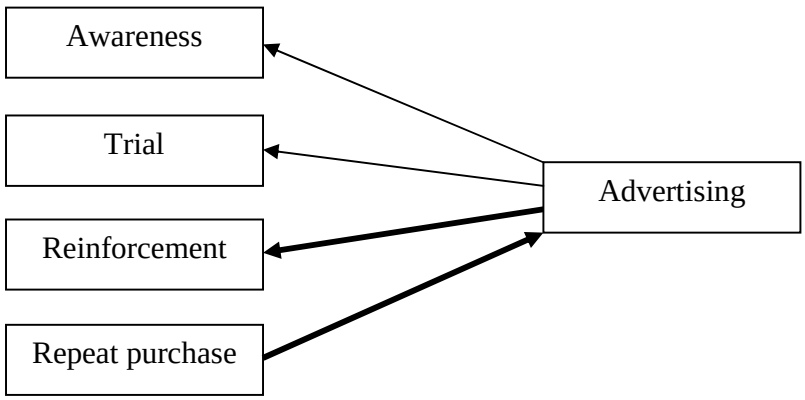
> "The working definition of advertising takes it as read that the purpose of communicating to target audiences is to persuade them to revise negative opinions, renew positive beliefs and ultimately act accordingly."

This observation is couched in terms relating to cognitive aspects of consumer decision-making and their direct influence on behaviour (C-B); a perspective that has been common in the advertising literature since Colley (1961: 21) described the role of advertising as, "purely and simply to communicate to a defined audience, information and a frame-of-mind that stimulates action." In this respect, therefore, the role of advertising is to inform, remind, and persuade consumers by way of considered thought.

However, the primacy of cognition has traditionally been challenged by *behaviourist* theories of consumer decision-making and advertising effects. At its radical extreme, behaviourism rejects the notion of 'autonomous' man that is central to the cognitive perspective. The idea that behaviour is the result of complex and conscious thought processes, perceptions, attitudes, feelings and states of mind is regarded as a fiction, replaced by the notion that man is an elaborate machine that merely responds to environmental stimuli (Skinner, 1948). The exact nature of this machine has been the subject of much debate, with definitions ranging from the suitably dry 'device for converting incoming messages into outgoing messages' (Weiner, 1964) to the wonderfully termed 'Environmentally Modifiable Physico-Chemical Regulatory Device' (Reiner, 1968). However, Markin and Narayana (1976: 223) suggest that the

term machine is somewhat misleading, implying that man "rusts, clanks, whirs and goes chug-chug . . . [or] he is a large, warm, soft computer." What it does mean, they clarify, is that human behaviour is lawful, limited, and predictable within general principles that apply to all individuals. The key assertion, therefore, is that behaviour is not determined from within but from without, and is primarily shaped by repeated association (Pavlov, 1927) or the positive reinforcement of previous behaviour (Skinner, 1953). With this in mind, Ehrenberg (1974) argues that advertising essentially works by influencing each phase of the awareness-trial-reinforcement process that characterizes the behaviourist perspective of consumer behaviour (see figure 3.9). Importantly, however, he claims that the strongest effects will be observed when advertising works to confirm existing purchase patterns (see the heavy arrows in figure 3.9). Thus, whilst this philosophy incorporates the possibility of a behaviour-affect-cognition (B-A-C) hierarchy, (alongside those of B-C-A, B-C and B-A), affective response is once again considered to play a secondary role (at best) in the formation of attitudes.

Figure 3.9: Awareness-Trial-Reinforcement model of ad effects (Ehrenberg, 1974)



Source: East (2003)

It should be stressed, however, that the behaviourist perspective has been subject to significant criticism from its inception, inspired perhaps by the somewhat disturbing notion of man as nothing more than a reactive and predictable machine. Indeed, Hood (2009: 99) observes that the tone was set for the rejection of behaviourism in an early review of Skinner's work by Noam Chomsky:

> "Using language development as his test case, Chomsky launched an attack on behaviorism. He pointed out that no association theory of learning could explain how every human child acquires language for the simple reason that the rules that generate and control language are invisible to every natural speaker. . . [so] how can we possible teach our children by way of reinforcement and punishment?"

Since the work of Pavlov (1927) and Skinner (1948, 1953), however, the behaviourist paradigm has nonetheless played host to significant theoretical and empirical developments in the fields of consumer behavior, non-conscious consumer processing and behavioural economics. Furthermore, and particularly in relation to advertising, the validity of the cognitivist perspective has also endured continuing criticism from a range of perspectives; primarily as a result of the continued absence of unequivocal empirical evidence for a hierarchy of effects (Vakratsas and Ambler, 1999). As Weilbacher (2001: 20) observes:

> "The most that can be said about the hierarchy-of-advertising-effects model . . . is that it has been in the marketing/advertising atmosphere for over 100 years, expressed in one context or another, as an intuitive, non-validated explanation of how advertising works"

Similarly, the twin pillars of rational and reasoned choice on which traditional hierarchical models of consumer decision-making rest have been strongly challenged on

the basis that they do not account for the myriad cognitive limitations of individual consumers. This is illustrated in a detailed and comprehensive critique by Zey (1992: 19), in which the author concludes:

> "Humans cannot maximise because they are not totally rational and because they cannot fully implement the rational process. They cannot obtain complete information even before making important decisions, all possible alternatives are not known [and] outcomes attached to each alternative are not obvious."

However, perhaps the strongest challenge to the cognitivist perspective has come from theories that assert the primacy, and even independence, of affective consumer processing in the formation of attitudes and behaviour. Not only do these theories accommodate the notion of advertising effects by way of mere exposure, they have their very roots in one the main theoretical explanations of this phenomenon; the *primacy of affect* theory (Zajonc, 1980; see chapter 2, page 40). The emergence of affect-based theories of consumer processing thus provides an important context for the conceptualisation of the MEE in marketing theory; as will be discussed below.

3.3.2. Affect-based theories of consumer processing and the MEE

As noted in the previous section, traditional stepwise models of consumer decision-making imply a highly cognitive approach to information search, evaluation, attitude formation, choice and post-purchase evaluation; assuming a cognition-affect–behaviour (C-A-B) hierarchy. However, it is claimed that these frameworks have rarely managed to explain more than 20% of variance in consumer attitudes and behaviour (Obermiller

and Atwood, 1990). One of the earliest papers to explicitly acknowledge the need to address this, and to do so by introducing an emphasis on *affect*, was that of Markin and Narayana (1976: 227):

> "It is rather well known but only begrudgingly acknowledged in the formal literature on consumer behaviour that most decisions are made on the basis of limited cognitive activity involving selective cues, and that these cues are more in the psychological realms of the affective-emotional amygdala than in the cognitive realm of the cerebral cortex. Thus a more relevant model of the consumer would be one possessed of more realistic attributes; attributes which acknowledge the frailty of the human condition. This model would admit to the affective-emotional nature of the consumer."

In support of this, Zajonc (1980) contends that affect is not a product of cognition and that this can occur in the absence of cognitive processing. Although robust empirical evidence for this hypothesis is relatively scarce (Vanhuele, 1994), it may be supported by more recent neuroscientific indications that cognition and affect are the product of separable neural substrates (Elliott and Dolan, 1998; LeDoux, 1995). Further to the independence of cognition and affect, however, Zajonc also contends that if cognition has any role to play in decision-making it is secondary to that of affect (Zajonc and Markus, 1982). The *primacy of affect* theory (Zajonc, 1980, 2000) thus incorporates the notion of both an A-C-B and A-B hierarchy of consumer processing. Furthermore, Zajonc and Markus (1982) argue that the role of cognition in consumer decision-making has been greatly exaggerated because people believe that they should act rationally, and therefore report rational judgments that in fact they do not use; a proposition that is strongly supported in the subsequent literature (e.g. Hirschmann and Holbrook, 1982; Klayman and Ha, 1987; Kunda, 1990) and effectively constitutes an A-B-C hierarchy of consumer response. Zajonc (1980) claims that the *primacy of affect* is particularly

evident under conditions of holistic choice, whereby consumers are unable or unwilling to separate out individual attributes but instead form an overall impression. Furthermore, he argues that emotional judgments are instantaneous, "inescapable" and linked to deep-seated subjective feelings. As such, decision-processes that are driven by affect are unlikely to incorporate high levels of conscious engagement and cognition in relation to marketing communications. On this basis, the *primacy of affect* theory (Zajonc, 1980) has been proposed as a specific explanation of the MEE (as discussed in chapter 2, page 40-41).

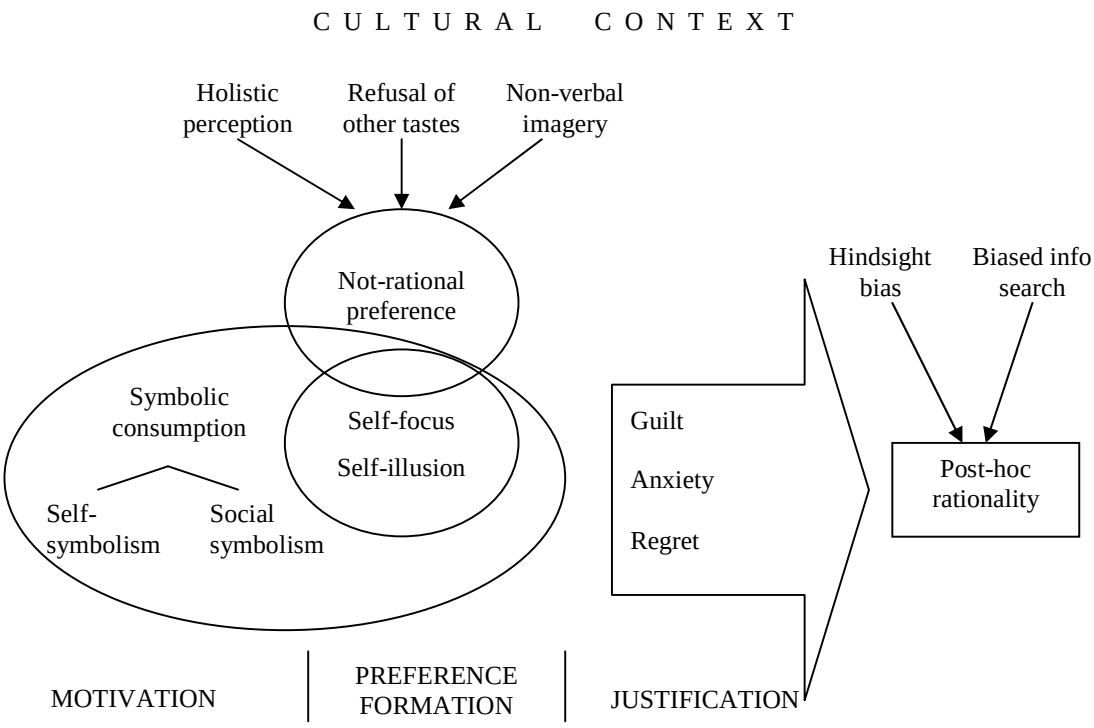
In line with Zajonc's theory, Mittal (1988) proposes an 'affective choice mode' in relation to symbolic and expressive consumption in particular, whereby choice is affect-driven, holistic and based on subjective feelings that cannot be verbalised. Indeed, the specific field of symbolic consumption has long been linked with emotion in the construction of self-image, on the basis that symbolic interpretation is essentially non-rational, unconscious, and thus beyond cognition and verbalisation (Sperber, 1990). More recently, however, the over-riding power of emotion has been elucidated in a much broader sense. For example, Rook (1987) presents evidence for the 'hedonic experiential' perspective of consumer behaviour (Holbrook and Hirschman, 1982), finding that consumption is often referred to in a purely emotional way with phrases such as 'thrilling' and 'wild'. This notion is extended by Arnould *et al.* (1999) into the concept of 'extraordinary experience', which they claim describes consumption that is intensely enjoyable, hedonistic and emotional. However, the work of Campbell (1987) suggests that there is nothing extraordinary about the concept of 'extraordinary

experience', and in fact *most* consumption is undertaken in a self-constructed reality of self-illusory hedonism. On the basis of this growing body of evidence, therefore, Elliot (1998) proposes an all encompassing 'Model of Emotion-Driven Choice' (figure 3.10), in which non-rational preferences are formed holistically and much faster than cognition-based judgments. Whilst he observes that this may be followed by post-hoc rationalisation he stresses that:

> "Once the non-rational preference is formed it tends to drive out further rational evaluation as the emotional responses overwhelm objective evidence and dominate consumer behaviour." (Elliot, 1998: 104)

Moreover, Elliot (1998) suggests that affective decision-making is actually far more efficient and effective than cognition-based hierarchical modes. In support of this, he cites the evidence of Taylor and Brown (1988) that thinking about the reasons for preferences may lead to less satisfactory choices. Indeed, Franzen and Bouwman (2001: 33) observe that emotional response appears to be the dominant factor in all human decision-making, concluding that "where emotion and reason conflict, emotion wins."

Figure 3.10: A Model of Emotion-Driven Choice (Elliot, 1998)



Source: Elliott (1998: 101)

The increasing importance of affect in theories of consumer decision-making is mirrored in those relating to advertising effects. As previously noted, the literature in this field has also been traditionally dominated by cognition-based hierarchies. As Vakratsas and Ambler (1999: 28) observe:

> "The main stream of advertising research began with AIDA. Originally a model of personal selling, it was adapted only later for advertising (Strong 1925, p. 76). From this emerged the class of persuasive hierarchy models summarized by Kotler (1997, p. 611) as Response Hierarchy Models: AIDA, hierarchy-of-effects (Lavidge and Steiner 1961), and innovation-adoption (Rogers 1962). All these models follow the cognitive stage - affective stage - behavior sequence"

Indeed, even explanations for the effects of advertising at low levels of attention and involvement (i.e. the lowest levels of processing in the integrative models discussed in

section 3.2.1) have traditionally been sought within the cognitivist paradigm. For example, Davis *et al.* (1991) suggest that consumers utilise cues such as production values and the implied advertising expenditure as signals of quality. In line with consumer decision-making theory, however, the contemporary advertising literature has also begun to incorporate the notion that behavioural response may be driven primarily (and perhaps entirely) by affect and emotion. As Ambler *et al.* (2000: 18) observe:

> "Many practitioners . . . have long believed that advertising effects were driven by how well ads triggered emotional (affective) responses. They doubt the relevance of neat academic step-by-step models."

Indeed, Broadbent (2000) suggests that all of the logical, rational, cognitive scales for measuring advertising effects are in fact irrelevant and that perhaps "it's the halo that counts." In particular, the author suggests that affective response may be all-important in brand communication and consumer decision-making, and that, "perhaps this is where the elusive brand equity is hiding – not so much in a bundle of reportable memories, associations and experience, as in a warm glow in the pit of the stomach, or wherever the amygdala shows its presence and its power" (Broadbent, 2000: 27). In line with this, Kitchen (2001) proposes that, when the goal is related to long-term brand building rather than stimulating direct action, affective response should be the key objective. Furthermore, Heath (2004) observes that even when advertisements do not provide any detailed information, they still appear to make a significant impact on affect and behaviour. Indeed, the author claims that nearly all of the most successful advertising campaigns are underpinned by a strong emotional element.

It is within this context, therefore, that the MEE may be conceptualized as a means by which to study, influence and explain the influence of advertising on affective response under conditions of low attention, engagement and involvement. Specifically, it may be argued that the rise to prominence of affect-driven theories of consumer processing is closely linked to the emergence of the MEE. Indeed, the impetus for Zajonc's (1980) *primacy of affect* hypothesis was to develop a theoretical explanation for the MEE that he himself had defined in 1968. To this day, the extent to which the MEE represents a cognitive or affective phenomenon constitutes a major point of difference between competing theoretical explanations (as discussed in section 2.3, page 36). It is perhaps unsurprising, therefore, that the MEE has been categorised as a *non-cognitive* (i.e. affect-based) theory of advertising effects (Vaktratsas and Ambler, 1999).

As discussed in chapter 2 (section 2.3.2), however, Zajonc's (1980) proposition that the MEE effectively constitutes an A-B hierarchy of response has been strongly challenged by a series of influential theories that are based on the premise that, whilst mere exposure may give rise to the subjective experience of affect (e.g. liking, preference), the implicit processes by which this occurs are entirely cognitive. Specifically, it is argued that feature analysis during exposure enhances implicit memory and perceptual fluency for the stimulus when it is subsequently encountered. In the absence of explicit memory for the source, this fluency is then misattributed to affect (Bornstein and D'Agostino, 1992, 1994) or indeed other plausible cognitive evaluations (e.g. brightness, Mandler *et al.*, 1987). As such, whilst the MEE may be subjectively experienced as affect (A) followed by behaviour (B), it actually reflects a C-A-B

hierarchy of response, in which the initial cognition (C) is entirely subconscious. The distinction between *cognition* and *consciousness* is therefore critical to an accurate conceptualisation of the MEE in marketing theory. In particular, it is important to recognise that cognition can involve implicit processing, and that this may subsequently give rise to an 'illusion' of affect (see Bornstein and Craver-Lemley, 2004). Indeed, given the dominance of cognition-based theories of mere exposure in recent years (Butler and Berry, 2004), it is perhaps prudent for marketing researchers to conceptualise the MEE as a *non-conscious* rather than non-cognitive theory of marketing communication; a perspective that is discussed in more detail below.

3.4. Non-conscious consumer processing and the MEE

As illustrated by the discussion in previous sections, consumer decisions and advertising effects have traditionally been assumed to be the product of *conscious* consumer processing; albeit often under conditions of low involvement and largely affective in nature. Following evidence that consumer processing and decision-making can occur in the absence of cognition, however, contemporary research also indicates that consciousness may not be a necessary condition for this either (Dijksterhuis *et al.*, 2005; Whittlesea and Wright, 1997). Indeed, Dijksterhuis *et al.* (2005: 200) argue that conscious information processing can only account for a minority of the choices people make:

> "In our view, [non-conscious consumer processing effects] may well be very common in real life. Only a limited number of choices are based on conscious information processing strategies. The rest of the variance left to

> explain is caused by unconscious effects of all kinds of subtle cues in the environment."

However, the recency with which this has been acknowledged in the marketing domain is stressed by Bargh (2002: 280), who argues that, "consumer research has largely missed out on [scientific findings that suggest] much of social judgment and behaviour occur without conscious awareness or intent." Importantly, Bargh (2002) observes that non-conscious motivations and behaviours go beyond mere hedonic impulses and physiological addictions, and that when traditional cognitive models of behaviour are taken out of laboratory settings, the role of deliberate conscious choice is minimal. This leads the author to recommend two key areas for the "next wave of consumer research":

1. The assessment of how much of a role non-conscious influences play in real life decisions and behaviour that are of consequence to the individual; and
2. Assessment of the extent to which people are aware of, and in control of, the influences and reasons for their purchasing and consumption behaviour.

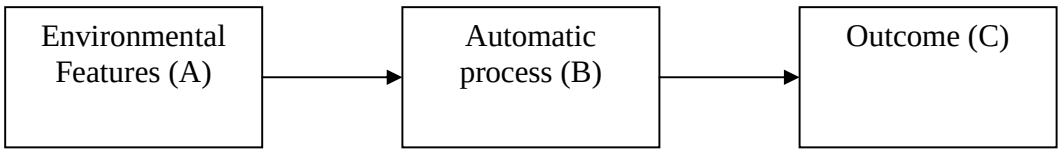
In line with this, Fitzsimons *et al.* (2002: 276) draw heavily on the scientific literature referred to by Bargh (2002) to conclude that:

> "Evidence continues to accumulate regarding stimulus *(sic)* that are not consciously perceived by the consumer, non-conscious downstream effects of a consciously perceived stimuli *(sic)* or thought process, and decision processes that occur entirely outside of awareness. Each of these non-conscious components of consumer choice has important implications for researchers studying consumer decision making, particularly because consumer choice contexts exhibit many of the conditions that lead to automatic processing."

Given the various types of non-conscious processing highlighted by Fitzsimons *et al.* (2002), however, Chartrand (2005) argues that it is first necessary to define exactly which aspects of the decision-making process consumers are unaware of. To this end, Chartrand (2005: 203) extends the simple conscious versus unconscious dichotomy to specify three aspects of the decision in which consumers may lack awareness (see figure 3.11):

> "In general, environmental features activate an automatic process, which in turn leads to an outcome**.** Environmental features (A) can include social situations, the presence of other people, events, objects, places, and so on. Automatic processes (B) can include attitude activation, automatic evaluation and emotion, non-conscious behavioral mimicry, automatic trait and stereotype activation, and non-conscious goal pursuit, just to name a few . . . Outcomes (C) can include behavior, motivation, judgments, decisions, and emotions."

Figure 3.11: The three elements of non-conscious consumer processing



Source: Chartrand (2005)

With reference to the model above, Chartrand (2005) proposes that non-conscious decision-making occurs when consumers lack awareness during one or more of these three stages, and stresses the implications of this for both marketing theory and consumer protection. Firstly in this respect, Chartrand (2005: 209) contends that recognition of exactly which elements of decision-making occur outside of conscious awareness is critical to the development of "a more comprehensive model of non-

conscious processes in consumer behavior." Secondly, and in line with Bargh (2002), the author argues that consumers must understand the specific nature of non-conscious influence on their behaviour if they wish to counteract this. For example, consumers may need to identify and avoid certain environmental triggers (A), alter implicit semantic associations (B) and/or recognize behaviours that give rise to negative consequences (C).

Whilst Chartrand's (2005) model extends beyond the influence of marketing communication on consumer processing and behaviour (the focus of this thesis), it nonetheless provides a useful and important framework for understanding the variety of non-conscious processing effects in this specific context. It is within this structure, therefore, that the various strands of the extant marketing literature will be drawn together. To this end, the following subsection is concerned with the influence of subconsciously perceived marketing stimuli in the environment (A); a phenomenon that is encapsulated in the somewhat controversial concept of *subliminal advertising*. Two further subsections are then dedicated to a discussion of non-conscious intermediate processing effects (B) and non-conscious outcomes (C) in a marketing context. The section then concludes with a synthesis of the implications of this literature stream for conceptualisation of the MEE in marketing theory.

3.4.1. Non-conscious perception of marketing communications: Subliminal advertising

Subliminal advertising refers to marketing communication that is presented below the threshold of conscious perception. It is often related to words, symbols and pictures that are embedded in another medium (e.g. a picture, tv programme or advertisement), and is hypothesized to exert a subconscious influence on consumer attitudes and behaviour. Although widely accepted in the domain of psychology for some time previously, the 'commercialization' of subliminal perception (Broyles, 2006) occurred with the publication of a study by James M Vicary in *The Hidden Persuaders* (Packard, 1957). Vicary claimed to have increased the sales of popcorn and cola in a New Jersey cinema by projecting subliminal instructions to consume these products onto the screen. Despite the fact that he subsequently admitted the 'experiment' was a hoax and that the results were invented, the notion of subliminal advertising continues to prick the public consciousness and remains a source of fear and fascination (see Nelson, 2008).

Empirical evidence for subliminal advertising effects is, however, equivocal at best (see Trappey, 2006). In support of this phenomenon, subliminal embeds have been shown to enhance hunger (e.g. the word "beef"), thirst (e.g. the word "Coke") and sexual arousal (for a review, see Broyles, 2006). More recently, enhanced physiological states (e.g. thirst) have been found to provide the necessary conditions for the subliminal manipulation of product consumption and evaluation (Strahan *et al.*, 2002; Berridge and Winkielman, 2003). Such findings support the claim that subliminal advertising may have some merit in

producing specific effects in the early phases of consumer decision-making (Cuperfain and Clarke, 1985; Theus,1994; Dijksterhuis *et al.* 2005).

The somewhat limited supporting evidence, however, should be considered alongside continuous and consistent failures to demonstrate subliminal advertising effects (e.g. Champion and Turner, 1959, Kelly, 1979, Gable *et al.*, 1987, Rosen and Singh, 1992). Furthermore, both experimental and applied replication of these effects has proven to be almost impossible (see Broyles, 2006). However, skepticism surrounding the use of subliminal advertising is primarily fuelled, not by doubts over the *existence* of its influence, but by the notion that this is simply a weak analogue of that created via supraliminal perception (Theus, 1994; Trappey, 1996). The effects are so small, it is argued, that they are far outweighed by others in the consumption environment (see Broyles, 2006). Such claims lend contemporary support to the conclusion of Moore (1982) that subliminal advertising is, "an epiphenomenon, not worthy of any marketing application."

In light of such criticism, and despite continuing popular misconception, the influence of subliminal advertising has been largely discounted by academics, advertisers and regulators alike (see Broyles 2006; Nelson, 2008). That is not to say, however, that the potential for this has been entirely rejected; particularly in relation to the early (attitudinal) phases of consumer decision-making and certain persuasive contexts. For example, Theus (1994) suggests that subliminal priming of positive self-image could

enhance the effectiveness of public service advertising, e.g. to reduce tobacco, alcohol or drug abuse.

Whilst it remains difficult to make the case for a direct link between subliminal perception and consumer behaviour, however, a much stronger argument has been made for other forms of non-conscious advertising effects; phenomena that do not relate to subliminal perception but a lack of conscious awareness of the *processing* that occurs between exposure and outcome (see Chartrand, 2005; Dijksterhuis *et al.*, 2005). Indeed, it should be stressed that, whilst the fleeting reference to Vicary's hoax stole the headlines, the concept of *subliminal advertising* is little more than a footnote in *The Hidden Persuaders* (Packard, 1957). Rather, the focus of Packard's text is the effect of non-conscious processing that occurs following *supraliminal* exposure to advertising stimuli. In this respect, he argued that advertising could influence perceptions, attitudes, emotions and impulses without consumers' conscious awareness of the extent or nature of this influence. Such effects have since been the subject of a rich vein of motivation research in both psychology and marketing over the last 40 years, during which time they have been demonstrated to be robust, replicable and of potentially great significance to marketers, advertisers and consumers. The application and implications of this research in a marketing context are thus reviewed in the following section.

3.4.2. Non-Conscious Intermediate Processing

The degree of public concern regarding subliminal advertising would appear to be inconsistent with the scarce and highly questionable evidence for its effects on attitudes and behaviour. However, the realm of non-conscious consumer processing effects goes far beyond the mere perception of marketing stimuli. Indeed, with reference to figure 3.11 (page 102), Chartrand (2005: 204) argues that non-conscious processing studies, "are almost always ones in which the mediator between the environment and the outcome—the automatic process (B)—occurs outside of the individual's conscious awareness." Such a scenario is particularly pertinent in the domain of consumer behaviour, as Chartrand (2005: 204) explains:

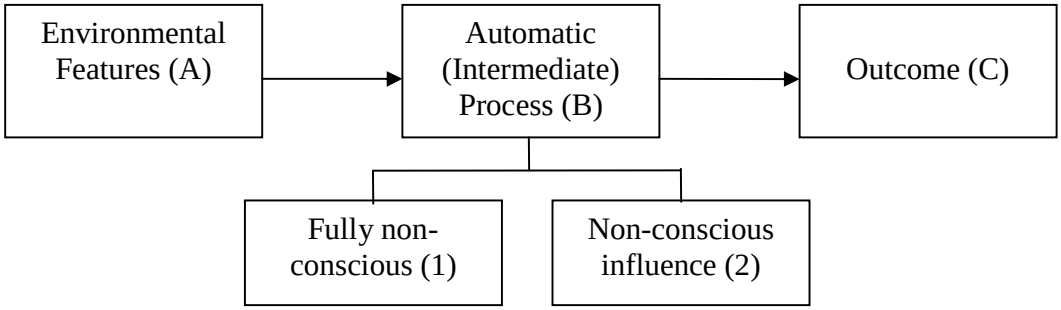
> "One of the most frequent scenarios in consumer settings is one in which the consumer is aware of the environmental trigger and the outcome, but not the automatic process. For instance, the consumer is aware of shopping with her friend (A), and aware of purchasing the $100 blouse (C), but not aware of the automatic intervening process that led to that decision (B)."

Indeed, Dijksterhuis *et al.* (2005: 194), argue that consumers "often react rather 'mindlessly' to stimuli that trigger certain automated responses"; regardless of the subliminal versus supraliminal nature of perception. The authors refer to such decisions as 'introspectively blank', arguing that the "the amount of [conscious] information processing going on [is] minimal or virtually nonexistent" (Dijksterhuis *et al.*, 2005: 194). However, in the same way that Chartrand (2005) highlights three potential elements of non-conscious consumer behaviour (see figure 3.11, page 102), and as alluded to by Bornstein and Craver-Lemley (2004; see chapter 2, page 22), it may be argued that *intermediate processing* (B) is itself characterized by two dimensions:

1. Activation and experience of the mental construct; and
2. Influence of the activated mental construct on attitudinal and behavioural outcomes

Consumers may lack conscious awareness in both of these elements, or simply the latter; giving rise to the possibility of two different types of non-conscious intermediate processing effect (see figure 3.12).

Figure 3.12: Adaptation of Chartrand's (2005) model to illustrate two types of non-conscious intermediate processing effect



Within the marketing literature, an example of a *fully non-conscious* intermediate processing effect (1) is evident in the work of Chartrand *et al.* (2008). In this study, the authors demonstrate the non-conscious activation and influence of consumer goals (image versus value-based) on brand choice. Chartrand (2005: 207) draws attention to the wider implications of these findings in a marketing context, as follows:

> "Consumers are primed in naturalistic settings by any number of things; a brand-image goal could be made more accessible by the presence of a wealthy friend, or a value goal could be activated by a sale sign in a store."

However, it is important to recognise that psychological evidence for fully non-conscious intermediate processing is not restricted to the priming of a motivational state (i.e. a goal) For example, Dijksterhuis *et al.* (2005: 194) elucidate the entirely non-conscious process of behavioural mimicry; a phenomenon they refer to as the *low road to imitation*, and explain as follows:

> ". . . mere perception of the social environment leads people to engage in corresponding behaviour (see Dijksterhuis & Bargh, 2001; Wheeler & Petty, 2001). This research implies that our behavior is often highly imitative and thus that behavior is contagious . . . we often simply do what we see."

In social psychology, this type of non-conscious mirroring has been causally linked to enhanced liking and rapport between people (see Chartrand and Bargh, 1999); a phenomenon that has been successfully demonstrated in the consumer environment by positively (and negatively) manipulating the average tip received by waitresses who imitated (and did not imitate) the verbal orders of their customers (van Baaren *et al.*, 2003). Furthermore, Tanner *et al*. (2008) have subsequently demonstrated that mimicry of consumer behaviour not only enhances liking for people, but also for the products with which they are associated. Moreover, this latter effect is magnified when consumers are mimicked by people who actively endorse the product (e.g. sales people), rather than those who appear to be neutral and unaffected by its success. Importantly, however, participants did not report any enhanced liking for the 'sales person' in this second scenario; leading the authors to conclude that the liking previously generated towards the (neutral) mimicker was unconsciously transferred to the product when that person was perceived to be actively engaged in selling. This misattribution explanation

of non-conscious processing to affect is particularly interesting in the context of this thesis as it exhibits parallels with theoretical accounts of the MEE (see section 2.3.2.2, page 45). Furthermore, it is also proffered by Chartrand (2005) as a means to account for the influence of behavioural mimicry on consumption patterns and behaviour (Johnston, 2002), and subsequent preferences for the products consumed (Ferraro *et al.*, 2005). In the first of these studies, participants were found to mirror the volume of ice cream consumed by the researcher. In the second, mimicry was found to extend to the pattern of consumption (between two types of cracker) and also to enhance preference for whichever product was consumed the most. Importantly, Chartrand (2005: 205) highlights the fact participants in this second study did not demonstrate an awareness of their behavioural mimicry and instead "attributed their preferences to preexisting evaluations or attributes or both of the [product]."

In addition to physical mirroring, however, Dijksterhuis *et al.* (2005: 195) observe that non-conscious mimicry can also occur in relation to the stereotypes and traits that are automatically activated during exposure to others; a phenomenon they term the *high road to imitation*. An interesting implication of this for consumer behavior is that, whilst non-conscious priming may occur via exposure to a broad range of stimuli, the attitudes, traits, goals and behaviours of other people may serve as a particularly powerful influence in this respect. For example, with reference to the results of Bargh *et al.* (1996), Dijksterhuis *et al.* (2005) suggest that social stimuli (i.e. young people) might have a similar influence to music (Milliman, 1982) and colour (Bellizi and Hite, 1992) on the time that consumers spend in a shopping or service environment.

As illustrated in figure 3.12 (page 108), however, a total lack of subjective awareness is not necessary for the occurrence of non-conscious intermediate processing effects. Indeed, these may arise solely on the basis that consumers are unaware of the *influence* that a subjectively experienced construct has on their subsequent behavior; a phenomenon that is referred to in figure 3.12 as a *non-conscious influence effect* (2). This is evident, for example, in the marketing placebo effect (Shiv *et al.*, 2005) whereby the perceived quality, and even physiological efficacy, of a product can be influenced by the 'framing' effects of non-product factors (e.g. price). However, Chartrand (2005) draws attention to the fact that, even when consumers are consciously aware of having perceived an environmental stimulus, and of the mental processing that takes place as a result, the outcomes of this may yet remain outside the realms of consciousness. This third and final strand of the non-conscious consumer processing literature is explained briefly in the next section.

3.4.3. Non-conscious outcomes: attitudes, decisions and behaviour

In the context of consumer behaviour, and particularly that relating to choice, non-conscious experience of the outcome of information processing is rare; as Chartrand (2005: 204) acknowledges:

> "In the consumer domain, where the outcome is often a choice between product options, the decision maker is most often aware of the outcome - that is, of what he or she chose."

Nonetheless, it is possible to conceive of various outcomes of which consumers may be unaware. In this respect, whilst consumers may be conscious of the behaviour they are engaging in as a result of non-conscious processing, they may not be entirely aware of the nature, frequency or extent of this. For example, Chartrand (2005) points to the fact that diners in a restaurant may be unaware that they eat more food, more quickly when listening to fast, as opposed to slow, music. Additionally, post-hoc rationalization of previous decisions may be a non-conscious outcome of an activated motivational state (e.g. ego-protection) and could give rise to other non-conscious outcomes, such as overestimation of prior knowledge (Hawkins and Hastie 1990). However, perhaps the most established non-conscious outcomes of previous consumer processing relate to the nature and extent of *conscious* processing that is afforded to new information. For example, *selective attention* occurs when consumers seek out and pay more attention to information that closely reflects their current beliefs, stereotypes and interests, or fulfils an activated goal (e.g. reassurance during periods of post-purchase cognitive dissonance). Similarly, *selective distortion* refers to the tendency to interpret new information in ways that assimilate it with currently held norms, beliefs and stereotypes. Crucially, however, consumers are not consciously aware that they are engaging in these behaviours (see Fitzsimons *et al.*, 2002).

In the context of the MEE, however, the conscious (albeit illusory) experience of affective, cognitive and behavioural outcomes is not in dispute. Rather, the key question in the context of figure 3.12 (page 108) is the extent to which the non-conscious nature of the MEE is related to subliminal perception (A) or automatic intermediate processing

(B). The key aspects of this debate and its implications for marketing theory and practice are therefore discussed in the following section.

3.4.4. The MEE in the context of non-conscious consumer processing theory

As noted in chapter 2 (page 21), the MEE is currently conceptualized as a non-conscious phenomenon; largely on the basis that it is presumed to be hindered by the presence of conscious memory for prior exposure (e.g. Bornstein and D'Agostino, 1992, 1994), but also in the sense that (even when they remember it) participants are unaware of the extent to which exposure alone influences their attitudes and behavior (see Bornstein and Craver-Lemley, 2004). By way of explanation, the most influential theories of mere exposure posit that this occurs as a result of the non-conscious misattribution of implicit processing fluency to affective and cognitive response (see chapter 2, page 45). In the context of Chartrand's (2005) model, therefore, it may be argued that the marketing-based MEE is most accurately conceptualized as a product of non-conscious intermediate processing; alongside phenomena such as *behavioural mimicry* (Dijksterhuis *et al.,* 2005) and the *marketing placebo effect* (Shiv *et al.,* 2005). More specifically, whilst the fact that it remains apparent in the presence of stimulus recognition (albeit to a lesser degree perhaps) might limit the extent to which it can be regarded as a *fully non-conscious processing effect*, it should at least be considered to be a *non-conscious influence effect* (see figure 3.12, page 108). In support of this, Fitzsimons *et al.* (2002: 274) make clear reference to the MEE in their observation that it, "seems safe to argue that people are not consciously aware of the influence that mere

perceptual fluency and the misattribution of familiarity can have on their attitudes, confidence, perceptions of truth, and forecasts."

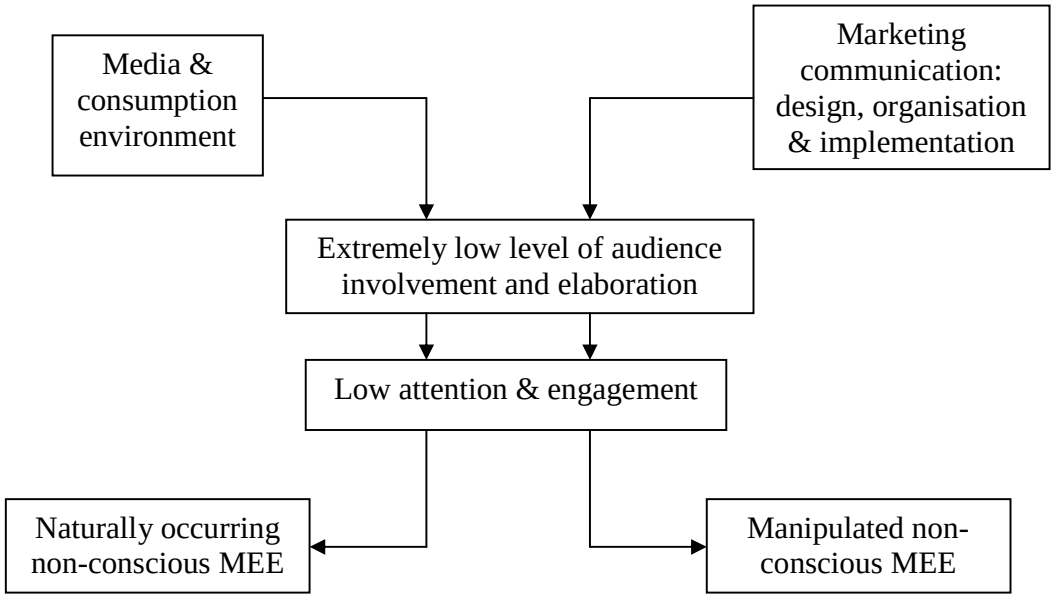
However, whilst subliminal perception is not considered to be a necessary condition for the non-conscious creation of the MEE in the dominant misattribution theories (see chapter 2, page 45) it has traditionally been employed as a means of demonstrating the non-conscious nature of the MEE in the psychology literature (see chapter 2, page 21). As such, it is not yet possible to discount the proposition that the marketing-based MEE is primarily enhanced by subliminal perception (Bornstein, 1989); and is therefore most closely associated with the controversial concept of *subliminal advertising*. Given that the former is considered to be a valuable and important stream of research in the contemporary consumer processing literature (see Fitzsimons *et al.*, 2002; Chartrand, 2005; Dijksterhuis *et al.*, 2005), whilst the latter remains subject to a somewhat paradoxical mixture of skepticism (over its efficacy) and ethical concerns (over its manipulative power), this represents an important distinction in marketing theory. On the one hand, a subliminal MEE may be seen to provide the first, robust evidence of how subliminal exposure to advertising may have a substantive effect on the attitudes of consumers. By contrast, a non-conscious MEE would contribute to the growing literature on consumer behaviour in the absence of awareness, regardless of the nature of perception. As such, an important challenge for marketing-based MEE research at this point (and thus one of the main objectives of this thesis) is to test the proposition that, under conditions of supraliminal perception, the MEE is enhanced by the absence of memory for prior stimulus exposure.

Whichever non-conscious mechanism is responsible for the MEE, however, the importance of this, and indeed all of the non-conscious phenomena reviewed in this chapter, has become increasingly recognised in the marketing literature (see Fitzsimons *et al.*, 2002; Chartrand, 2005; Dijksterhuis *et al.*, 2005). These phenomena have significant implications for the exploration, explanation, application and control of marketing communication and its impact on consumer attitudes and behaviour. The current thesis, therefore, may be seen to contribute directly to a body of consumer research that appears to be fulfilling the prediction of Duplessis (1997, in Broadbent, 2000: 27) that in future, "we will not be delving for the sub-conscious after establishing the rational, but we will recognise the sub-conscious before we delve into the rational."

3.5. Summarising the theoretical basis for the MEE in a marketing context

During the course of this chapter, the relevance of the MEE has been discussed in relation to three streams of the information processing literature; involvement theory, non-cognitive and non-conscious consumer processing. At this point, therefore, it is perhaps useful to draw together the key themes of the discussion in this chapter, and to summarise the basis on which the MEE might be expected to occur in a marketing context. To this end, a simple model is proposed in figure 3.13 and discussed in more detail below.

Figure 3.13: The creation and influence of the MEE in a marketing context



At the heart of the above model is the notion that an extremely low level of audience involvement provides the primary context in which the marketing-based MEE might be expected to occur (Greenwald and Leavitt, 1984). This is apparent whenever consumers lack the motivation, ability and/or opportunity to elaborate on marketing communication (MacInnis and Jaworski, 1989), and is reflected in little or no conscious attention to marketing stimuli (Greenwald and Leavitt, 1984; MacInnish and Jaworski, 1989; Heath, 2004). Such conditions are common in a contemporary media and consumption environment that is characterised by the proliferation of brands, messages and media. In this context, increasingly time-poor consumers are bombarded by thousands of marketing messages in a cluttered media environment (Skinner and Stephens, 2003). The volume and diversity of brands, media and messages means consumers are unable and unwilling to identify, obtain, and evaluate all of the information necessary to take

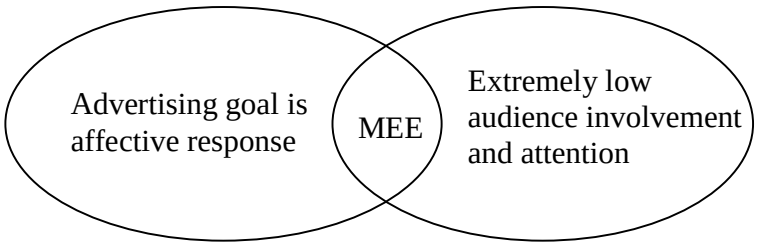
reasoned action (Shapiro *et al.*; 1997). Furthermore, as brands are largely expected to match each other's functional performance the details of advertising are often avoided, ignored or preconsciously 'screened-out' as unimportant (Heath, 2004). In this sense, therefore, it might be argued that the non-conscious MEE is a naturally occurring phenomenon in the contemporary consumption environment.

However, it should be noted that the design and execution of advertising may also constrain consumers' ability and opportunity to elaborate, and thus the level of audience involvement. For example, Edell and Staelin (1983) found that, in the absence of verbal explanation, the ambiguous nature of isolated pictures may restrict processing ability. Similarly, and in same way that advertising clutter might divide attention between messages, the amount and congruency of information within an advertisement might result in divided attention between each aspect of this, (e.g. attractive endorsers may restrict message processing; Chaiken and Eagly, 1983). Also, restricting the duration for which the message is available for processing may also be expected to reduce the opportunity for elaboration and thus the level of audience involvement (Moore *et al.*, 1986). As such, the MEE should also be regarded as a phenomenon that might be manipulated by marketers to enhance affective response to products, brands and advertisements.

Whilst the MEE should not necessarily be considered to be a non-cognitive phenomenon, the most pertinent outcome of this in a marketing context is the misattribution of processing fluency to positive affective response. As such, it is likely

to be most relevant to advertising effects in situations where the goal is simply to generate positive affect towards the brand rather then convey detailed information and understanding (Vakratsas and Ambler, 1999). Thus, it is perhaps fair to conclude that the MEE is most relevant to marketing when the goal of advertising is to elicit generally positive affective response at extremely low levels of audience involvement, and in the absence of significant focal attention (see figure 3.14).

Figure 3.14: Basic conditions for maximising the influence of consumer-based MEE



However, it is important to acknowledge three potentially important mediators of the extent to which the mere exposure effect of advertising (i.e. the enhancement of positive affective response) might subsequently be expected to influence consumer choice:

- Low versus high levels of actor involvement
- Propensity for brand-switching
- Absence of experience with the target brand and/or the product category.

With regard to the first of these, and as discussed in section 3.2 (page 73), the influence of enhanced affective response on subsequent brand choice has been widely presumed to

be facilitated by a low level of actor involvement at the point of decision-making (e.g. Chung and Szymanski, 1997; Baker, 1999; Fang *et al.*, 2007). Given that consumer choices in fmcg categories are often made under such conditions (Hawkins and Hoch, 1992), therefore, the MEE may be particularly, and indeed increasingly, relevant in the contemporary consumption environment. Moreover, it may be argued that a correlation between low actor involvement and the influence of exposure-induced affect implies that the MEE may be particularly influential in the early stages of decision-making. In this respect, Cai *et al.* (2004) contend that involvement increases as consumers move from developing awareness sets of the alternatives, to consideration sets and, finally, purchase decisions. In line with this, however, it may be hypothesised that the influence of the MEE on decision-making will *decrease* as the consumer moves closer to the actual purchase decision. Indeed, whilst it is beyond the scope of the empirical work in this thesis, this may constitute an interesting and useful direction for future mere exposure research in this domain (as will be discussed in chapter 9).

Secondly, and in the continued absence of empirical research into this issue, it is perhaps prudent to assume that the marketing-based MEE will only influence consumer behaviour in the absence of well-established routines, habits or strongly held beliefs with regard to target and competitor brands. In this sense, it may be fair to presume that the relatively moderate size of the experimental effect (see chapter 2, page 23) indicates that its impact on behaviour may be nullified by the forces of brand inertia. A propensity for brand-switching within groups of consumers or product categories may therefore constitute a second mediating factor in the degree to which exposure-induced affect

influences behaviour. However, it should be noted that the degree to which the marketing-based MEE may alter previously ingrained attitudes towards well-known brands is yet to be adequately tested in the marketing literature.

Finally, Vakratsas and Ambler (1999) contend that, alongside cognition and affect, *experience* constitutes a third mediating factor between advertising exposure and choice behaviour. The main implication of this for the MEE is that experience with target or competitor brands may create strongly held beliefs and attitudes that reduce, or even eliminate, the impact of mere exposure on choice behaviour. In contrast, however, it may be argued that *negative* experiences with a product may enhance the motivation for brand-switching in that category, and thus the degree to which the MEE influences choice behaviour. However, in the current absence of empirical evidence for either of these hypotheses, it is perhaps prudent to assume that exposure-induced affect is more likely to lead to behavioural effects in the absence of extensive experience with the target brand, and ideally the product category in general.

3.6. Conclusion

In conclusion, therefore, the development of research into advertising effects has, to a large extent, mirrored that of consumer decision-making. In particular, the drive to develop a more detailed understanding of consumer response to advertising has led researchers in both traditions to question the relationships between cognition, affect and

behaviour in the creation of communication effects. Most notably in this respect, the emphasis placed on cognitive response by traditional hierarchical models has been challenged by the emergence of affect-driven theories of consumer response and decision-making. In line with these, an emerging body of contemporary research argues that affective response to advertising is the key to influencing subsequent behaviour, and should thus be the main objective of advertisers. This is particularly important when the ultimate goal of advertising is related to long-term brand building and ensuring the brand is included in a consumer's consideration set.

Given the preoccupation for demonstrating the link between mere exposure and affect in the psychology literature (see chapter 2, page 19), and the close relationship between early explanations of the MEE and affect-driven theories of advertising (Zajonc, 1980, 2000), it may seem appropriate to categorise the MEE in the context of *non-cognitive* consumer processing theory. In light of the recent emergence of cognition-based theories of this phenomenon, however, this would not be entirely appropriate. Rather, the marketing-based MEE should be conceptualised as a *non-conscious* (cognitive) theory of marketing communications. Whilst the most robust (and perhaps relevant) outcome of this is likely to be the enhancement of affective response, it may also impact upon cognitive judgments (e.g. quality) of merely exposed marketing stimuli when they are subsequently encountered. Within the realms of non-conscious consumer processing, however, it is as yet unclear as to whether the MEE is a function of *subliminal perception* and/or *non-conscious intermediate processing*. This is a key distinction in the

context of marketing theory and constitutes an important direction for further research in this domain; and in particular that which is included in this thesis.

What is not subject to dispute, however, is that the MEE is most relevant to the exploration, explanation and manipulation of marketing communication effects under conditions of low attention and involvement (during exposure and throughout the decision-making process). Furthermore, it is likely to be most influential when the goal of marketing communication is to generate affective response to the brand. As such, the MEE may be assumed to be of greater importance in the early stages of decision-making (i.e. the formation of awareness and consideration sets) than in the actual purchase decision (as this tends to be associated with a relatively higher degree of actor involvement; Cai *et al.*, 2004). Further to this, however, the influence of exposure-induced affect on ultimate choice behaviour is likely to be maximised by the absence of strong routines, habits, attitudes and experience in relation to the brand and, ideally, the product category.

In conclusion, however, it is important to stress that the integration of the MEE into marketing theory, and indeed the proposed conceptualisation of the marketing-based MEE in figure 3.13 (page 116), is based on the assumption that the occurrence, nature, size and direction of this domain-specific phenomenon will be identical to that demonstrated in abstract psychological research (see chapter 2). In essence, therefore, the validity of a mere exposure-based theory of advertising effects and consumer

decision-making is dependent on the robustness of the three *fundamental* propositions distilled from the psychology literature in chapter 2:

> P1: Mere exposure to a marketing stimulus will influence affective response to that stimulus when it is subsequently encountered
>
> P2: The size of the marketing-based mere exposure effect will be hindered by the presence of accurate recognition memory for marketing stimulus exposure
>
> P3: The size of the marketing-based mere exposure effect will be hindered by a subjective sense of confident, contextualized recollection for prior exposure to the marketing stimulus; regardless of recognition accuracy

Whilst a great deal of evidence for the first of these propositions is apparent in the psychology literature (see Bornstein, 1989) the prospect that this may, to some extent, be context specific (e.g. with regard to stimuli or participants; see chapter 2) highlights the need for robust replication in the marketing domain. Furthermore, the current controversy regarding the impact of recognition memory (and therefore the nature of the MEE; as discussed in chapter 2, page 29) may have important implications for marketing theory, research and practice, and thus warrants examination in this context. With this in mind, the purpose of the following chapter is to critically review the extent to which specific evidence for the MEE is apparent in the extant marketing literature, and in particular the degree to which the above propositions have been tested and supported.

Chapter 4

Empirical evidence for the marketing-based MEE:

A critical review

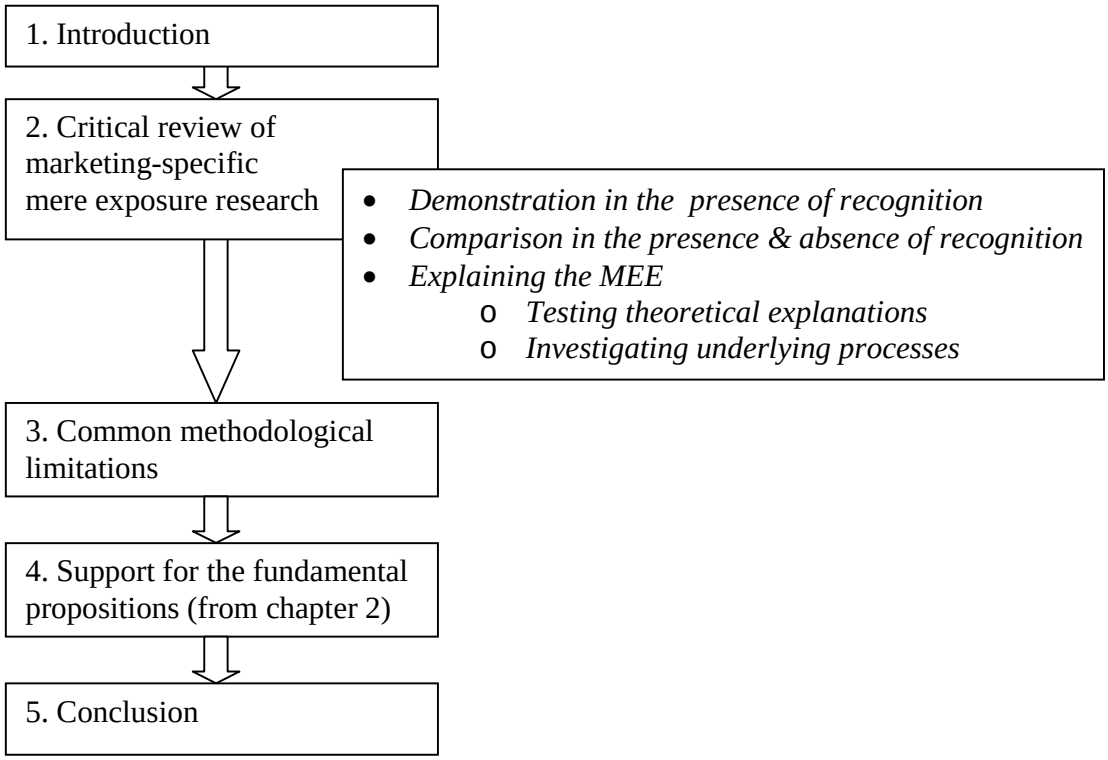
4.1. Introduction

The mere exposure research paradigm is derived directly from Zajonc's (1968: 1) original observation that:

> "the mere repeated exposure of the individual to a stimulus is a sufficient condition for the enhancement of his attitude towards it. By 'mere exposure' is meant a condition which just makes the given stimulus accessible to the individual's perception."

Research that is conducted within the strict confines of this paradigm is characterized by an exposure phase, a period of delay and a subsequent test phase. Exposure in this respect takes the form of *repeated* presentation of the target (and more often than not distractor) stimuli in isolation, and at a level that is *just perceptible*. The absence of contextual, associated or accompanying stimuli is important to distinguish the MEE from similar effects that may occur as a result of *classical conditioning;* a phenomenon that is characterized by associative priming or, as Foxall (2002: 186) explains, "the direct or non-cognitively mediated transfer of pleasant or unpleasant feelings from the [unconditioned stimulus] (e.g. the advertisement] to the conditioned stimulus (e.g. the brand]." With this in mind, it will be argued in this chapter that few marketing studies to date have been conducted within the strict confines of the mere exposure paradigm. Rather, evidence of the marketing-based MEE is provided via the loose application of this framework and the use of an alternative, *incidental exposure* paradigm. The findings, conclusions and limitations of this body of work are critically discussed in detail during this chapter.

Figure 4.1: Structure of Chapter 4



To this end, the extant marketing literature is categorised into three streams (see figure 4.1.); incorporating those studies that seek to demonstrate the MEE in the presence of recognition, to compare it in the presence and absence of recognition and to explain this phenomenon, respectively. The latter category is then further divided into those studies that have sought to test the theoretical explanations discussed in chapter 2 (section 2.3, page 36) and those that have investigated some of the specific non-conscious processes to which these theories refer. Whilst study-specific limitations are raised during this review, it will be argued that the extant marketing literature in this field is characterised by a number of common methodological limitations. These are discussed in section 4.3 (page 159), prior to a review of the extent to which this body of work may be considered

to provide empirical support for the fundamental propositions distilled from the psychology literature in chapter 2 (page 62).

As an overview, however, it is perhaps useful to first acknowledge that, in line with the majority of psychological research, all of the marketing studies in this field have examined the link between exposure and *affect*, and all bar one have reported an entirely *positive* relationship. Contrary to the psychology literature, however, effect size is not widely reported in the extant marketing literature to date. Further to this, it is important to note that, whilst effects are often reported in the presence and absence of recognition, marketing research into the MEE is almost entirely characterised by the *supraliminal* presentation of stimuli during the exposure phase. This is perhaps unsurprising given the scepticism and hostility with which research into subliminal advertising has been met in recent decades (Broyles, 2006; see page 104). As will be discussed in the following section, however, marketing-based evidence of the MEE in either the presence or absence of recognition is largely equivocal and subject to significant theoretical and methodological constraints.

4.2. The existence and nature of the MEE in a marketing context: A critical review of the evidence

Although Obermiller (1985) is often cited as the first notable study to provide evidence of the MEE in the marketing literature (e.g. Vanhuele, 1994; Baker, 1999), this is not entirely accurate. Specifically, this study develops and tests the proposition that processing style mediates the impact of stimulus exposure on subsequent affective response. However, with regard to table 4.1 (page 129), it may be argued that only *one* of the five processing conditions across which Obermiller (1985) compares the effect of repeated exposure to novel melodies is in line with the MEE paradigm. This, the author refers to as 'minimal processing' and takes the form of divided attention; in line with Wilson (1979), one of the very first empirical studies of the MEE in the psychology literature. Whilst Obermiller (1985) concedes that this condition is "the closest analogue to Wilson (1979)," it should be stressed that it is in fact the *only* condition in which participants are not required to engage in a high degree of conscious, attentive, elaborative processing of the target stimuli during exposure, and thus the only condition in which *mere exposure* occurs (according to Zajonc's original definition; see page 18). At this level of minimal processing, exposure was not found to have any influence on affective response; i.e. the MEE was not in fact observed in this study. This led Obermiller (1985: 27) to conclude that, "the failure to replicate findings of affective change under conditions of limited cognitive processing (during repeated mere exposure) calls into question the robustness of [the MEE]." In conclusion, Obermiller (1985: 28) called for more consumer research within the strict confines of the mere

exposure paradigm, to "demonstrate or refute affective responding under conditions that limit cognitive processing [during repeated exposure]."

Table 4.1: Summary of the five processing conditions in Obermiller (1985)

Condition	Description
Minimal processing	Attention was focused away from the melodies. Subjects were given a worksheet of math and language exercises. While they worked on this distraction task, the melodies played in the background.
Structural processing	Attention was focused on the melodies. The task required subjects to count and record the number of notes in each melody.
Cognitive processing	Attention was focused on the melodies. Subjects were instructed to listen to the melodies and write down an appropriate title for each one.
Affective processing	Attention was focused on the melodies. Subjects were instructed to listen to the melodies and rate each on a five-point pleasant/unpleasant scale.
Associative processing	Attention was focused on the melodies. Subjects were instructed to listen to the melodies and attempt to form as many images or associations as they could and to indicate how many images or associations they formed for each melody on a six-point scale.

Source: Obermiller (1985)

In response to the call of Obermiller (1985), a small but potentially important body of marketing research has emerged that appears to provide evidence for the MEE in this context, although these studies are largely subject to significant theoretical and methodological limitations (as will be discussed subsequently). Whilst not overtly acknowledged, the moderating influence of stimulus recognition has been an intrinsic aspect of this stream of the marketing literature; a consequence perhaps of the increasing interest of psychologists in this issue during the last three decades (see chapter 2, page 29). More recently, the emphasis in both domains has shifted from demonstration to *explanation*, and in particular the nature of the non-conscious processes that underpin the MEE. As such, marketing studies of the MEE may be divided into three categories;

those that examine the MEE in the presence of recognition only, those that seek to compare the MEE in the presence *and* absence of recognition, and those that endeavour to explain this phenomenon. A critical review of each of these streams of literature is provided in the subsections below.

4.2.1. Demonstrating the marketing-based MEE in the presence of recognition

Reflecting an acknowledgement of the MEE (and the greater interest in this) as essentially a non-conscious phenomenon (see chapter 2, page 21), perhaps, this stream of the extant marketing literature is limited to just two studies; both of which, it would seem, were undertaken with the original aim of exploring the MEE in the *absence* of recognition. Firstly, and albeit inadvertently, Baker (1999) provides evidence of the MEE solely in the presence of recognition, in a study that is ostensibly designed to compare the conditions under which the MEE and classical (affective) conditioning might influence consumer behaviour. In essence, this involves testing three potential mediators of both phenomena; existing brand familiarity, perceived functional performance and level of involvement. The fact that identical conditions are found to enhance both the MEE and classical (affective) conditioning could simply be a function of their similarity; alternatively, it could indicate a failure to distinguish between them in the research design. However, if the validity of Baker's (1999) results is accepted, the important aspect of this study is the nature of the MEE in question. In this respect, whilst the literature review refers to preattitudinal and non-conscious processing, the empirical work does not distinguish between affective response in the presence and

absence of conscious memory for prior exposure. Indeed, the measurement of recognition is replaced by one of 'exposure frequency awareness'; whereby participants are required to determine the *number of times* each stimulus was presented. Given the relatively large number of prolonged, attentive exposures (discussed further in section 4.3, page 159) and the nature of the memory task, it would appear that there is no suggestion that participants did not *recognise* the stimuli as having been presented previously (merely, that they could not remember how many times this occurred). As such, Baker (1999) essentially presents evidence of a marketing-based MEE in the presence of recognition, but only when there is parity in brand familiarity and perceived functional performance. Additionally, the MEE in this study does not appear to be restricted to low involvement consumer decision-making, operating also as a 'tie-breaker' in highly involved deliberation; a finding that potentially extends the conditions under which the MEE might be expected to influence consumer behaviour (see chapter 3, page 118).

Further to this study, it should perhaps be acknowledged that Olson and Thjomoe (2003) claim to 'reconfirm' the MEE for brand names in the presence of recognition. In line with Baker (1999), they also contend that the effect is not mediated by accompanying brand information that is not fully processed (i.e. that it is distinct from the process of implicit associative priming). This study, however, is beset with methodological problems; not least of which is an almost total lack of control over the direction and extent of attention during exposure, and the absence of recognition measures for the target brand names. The former relates to an exposure phase in which marketing

students were repeatedly exposed to 82 adverts (48 targets and 44 distractors) that were embedded in the slides of a real lecture and positioned as "examples of advertising." Each advert was presented 'several times' and for a duration of 5-seconds on each occasion. The degree to which each brand name is *just perceptible* (Zajonc, 1968) and not subject to elaborative processing is therefore highly questionable. The main problem with this approach, however, is that it facilitates significant differences in attentive processing between participants and stimuli during the course of the lecture; from situations in which students lose interest and look away from the lecture slides, to those where students study some of these 'examples of advertising' in great detail as part of their learning experience. The absence of subsequent recognition measures for each advertisement further compounds the difficulty in identifying whether or not each stimulus has received a high degree of attentive, elaborative processing. At best, therefore, the findings of this study should be taken as indicative evidence of a marketing-based MEE in the *presence* of recognition but, given that the authors concede that their results require "replication and extension", it is important to stress that they should (for now at least) be treated with a degree of caution.

As previously mentioned, however, the conclusions of Olson and Thjomoe (2003) are not the only ones that must be considered in the context of significant limitations. Indeed, most marketing-specific studies of the MEE are subject to a number of common methodological considerations that could undermine the validity of their findings and conclusions; as will be discussed in section 4.3 (page 159). Prior to this, however, the two most prominent streams of marketing-based MEE research are critically reviewed;

beginning with that which seeks to directly compare this phenomenon in the presence and absence of recognition.

4.2.2. Comparing the marketing-based MEE in the presence and absence of recognition

In addition to the literature reviewed above, a slightly larger (though still small) body of marketing research has sought to compare the MEE in the presence and absence of recognition memory. However, it should be noted this is largely restricted to comparing the occurrence, rather than the size, of the MEE in each case. This constitutes a potentially important limitation as psychological results consistently indicate that stimulus recognition is likely to attenuate the *size* of the effect, rather than eliminate it completely (see chapter 2, page 29). Perhaps a more serious problem for this somewhat limited stream of marketing research, however, is the equivocal nature of the findings; as illustrated in the discussion below.

The first notable response to Obermiller's (1985) call for more marketing research into the MEE, is that of Anand, Holbrook and Stephens (1988). These authors replicated Wilson's (1979) exposure technique of dividing attention between two auditory stimuli, ostensibly to test cognition versus affect-based theories of the MEE. In this study, however, cognition appears to be confused with *recognition*; a fundamental criticism of the empirical evidence for Zajonc's (1980) *primacy of affect* theory (see Vanhuele, 1994), and one that potentially invalidates Anand *et al.*'s conclusions as to the necessity

of cognition in the MEE. However, although not explicitly acknowledged, this study more accurately constitutes an attempt to measure the marketing-based MEE in the presence and absence of recognition. In this respect, Anand *et al.* (1988: 390) find support for the former but not the latter, observing that, "our results suggest that the [MEE] increases with the accuracy of recognition." These findings may be considered surprising, and at the time ran contrary to psychological research indicating that the size of the MEE is significantly *reduced* under such conditions (for reviews see Bornstein 1989; Bornstein and Craver-Lemley, 2004).

In defence of Anand *et al.* (1988), however, it might be noted that psychological evidence for the non-conscious nature of the MEE is largely derived from studies that use *subliminal* exposure (see Bornstein and Craver-Lemley, 2004). By contrast, this is one of the first studies to measure the effects of supraliminal exposure in the absence of subsequent recognition. Furthermore, their conclusion is supported by more recent psychological research of this nature (Lee, 2001b; Wang and Chang, 2004; Newell and Shanks, 2007; see page 33). In this respect, therefore, it may be argued that the results of Anand *et al.* (1988) constitute an early indication that subliminal perception is a necessary condition for the non-conscious enhancement of the MEE; and that this might be more accurately termed the *subliminal MEE*. However, given the combination of small sample size (n=30) and a lack of control over the nature and duration of exposure (as will be discussed in section 4.3, page 159), it is perhaps unwise to draw such a conclusion from this study alone. Furthermore, the failure to demonstrate the MEE in the absence of recognition is contradicted by Janiszewski (1993), and two subsequent

comparative studies that are relevant to the MEE (Shapiro and Krishnan, 2001; Tom *et al.*, 2007). In this respect, Janiszewski (1993) proffers evidence for the MEE in both the absence *and* presence of recognition in a study that is primarily designed to test a theory of preattentive hemispheric processing. In this respect, participants were peripherally (and it is therefore presumed *incidentally*) exposed to invented advertisements in a mocked-up newspaper. In the absence of recognition memory for the novel brand names contained within, liking for these elements of the stimuli was found to be enhanced; a result the author explains with reference to the non-conscious MEE, and in particular the misattribution theories of Mandler *et al.* (1987) and Bornstein and D'Agostino (1992). However, the same result is also evident in the *presence* of recognition; a finding that is not discussed in the context of MEE theory, nor in relation to comparative effect size.

Further to this, it may be argued that evidence for the MEE in the absence *and* presence of recognition is also apparent in Shapiro and Krishnan's (2001) comparison of advertising effects on explicit and implicit memory. Although not acknowledged, the MEE, and in particular the perceptual fluency/attribution theory of mere exposure (Bornstein and D'Agostino, 1992, 1994; see page 45), is adopted as a proxy by which to infer the presence of implicit memory in this study. As the authors explain:

> "Implicit memories have been shown to lead to a response bias in which there is a greater likelihood of using the previously seen information to complete a task without the awareness of doing so. One type of response bias that has been found is an increased preference for previously seen information (Schacter 1987). One explanation for this effect is perceptual fluency, in which a previously seen stimulus appears familiar, and absent a successful search of memory to attribute this familiarity to the prior exposure episode, the familiarity is attributed to a preference for the stimulus." (Shapiro and Krishnan, 2001: 2)

On this basis, the authors used a 2x2 between-group experiment to examine the impact of delay and divided attention on explicit (recognition) and implicit memory (i.e. preference) for 12 novel brand names. These stimuli replaced the real brand names contained in 12 real-life advertisements. Each ad was then exposed once for a period of 10 seconds. Divided attention was created by instructing participants to simultaneously listen to a radio broadcast during the exposure phase, while delay was facilitated by asking respondents to complete the test phase the following day. In this way, the authors found that both divided attention and a period of delay significantly reduced recognition rates for the target brands, whilst the brand preference effect (by which implicit memory was inferred) remained robust across all conditions. Although not specifically noted or discussed, therefore, these results would appear to reflect a marketing-based MEE in the both the presence and absence of recognition (to an equal extent). As a caveat to this conclusion, however, and in the specific context of the MEE, a number of limitations should be acknowledged with regard to this study.

Firstly, it may be argued that the clearly visible nature of the target brand names and the extended length of exposure (10 seconds) does not necessarily meet the criteria of 'mere exposure' (i.e. that which is *just perceptible*; Zajonc, 1968), even in the divided attention condition. Furthermore, the fact that the target brand names were presented in the context of elaborate, real-world advertising gives rise to two additional limitations. Firstly, it is possible that the observed preference effects are the result of *associative priming* during each 10s exposure; i.e. that they reflect the results of classical

conditioning rather than mere exposure (see Baker, 1999). It might be argued that, in order to clearly distinguish the influence of the MEE experimentally, either the brand names should be presented in isolation *or* the complete advertisements should be considered to be the target stimuli and replicated in their entirety at test. In this case, however, the latter option may be problematic on the grounds that real-life adverts may be subject to pre-existing attitudes that are transferred to the newly-embedded brand names during exposure. In addition to this, however, the use of such stimuli gives rise to a second methodological limitation. Specifically, varying degrees of pre-experiment familiarity with each real-life advertisement could contribute to differences in processing fluency (over and above the influence of experimental manipulation). In this respect, a relatively high degree of fluency might be expected to enhance both encoding of the target brand names during exposure and/or perceived recognition of these at test (see Moray, 1959; Nielson and Sarason, 1981; Kurilla and Westerman, 2008).

In the context of this thesis, however, perhaps the most significant limitation of Shapiro and Krishnan's (2001) study is that it is not specifically designed to examine the MEE; rather, support for this particular phenomenon must be inferred. To explain; evidence for the MEE in this study is drawn from between-group findings of explicit (recognition) and implicit memory for previously exposed stimuli (inferred by the enhancement of affect). In the first group, recognition was found to occur only in the absence of delay and under conditions of full attention. In the second group, enhanced brand preference is found with or without delay, and under conditions of full and divided attention. From this, it may be inferred that exposure-induced affect is evident

under conditions that both facilitate and hinder stimulus recognition. However, in the absence of within-subject analysis of the relationship between recognition and affect it is impossible to determine whether those participants that recognised (or indeed failed to recognise the target stimulus) in the first group also preferred it. Similarly, recognition data is not available in relation to those participants who preferred the stimulus in the second group. In other words, the fact that one group preferred the target brand names following a period of delay, whilst another failed to recognise them under the same conditions does not necessarily demonstrate the occurrence of a non-conscious MEE. It is possible that all those who preferred the target brand names would have also reported recognition of these stimuli had they been asked. Similarly, all those who reported recognition of the brand names may not necessarily have preferred them. Whilst this is perhaps unlikely, the fact that it is possible undermines an interpretation of this study as evidence for two qualitatively different forms of the MEE, arising on the basis of two separate memory systems (i.e. explicit and implicit). Whilst such a conclusion should not necessarily be ruled out, and would be of both interest and importance in the field of marketing communication, it is argued that the results of Shapiro and Krishnan (2001) would benefit from validation using a within-subject experimental design.

On the one hand, therefore, and in light of the limitations above, it may be argued that the results of Shapiro and Krishnan (2001) do not necessarily reflect the MEE, and should be treated with caution in this particular context. Alternatively, however, and in the continued absence of empirical evidence for the non-conscious MEE following supraliminal exposure, it may be reasonably proposed that this robust, marketing-based

study indicates the possibility of a qualitative distinction between two forms of the MEE. In this respect, the fact that an equivalent preference-bias is apparent in both the presence and absence of recognition may suggest that, rather than the former being a weaker analogue of the latter (i.e. a *fully non-conscious* effect; see figure 3.12, page 108), the two effects occur via two different processing routes; namely those associated with explicit and implicit memory respectively. Whilst this possibility is not raised by the authors, it may be seen to provide a theoretical basis on which to reconcile the seemingly paradoxical findings of an increase in the size of the MEE under conditions of both subliminal perception and stimulus recognition (see chapter 2, pages 29-33). It may therefore constitute an interesting avenue for further research, and will be considered in more detail during the latter part of this thesis.

To complete the literature review in this section, however, it is perhaps important to consider one particular study that, although not published within the marketing literature, sought to explore the effects of *supraliminal* and *subliminal* mere exposure in this context. In this respect, Tom *et al.* (2007) found that the 'perceived effectiveness' of a promotional tool (a corporate novelty gift) was enhanced by repeated supraliminal (250ms) and, to a greater extent, subliminal (100ms) embeds of the item in a promotional video. With regard to the psychology literature (within which this study is published), this marketing-based demonstration of the MEE would appear to be in line with the findings of Bornstein and D'Agostino (1992) and Bornstein's (1989) meta-analysis. From both a purely scientific and applied marketing perspective, however, a number of limitations should perhaps be acknowledged. Firstly, in the absence of

subjective measures of perception, the degree to which the two conditions are effectively distinguished from each other must be inferred. Given that the original empirical study of the (visual) non-conscious MEE utilised subliminal exposures of just 1ms (Kunst-Wilson and Zajonc, 1980), and that Seamon *et al.* (1983) found above chance recognition following exposures of 3ms (but not 2ms), the assumption that a 100ms embed will be subliminally perceived by all participants is questionable. Secondly, and in light of the fact that Tom *et al.* (2007) develop a theoretical foundation for the MEE that is based entirely on the *primacy of affect* theory (Zajonc, 1980), the largely cognitive nature of the dependent variable (i.e. a mindful evaluation of its potential effectiveness) appears to be somewhat illogical. Furthermore, it does not necessarily reflect a typical affective consumer response to promotion. Finally, the use of subliminal (or at least heavily disguised) embeds in a promotional video may be questioned on the grounds that it provides neither a high degree of ecological validity nor robust internal validity; the complex nature of contextual stimuli providing scope for *implicit associative priming* (i.e. classical conditioning) that may confound the effects of mere repeated exposure to the target stimulus alone (see chapter 2, page 56). Nonetheless, the work of Tom *et al.* (2007) represents a potentially important part of the bridge between psychology and marketing; the development and completion of which will facilitate a greater understanding of the MEE in both domains.

From the literature reviewed in this section, therefore, it may be concluded that comparative evidence and explanation for the marketing-based MEE in the presence and absence of recognition remains subject to some confusion. Whilst Anand *et al.* (1988)

find support for the MEE in only the first of these conditions, Janiszewski (1993), Shapiro and Krishnan (2001) and Tom *et al.* (2007) support the existence of this phenomenon in *both* scenarios. However, whilst Tom *et al.* (2007) find that recognition (or more specifically, perception) merely attenuates the size of the MEE, the conclusions of Shapiro and Krishnan (2001) imply two qualitatively different forms of this effect, based on the conscious and non-conscious processes of memory respectively. As a caveat to all of these findings, however, and in line with those studies reviewed in the previous section, this literature stream is subject to a number of significant limitations. These are not restricted to the study-specific issues raised in this section but also include a number of common methodological limitations that will be discussed in section 4.3 (page 159). Prior to this, however, a final stream of the marketing literature is reviewed; namely, that which endeavours to *explain* the MEE.

4.2.3. Explaining the MEE in a marketing context

Given the discussion to this point in the chapter, it might be argued that a robust domain-specific demonstration of the MEE, and in particular the degree to which it is moderated by stimulus recognition, remains absent from the extant marketing literature. Nevertheless, the trend in recent years has been to explain, rather than to validate, this phenomenon in a marketing context. In this respect, a small body of literature has emerged that may be subdivided into two categories; that which endeavours to test the numerous theories of mere exposure discussed in chapter 2 (section 2.3, page 36), and that which explores the nature and influence of the specific non-conscious processes to

which these theories refer. The relevant studies in both these respects are critically discussed in the subsections below.

4.2.3.1. Testing psychological theories of mere exposure in a marketing context

As previously mentioned, the intention of Anand *et al.* (1988) to compare affect versus cognition-based theories of the MEE is largely undermined by theoretical assumptions that have subsequently proven to be inaccurate (i.e. that recognition is equivalent to cognition; see Vanhuele, 1994). Unfortunately, a similar limitation is apparent in Lee's (1994) attempt to test the misattribution theories of mere exposure (see chapter 2, page 45). To this end, a 2x2 experimental design is employed in which stimuli are either exposed ('old') or not ('new'). Half of the stimuli in each condition are then explicitly labelled as having been exposed ('seen') or not ('not seen'), giving rise to four conditions; old/seen, old/not seen, new/seen, new/not seen. On this basis, Lee (1994) hypothesises that misattribution theories of mere exposure would be supported by enhanced positive affective response in:

a) the old/not seen but not the old/seen condition; *and*
b) the new/not seen but not the new/seen condition

The first assumption appears to be relatively robust, and is seemingly in line with Bornstein's (1989) conclusion that the size of the MEE is greater in the absence of stimulus recognition. The second is developed on the basis that the new/seen condition will give rise to negative affect in the absence of *expected* perceptual fluency for new

stimuli that are *believed* to have been previously exposed; a somewhat novel interpretation of the implications of the *perceptual fluency/attribution* theory of mere exposure (Bornstein and D'Agostino, 1992, 1994). However, this proposition is not necessarily supported by the misattribution theories discussed in chapter 2 (page 45) - in which the experience of processing fluency is neither expected nor necessarily conscious – and is particularly questionable in the light of Whittlesea's (1993) conceptualisation of the *false familiarity effect* (FFE). As discussed in chapter 2 (page 57), this phenomenon implies that a false, subjective experience of memory can occur on the basis of the relative ease of stimulus processing and is linked to *enhanced* affective response. On this basis, the instigation of false familiarity (via the suggestion that new stimuli had in fact been presented previously) should be expected to result in a preference-bias in the *new/seen* (and not the new/unseen) condition; a proposition that is diametrically opposed to that of Lee (1994). Given this, it is perhaps unsurprising that Lee (1994) fails to support the second part of the above hypothesis, instead finding *positive* affective response for new stimuli when participants were told that they had been presented previously (and inadvertently demonstrating the FFE). More surprising, perhaps, is the fact that Lee (1994) also fails to support the first part of the hypothesis; finding enhanced affective response to old stimuli *regardless* of what participants were told about their exposure status.

On the face of it, therefore, this study appears to provide evidence of an equivalent MEE in the presence *and* absence of recognition, leading Lee (1994: 274) to conclude that the MEE, "cannot be undone by knowledge of prior exposure." In a similar vein to Anand *et*

al. (1988), this conclusion is contradicted by those of two subsequent psychological reviews (Bornstein, 1989; Bornstein and Craver-Lemley, 2004) but finds some empirical support in the contemporary psychology literature (Lee, 2001b; Wang and Chang, 2004; Newell and Shanks, 2007). As the author concedes, however, it is somewhat undermined by a basic theoretical limitation; namely, that the construct of 'seen' in this study is not necessarily equivalent to that of *recognition*. In fact, Lee (1994) reports that *none* of the stimuli were recognised by participants during the test phase. With this in mind, it would appear that the enhancement of affect for 'old' stimuli (regardless of whether they were positioned as 'seen' or 'unseen') essentially provides evidence of a non-conscious MEE. In addition, the same finding for new stimuli positioned as 'seen' (but not 'unseen') inadvertently supports the *false familiarity effect* (Whittlesea, 1993). The MEE is not actually tested in the presence of recognition during this study.

With this in mind, perhaps the most important finding of Lee (1994) is that the direction of the non-conscious MEE (i.e. that which occurs in the absence of recognition) for low-density patterns is diametrically opposed to that of high-density patterns. Specifically, she finds enhanced positive evaluation of the former accompanied by increased negative evaluation of the latter. As such, whilst this study does not necessarily constitute a robust test of the misattribution theories of mere exposure, it is one of the very few studies to demonstrate a *reverse* non-conscious MEE in adults (alongside Crandall *et al.*, 1973; Heyduk, 1975), and to provide evidence that the *direction* of the MEE may be stimulus-specific.

The only other study that has specifically sought to test generic theories of mere exposure in a marketing context is that of Fang *et al.* (2007). With specific regard to online banner advertising, the authors adopt a peripheral (and thus, it is assumed, incidental) exposure paradigm to compare two competing explanations of the MEE; the cognition-based theory of *perceptual fluency/attribution* (Bornstein and D'Agostino, 1992, 1994) and the affect-based theory of *hedonic fluency* (Winkielman and Cacciopo, 2001). Despite doubts over whether the latter constitutes a valid theoretical explanation of the MEE (see chapter 2, page 40), Fang *et al.* (2007) argue that it is supported by the findings of this study whilst perceptual fluency/attribution is not. This is somewhat surprising in light of the credence that has been given to Bornstein and D'Agostino's (1992, 1994) theory in the extant psychology literature (e.g. Butler and Berry, 2004); although it may be seen to be supported by a small number of recent studies that challenge the assumptions of this theory (e.g. Lee, 2001b; Wang and Chang; see page 33).

However, there are a number of potential criticisms and limitations that might be raised with regard to the findings of Fang *et al.* (2007). Firstly, the theory of *perceptual fluency/attribution* (Bornstein and D'Agostino, 1992, 1994) appears to be ruled out on the basis that findings of enhanced affect for the target brand names was eliminated by the prior instruction that a peripheral stimulus (accompanying music) may give rise to a sense of processing fluency or affect; a result that Fang *et al.* (2007: 102) claim, "clearly supports the more complex model in which affect influences the interpretation of fluency." In the absence of further explanation, however, the justification for this claim

is unclear. Indeed, an alternative (and arguably more robust) interpretation might lead to the opposite conclusion; i.e. that the study in fact provides support for the misattribution theories of mere exposure. In this respect, the findings appear to support a central proposition of both *non-specific activation* theory (Mandler *et al.*, 1987) and *perceptual fluency/attribution* (Bornstein and D'Agostino, 1992, 1994); namely, that perceptual fluency will be misattributed to whatever reason appears most plausible in the context of the experiment (see page 50). In this case, the fact that accompanying music was specifically suggested as the source of fluency makes it the most plausible explanation, and eliminates the need for misattribution to qualities of the target stimulus.

In addition to this issue, the findings of Fang *et al.* (2007) are assumed to reflect non-conscious processes on the basis that mean recognition in a two-factor forced choice test was at chance, and the peripheral placement of banner ads ensured that exposure occurred "just under the level of perception" (Fang *et al.*, 2007: 102). However, the first of these assumptions is undermined by the absence of within-subject analysis of the link between recognition and affect. As such, it is not possible to rule out the possibility that enhanced preference for the latter is underpinned mainly by judgments that occurred in the presence of accurate recognition. Furthermore, were this to be the case it gives rise to the possibility of an inverse relationship as a result of task ordering effects, i.e. that accurate recognition of the stimulus was associated with prior judgments of affect rather than the exposure phase (see Phaf and Rotteveel, 2005). Moreover, the assumption of subliminal perception is undermined by an absence of direct attention-control during exposure and any subsequent measurement of this variable.

Finally, the peripheral exposure technique that is used by Fang *et al.* (2007) gives rise to the possibility that the observed effects are not in fact the outcome of *mere exposure* to the stimulus alone, but an interaction between the target stimuli and other focal and peripheral stimuli during the exposure phase. The potential for implicit associative priming of this nature is common to all research conducted within the *incidental exposure* paradigm, and will thus be discussed further in section 4.3 (page 159). Given these limitations, however, and the somewhat surprising nature of the findings in Fang *et al.* (2007), it is perhaps prudent to draw this section to a close with the conclusion that (in line with the psychology literature) robust evidence for one theory of mere exposure over all others is not yet apparent in the marketing domain. However, marketing-specific research that seeks to explain the effects of mere exposure is not confined to testing the specific theories discussed in chapter 2 (section 2.3, page 36). By investigating the non-conscious processes of implicit memory and processing fluency on which cognition-based theories of mere exposure are founded, a small body of additional work might also be considered to make an important contribution in this respect; as will be discussed in the next section.

4.2.3.2. Exploring the non-conscious processes of the MEE

Given the emergence in psychology of cognition-based explanations of the MEE, coupled with the continued absence of a universally accepted theory of mere exposure, it is perhaps not surprising that marketing researchers have instead sought to test the

specific underlying processes on which these accounts are built. In this respect, the main focus of marketing research has been the basic premise that exposure-induced fluency implicitly primes affective response to marketing stimuli. In particular, the key question that has been addressed is the perceptual versus conceptual nature of this process. Whilst it has been acknowledged that there is still widespread disagreement as to the whether implicit memory has a conceptual dimension at all (see chapter 2, page 53), this may nevertheless be considered to be an important and interesting stream of literature in the context of this thesis.

Perhaps the first marketing study to examine this issue directly is that of Chung and Szymanski (1997), who claim to take an 'implicit memory perspective' of exposure-induced brand choice. To this end, the authors measure the effect of brand name exposure on preference in relation to a given consideration set (consisting of the target brand and four alternatives). This effect is then compared under the following conditions:

a) Visual v auditory exposure
b) Low v high involvement at test (operationalised by decision-time restrictions of 3s and 10s respectively)
c) Perceptual v conceptual processing during exposure (operationalised as letter/syllable counting and judging when in the day the brand would be used respectively)

Whilst it is not overtly referred to, this study presents evidence in support of the MEE; but only under conditions of *visual exposure* and *low involvement* decision-making. No significant differences in brand preference are apparent as a result of the perceptual versus conceptual nature of processing; a finding that, on the face of it, might suggest the MEE can occur via *both* routes. However, the validity of the experimental manipulation in this respect is somewhat questionable. Firstly, given that the brand names were real, familiar and therefore part of existing semantic memory, the proposition that letter/syllable counting results only in perceptual processing appears to rest on the unlikely assumption that the stimulus is not processed holistically at any point. If it is perceived to be a real brand name, or even a real word for that matter, semantic activation might reasonably be expected to occur. Secondly, judgements as to when in the day a brand is used are assumed in this study to involve only conceptual processing. However, exposure to the perceptual features of the stimulus in this activity inevitably entails perceptual processing. As the authors acknowledge, however, the influence of perceptual versus conceptual processing may ultimately be more adequately assessed via another manipulation in this study; the visual versus auditory nature of exposure. Given that the test phase was entirely visual, the first of these conditions provides the opportunity for perceptual matching of the physical features encountered during exposure and test, whilst the second does not. Effects observed in the auditory exposure condition cannot therefore be explained on the basis of simple perceptual matching and thus the influence of conceptual processing can be confidently assumed. However, no such effects were found, with the MEE apparent only when visual perceptual processing was possible in both phases of the experiment. Thus the authors

conclude, quite reasonably, that under conditions of low involvement, perceptual processing (and in particular perceptual matching of the visual stimulus features between exposure and test) underpins the effect in this study. This is in line with the theory that implicit memory is essentially a *perceptual representation system* (Schacter, 1990; Tulving and Schacter, 1990; see page 49).

However, in the context of implicit memory research in general, and the MEE in particular, this study is subject to a number of additional limitations. Firstly, the authors claim to consider the effects of exposure within the theoretical framework of implicit priming. To this end, the paper provides a good review of the implicit memory literature and accurately defines implicit priming as "exposure-induced change in performance unaccompanied by awareness" (Chung and Szymanski, 1997: 288). *Awareness*, however, is not specifically defined, controlled or measured in this study; although given the long, supraliminal exposures, the requirement for active, attentive, elaborative processing during these, and the relatively short delay before testing, it must be considered to be extremely likely that many of the 15 target brand names were recognised as having been seen during the exposure phase (amongst the 30 that were presented in total). As such, it is perhaps fair to conclude that, contrary to the claimed implicit nature of this study, the results essentially demonstrate priming in the *presence* of explicit recognition memory. In the specific context of the MEE, however, even this conclusion is perhaps undermined by the fact that neither type of exposure (visual or auditory) could be considered to occur at a level that is *just perceptible* (Zajonc, 1968). Indeed, the difficulties of presenting auditory stimuli at this level might suggest that,

whilst the use of modality matching/mismatching is a robust way to assess the nature of the processes that underpin the MEE, future studies might consider the manipulation of modality at test rather than exposure. In this respect, the standard visual presentation of the exposure phase would be replicated or altered in the test phase to create the necessary modality match/mismatch. Finally, the extent to which the effects observed in this study are analogous to those of the MEE may be questioned on the basis that the experimental effect of just one further exposure is unlikely to lead to a sizeable preference-bias for the real-word stimuli (e.g. Dentyne) used in this study. This possibility is elucidated by Shapiro (1999) in perhaps the most robust marketing-based study of implicit priming effects; a critical review of which is provided below.

Building on the work of Shapiro *et al.* (1997; to be discussed subsequently), Shapiro (1999) compares the degree to which incidental exposure to product-category advertising facilitates implicit *perceptual* and *conceptual* priming and thus enhances the likelihood of inclusion in a consideration set. To this end, the two processing conditions are manipulated by the presentation of target products in isolation (to facilitate perceptual processing of the stimulus form) and in the context of a scene (to encourage semantic, associative processing). This second condition is then divided into *meaningful* and *non-meaningful* scenes, and target products are depicted that are either *familiar* or *unfamiliar* in shape. On this basis, Shapiro (1999) finds that incidental exposure to advertising influences consideration set formation when products are:

a) unfamiliar and presented in isolation; or

b) familiar and presented in the context of a meaningful scene.

The author concludes that these results highlight the importance of meaningful contextual information to the formation of conceptual fluency, and to the facilitation of perceptual fluency by its absence. Both forms of fluency, he argues, subsequently give rise to greater approach behaviour. However, whilst semantic analysis (and thus conceptual fluency) is further enhanced by the embedding of familiar stimuli, perceptual fluency for these is unlikely to be significantly influenced by one more experimental exposure.

Whilst this study is not explicitly positioned as an investigation of the MEE, its findings are nonetheless relevant and important in the context of this phenomenon. In this respect, the observed effects of implicit perceptual and conceptual fluency on consideration set formation may be considered to be analogous to those of mere exposure (i.e. direct stimulus priming) and classical (affective) conditioning respectively (see Baker 1999). However, whilst it was previously acknowledged that Baker (1999) finds no difference in the effects of these two phenomena (beyond the fact that one is easier to execute in the context of marketing communications), Shapiro (1999) indicates an important qualitative distinction. Specifically, the semantic analysis that underpins classical conditioning is facilitated by prior familiarity with the stimulus and a presentation context that encourages elaborative processing. By contrast, feature analysis and direct perceptual priming is enhanced by isolated exposure and unfamiliar stimuli. As such, this study not only provides evidence for perceptual fluency explanations of the MEE (Mandler *et al.*, 1987; Bornstein and D'Agostino, 1992, 1994),

but also identifies two boundary conditions that clearly distinguish this phenomenon from that of classical (affective) conditioning.

However, it is perhaps important to acknowledge that the specific focus of Shapiro (1999) is the extent to which generic products (e.g. computer, briefcase) are included in a consideration set. As such, further research may be necessary to examine the degree to which these findings hold with respect to brand discrimination and choice. Furthermore, it should be acknowledged that, whilst the study of Shapiro (1999) is particularly robust in the context of the *incidental exposure* paradigm within which it is developed, this approach may pose problems for the interpretation of these findings in the specific context of the MEE. Indeed, Shapiro (1999) does not necessarily seek to interpret his findings in the context of the mere exposure literature. For example, his conclusion that prior familiarity with the stimulus may moderate the implicit priming effects of a small number of additional experimental exposures would seem to be at odds with the finding that (familiar) meaningful words generate larger MEEs than (unfamiliar) nonsense words in Bornstein's (1989) seminal meta-analysis (see page 25). In this respect, however, it should be acknowledged that these previous results relate specifically to abstract lexical stimuli, whereas those of Shapiro (1999) refer to product images. Nonetheless, a degree of ambiguity as to whether the observed effects reflect the MEE or classical (affective) conditioning is a limitation that is common to all studies in which peripheral (incidental) exposure techniques are employed; and is therefore discussed in more detail in section 4.3 (page 159).

Prior to this, however, it is important to acknowledge the work of Lee (2002), who extends Shapiro's (1999) attempt to identify boundary conditions for implicit perceptual and conceptual priming by studying their influence in stimulus-based and memory-based brand choice. To this end, the author measures target brand selection in paired-choice (stimulus-based) and category generation (memory-based) tests following both isolated and contextualised exposure to the brand name. These two exposure conditions are based on the assumption that the former facilitates perceptual priming whilst the latter encourages conceptual priming (Shapiro, 1999). In the isolated exposure condition, brand choice is found to be enhanced when the task is stimulus-based but not when it is memory-based, whilst the opposite is apparent following contextualised exposure. This leads Lee (2002) to conclude that isolated exposure to the brand name facilitates perceptual fluency that, in turn, influences brand choice in stimulus-based (but not memory-based) decisions. By contrast, contextualised exposure facilitates conceptual fluency that impacts brand choice in memory-based decisions only.

Whilst contextualised exposure is not necessarily in line with the mere exposure paradigm (designed, as it is, to encourage elaborative, associative processing), Lee's (2002) findings in relation to isolated exposure would appear to be directly relevant to the MEE in a marketing context. In particular, the apparently implicit and perceptual nature of the priming effects in this study supports the notion that the MEE is underpinned by non-conscious processes, and that these may take the form of feature analysis and the subsequent misattribution of perceptual fluency (Mandler *et al.*, 1987; Bornstein and D'Agostino, 1992, 1994). However, one potential caveat to the implicit

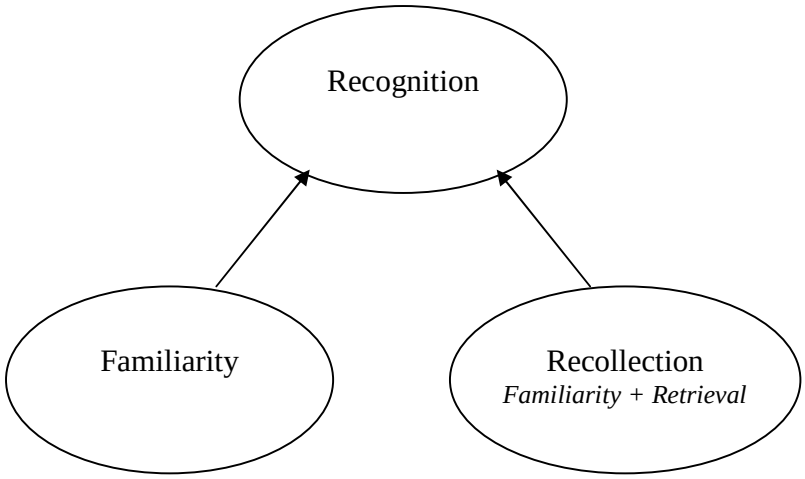
nature of the effects observed in this study is that, in the absence of a direct measure of recollection for the stimulus exposure, "the possibility that [brand choice] decisions reflect the potential influence of explicit memory cannot be ruled out" (Lee, 2002: 448). Indeed, the use of extended (8-second) exposures to the 12 target items (during which participants are *required* to actively evaluate their prior awareness of each brand), and a relatively short (10 minute) delay between the study and test phase, gives rise to a strong likelihood of stimulus recognition at the point of brand choice. As such, it is perhaps prudent to consider the results of Lee (2002) as an indication of the MEE in the *presence* of recognition. Within these parameters, however, it may be argued that this study not only demonstrates the MEE in a marketing context, but also presents evidence that it occurs on the basis of perceptual fluency (Mandler *et al.*, 1987; Bornstein and D'Agostino, 1992, 1994), and therefore only in relation to stimulus-based consumer decisions (where the physical features of the exposed stimulus can be exactly reproduced). By contrast, it may be argued that the necessity of contextualised exposure for memory-based brand choice effects provides further evidence that these are the product of classical (affective) conditioning. Indeed, the findings of a difference in the degree to which stimulus-based and memory-based brand choice is mediated by isolated and contextualised exposure respectively might be seen to strengthen the conclusion that *mere exposure* and *classical* (*affective) conditioning* are qualitatively different phenomena (Shapiro, 1999).

However, the study of Lee (2002), like the majority of those reviewed in this chapter, is subject to a number of methodological limitations. For example, the reliability of the

results may be hampered by the relatively small sample size per condition (n=28). Furthermore, the fact that such a significant effect was observed on the basis of a single exposure, and in relation to real, familiar and popular brands, may cast doubt on the degree to which the results are the product of experimental manipulations alone (Shapiro, 1999). Additionally, the author acknowledges that intermediate tests of perceptual and conceptual priming (between exposure and judgments of brand preference) raises the possibility of task order effects; an issue that will be discussed in more detail during chapter 6 (page 285).

Finally, and in addition to those studies that address the issue of perceptual versus conceptual priming, one further marketing study is worthy of note in that it seeks to qualify the attenuating influence of stimulus recognition (Bornstein, 1989); a contribution that may explain the seemingly equivocal findings of this in the marketing literature (see section 4.2.2, page 133). In Vanhuele (1995), participants were exposed to 81 unknown brand logos and then required to make affective evaluations after a delay of either 30 minutes or one-day. The results indicated that the MEE was evident only in the one-day delay condition and in the presence of accurate recognition. Although in line with those of Anand *et al.*, (1988), therefore, these findings would appear to be at odds with those of Bornstein (1989; see page 29) and the theory of a non-conscious MEE that is hindered by recognition memory (Bornstein and D'Agostino, 1992, 1994; see page 45).

Figure 4.2: The two bases of recognition memory (Mandler, 1980)



However, the author seeks to reconcile this apparent disparity with reference to Mandler's (1980) observation that recognition memory can occur on the basis of either *familiarity* or a combination of both this and precise retrieval that, taken together, might be termed *recollection* (see figure 4.2). The implications of this are explained by Vanhuele (1994, 266):

> "A stimulus can be recognized because it merely looks (or sounds, tastes, smells, or feels) familiar, but this impression can also be confirmed by recollecting details about the context in which it was presented, the thoughts that came to mind during its presentation, the attitudes that were formed etc."

With this in mind, he argues that the observed MEE is in fact a function of *familiarity* rather than recollection, and that it is the latter form of recognition that attenuates the effect. In this respect, the findings of Vanhuele (1995) may be considered to support cognition-based theories that consider familiarity to be a necessary condition for the enhancement of affect (e.g. Stang, 1975; Sawyer, 1981). As discussed in chapter 2 (page 45), however, these theories have been largely subsumed by the proposition that

exposure-induced response is the product of misattributed processing fluency (e.g. Mandler *et al.*, 1987; Bornstein and D'Agostino, 1992, 1994). In this context, familiarity in the absence of recollection, like affect, is deemed to be simply another cognitive illusion; an outcome of the MEE, rather than an underlying process factor. With this in mind, it may be argued that the subjective experience of familiarity that is presumed to underpin affective response by Vanhuele (1995) may be an illusion in itself; that in fact, both outcomes are the product of perceptual fluency in the absence of recollection. This interpretation, however, merely adds further credence to the author's claim that it is not recognition per se that moderates the MEE (Bornstein and D'Agostino, 1992), but explicit *recollection* for the stimulus exposure.

Indeed, although it is not overtly acknowledged, empirical evidence for Vanhuele's (1995) proposal may be found in the most recent marketing-based study of the MEE. In the specific context of product placement, Matthes *et al.* (2007) ostensibly find an inverse relationship between brand recall and liking; a result that would appear to support the notion that recognition memory moderates the MEE (Bornstein and D'Agostino, 1992). Importantly, however, it should be noted that the precise nature of the moderating variable in this study is brand 'recall', as measured on a 5-point scale (from 'do not remember' to 'do remember'). As such, it might be argued that what the authors have in fact measured is not only recognition per se, but also *confidence* in this judgment or, more broadly, the *subjective experience* of memory. In this respect, therefore, and as a caveat to the conclusion that this study provides robust support for the claims of Vanhuele (1995) in an applied marketing context, it should be noted that

the findings directly contradict those of contemporary psychological research in which the MEE has been found to be *enhanced* by recognition (e.g. Newell and Shanks, 2007); particularly when it is accompanied by a subjective sense of recollection (Lee, 2001b; Wang and Chang, 2004); as discussed in chapter 2 (page 33).

Whilst it may be premature to draw definitive conclusions as to the influence of memory on the marketing-based MEE at this stage, therefore, the propositions of Vanhuele (1995) continue to provide a relevant and important basis for further research into the MEE; and in particular that which is the focus of this thesis. However, it should be noted that Vanhuele's (1995) "pilot study" is subject to some significant methodological limitations with regard to sample size, exposure control and the propensity for boredom and fatigue effects; all of which raise the question of validity in the context of MEE research. More broadly, however, it has been consistently noted that such limitations are common to a number of marketing-based studies in the field of mere exposure. They are thus discussed in more detail in the following section.

4.3. Common methodological limitations

In addition to the study-specific limitations discussed to this point in the chapter, a number of common methodological limitations are also evident in relation to this relatively small body of literature. These relate to three key elements of experimental design; sampling, stimuli, and procedure. The specific nature of these limitations is discussed in the subsections below.

4.3.1. Sampling

At the end of the section 4.2 (above), brief reference was made to the size of Vanhuele's (1995) pilot study, which included a total of 42 participants. Only 13 of these, however, were allocated to the crucial one-day delay condition in which evidence of the MEE was found. This, of course, is an extremely small sample on which to base statistical analysis, but it is not uncommon in the extant marketing literature. For example, the crucial 'minimal processing' condition in Obermiller (1985) contained just 31 participants; a sample size that is approximately replicated in Anand *et al.* (1988; n=30), Janiszewski (1993; n=25-30) and Fang *et al.* (2007; n=35-40). Indeed, while Lee (1994) sampled 60 participants in total, they were divided into four separate conditions; resulting in an average sample size per condition of just 15. Whilst such sample sizes do not necessarily negate the validity of the findings, they may cast some doubt over the reliability of statistical results; particularly when the expected size of the experimental MEE is relatively small (see Bornstein and Craver-Lemley, 2004), and indirect tests are used to infer the effects of implicit memory and thus the non-conscious effects of exposure (Meier and Perrig, 2000; Buchner and Brandt, 2003).

At this point, it is also perhaps noteworthy that the use of student samples is ubiquitous in this literature stream. This is an extremely common (indeed almost universal) approach to sampling in the psychology literature and does not necessarily constitute a major limitation; particularly as the MEE is not considered to be sensitive to individual

or group differences (see chapter 2, page 27). Furthermore, it may be argued that, when the objective is to extend psychological research on the basis of variables that are not sample-specific, the continued use of this approach provides a useful foundation for comparison and dialogue between the two disciplines (as will be discussed in chapter 5, page 182). However, should robust evidence emerge that individual differences do indeed moderate the MEE, the study of different consumer groups may come to be seen as an important direction for future research in the marketing domain.

4.3.2. Stimuli

In addition to sample size it should be acknowledged that, although published in the marketing literature, many of the studies reviewed in this chapter do not necessarily extend mere exposure research in a way that is domain-specific. For example, Obermiller (1985) measures evaluations of invented sequences of tones, whilst Lee (1994) studies affective response to high versus low-density abstract patterns. Neither the stimuli nor the type of decision in these studies specifically relate to marketing or consumer behaviour, and thus it may be argued that they should perhaps be considered to be part of the experimental psychology literature (as reviewed in chapter 2). To a large extent, the same criticism might be made of Anand *et al*. (1988), in which the target stimuli consisted of 60-second textual and musical (piano) passages; although the prose in this study was drawn from a real-world product review. The potential for such criticism is recognised by Obermiller (1985: 20) who, in a pre-emptive defence, argues that, “my intention was to generalise to advertising response at the level of theory rather than stimulus operationalisation.” At the time of publication this may indeed have been

a perfectly reasonable basis on which to extend mere exposure research in the marketing domain; a decision that Obermiller (1985: 20) explains, quite justifiably, as follows:

> "when processes are subtle and effects are expected to be small, one must first isolate the processes under question, and then assess their robustness by examining their impact in more complex environments"

However, subsequent demonstrations of effect size differences between simple and complex stimuli (for a review see Bornstein, 1989), and directional differences in the exposure effects of high versus low-density patterns (Lee, 1994) indicate that the MEE is to some extent stimulus-specific. With this in mind, it may be argued that the use of typical marketing stimuli (e.g. brand logos, Vanhuele, 1995; brand names, Baker, 1999) constitutes an important element of marketing-based research into the MEE.

4.3.3. Procedure (stimulus exposure)

Whilst the theoretical conceptualisation of *mere exposure* in the marketing literature is generally in line with the original definition of Zajonc (1968), the operationalisation of this is often questionable. This is particularly apparent in relation to the notion that mere exposure is characterised by presentations that are *just perceptible*, and therefore do not involve a high degree of attentive and elaborative processing (Zajonc, 1968). In this respect, it may be argued that techniques of divided attention (Obermiller, 1985; Anand *et al.*, 1988) may not necessarily afford a high degree of exposure control and facilitates wide variations in attentive processing between individuals and stimuli. Similar criticism may be made with regard to the experimental use of the peripheral *(or incidental)* exposure techniques in Janiszewski (1993), Shapiro (1999) and Fang *et al.*

(2007). In these studies, it is possible that the results could be confounded by differences in attentive processing between both participants and stimuli. Although participants are requested to focus on a particular part of the visual stimulus in these studies, there is rarely (if ever) direct control or measurement of where and for how long focal attention is focussed. On this point, it should perhaps be noted that, although Janiszewski (1993) uses eye tracking-technology to provide a mean estimation of the direction and amount of attention, this does not necessarily address the issue of individual differences in the sample. In this respect, specific measurement of the interaction between attention and exposure (alongside subsequent recognition) would perhaps provide a more robust means of demonstrating *incidental* exposure, and exploring the effects of increasing attention within this paradigm.

Whilst peripheral exposure could possibly give rise to the confounding effects of attention and elaboration in mere exposure research, however, the occurrence of these must be considered *probable* in those studies that specifically allow, or even require, this during the exposure phase. For example, the 25 stimuli in Lee (1994) are each exposed for 8 seconds, whilst the 24 slides in Baker (1999) – each containing 12 exposures of the same brand name – are exposed for 2 seconds at a time. Given the very small effect sizes that are traditionally associated with exposures of this length (see Bornstein, 1989) and the extremely small sample of Lee (1994), it is thus questionable as to whether the findings constitute valid and reliable evidence of the MEE. Perhaps the most elaborative exposure phase in this body of work, however, is that of Vanhuele (1995), in which participants are *required* to consciously and actively evaluate 81 brand

logos in their own time. Whilst it is acknowledged that this study specifically considers the role of familiarity and recollection in the MEE, it is clearly not in keeping with Zajonc's definition of mere exposure as that which is *just perceptible*. Furthermore, it could be expected that the extensive exposure phases of Lee (1994), Vanhuele (1995) and Baker (1999), coupled with the use of stimuli and tasks that are not particularly arousing, might be expected to result in boredom and fatigue; factors that have been found to hinder the MEE (Bornstein *et al.*, 1990). At best, therefore, it might be expected that the influence of mere exposure is significantly underestimated in these studies. At worst, the validity of the results might be questionable on the grounds that the effects observed under these conditions are unlikely to reflect the influence of mere exposure alone (see Bornstein and Craver-Lemley, 2004).

Finally, and in addition to the possible confounding influence of attention and elaboration, the issue of exposure control is particularly problematic in those studies that utilise peripheral stimulus presentation as a means of creating *incidental exposure* (IE). In this respect, however, it is perhaps first important to acknowledge the ecological validity of this approach in the broader context of advertising research. Peripheral, incidental exposure to advertising is likely to occur frequently in the contemporary media environment; e.g. advertising that appears at the periphery of the visual field when audiences are engaged in a focal task (such as reading a print article, watching an embedded video on a web page or simply driving down a busy street). In such circumstances, the advertisement is often perceived fleetingly and with low levels of conscious attention, elaborative processing and subsequent explicit memory. The effects

of incidental exposure (IE) are therefore of significant interest to advertising, marketing and consumer researchers; and, it would appear, very closely related to those of *mere exposure.*

In the IE research paradigm, a typical study involves focussing the attention of participants on a focal task whilst the target stimuli are exposed at the periphery of their visual field (usually to the left or right). As Shapiro *et al.* (1997: 94) explains:

> "Because the secondary information [i.e. peripheral stimulus] does not receive direct foveal attention, and since attentional resources available for processing [are] limited, it is not surprising that the secondary information cannot be explicitly recognized."

Cognitive and affective response to the target stimuli are then measured in the absence of recognition. In this way, consumer researchers have provided robust evidence of the positive influence of IE on liking for brand advertising (Janiszewski, 1988) and the inclusion of products in a consideration set (Shapiro *et al.*, 1997). Given the close similarities in both the nature and outcome of *incidental* and *mere* exposure, it is unsurprising that the two phenomena are often considered to be one and the same in the marketing literature. Indeed, the IE paradigm has been employed in a number of the studies reviewed earlier in this chapter (e.g. Janiszewski, 1993; Shapiro, 1999; Fang *et al.*, 2007). With specific regard to the MEE, however, the IE paradigm gives rise to an important limitation; namely, that the effects observed could be due to the simultaneous processing of focally attended material and the peripheral target stimulus. Indeed, Janiszewski (1988: 205) originally draws attention to this in a study of hemispheric processing:

> "the finding of a placement effect on evaluation of a pictorial ad when a verbal attended task is used . . .and a placement effect on a verbal ad, but not a pictorial ad, when a visual attended task is used . . . suggests that attended stimuli may influence the processing of unattended stimuli."

Furthermore, an interaction between the attended and non-attended material, and indeed different peripheral stimuli, in the IE paradigm has since been empirically demonstrated by Janiszewski (1993). Given this, it is possible (and even probable) that the *peripheral* or *incidental* exposure effect reflects the outcome of implicit associative priming during exposure, and thus the phenomenon of *classical conditioning*. This is distinct from the simple, repetitive, unreinforced priming of the target stimulus alone that characterises the MEE (see Baker, 1999). On the same basis, the simultaneous peripheral processing of each aspect of complex advertisements (e.g. logos, pictures, verbal claims, etc.) might be expected to contribute to affective response towards the target brand name. In conclusion, therefore, whilst the findings of Janiszewski (1993), Shapiro (1999) and Fang (2007) clearly demonstrate the influence of *incidental* exposure (that may indeed incorporate the MEE) it is important to acknowledge the potential confounding influence of *implicit associative priming* in this paradigm. As such, an important contribution of future research into the marketing-based MEE may be to validate these findings within the specific confines of the mere exposure paradigm.

4.4. Conclusion

In conclusion to the critical review in this chapter, therefore, it should be noted that the body of marketing research undertaken within the strict parameters of the mere exposure

paradigm is relatively small and subject to a number of theoretical and methodological limitations. In some cases, these limitations may be seen to undermine the original aims of the research; a problem that is particularly true of those studies that ostensibly seek to test competing theoretical explanations of the MEE. Nonetheless, the work reviewed in this chapter gives rise (albeit often inadvertently) to some potentially important findings regarding the effects of supraliminal mere exposure in the presence and absence of recognition. The majority of these findings, it has been observed, relate to the former; supporting evidence for which is provided by Anand *et al.* (1988), Baker (1999) and Vanhuele (1995). In addition, Baker (1999) identifies the conditions under which this specific form of the effect might be expected to be most influential in the consumption environment, whilst Vanhuele (1995) makes a contribution to explaining the potential role of familiarity (albeit questionable in the light of current theories of the MEE). Whilst evidence of the MEE in the absence of recognition is surprisingly not found by Anand *et al.* (1988), it is proffered by Lee (1994). Importantly, however, this later work is also one of the very few studies to demonstrate a *reverse* non-conscious MEE in adults, and to provide a clear indication that the direction of the non-conscious MEE may be stimulus-specific. Given the inadvertent nature of many of these findings, however, and significant methodological limitations (e.g. very small samples, the use of non-marketing stimuli, and long, attentive and elaborative exposure phases), and the rarity with which effect size data is reported, it may be premature to draw conclusions with regard to the marketing-based MEE on the basis of these studies alone.

In the absence of robust, unequivocal, domain-specific findings as to the occurrence, size, direction and nature of the MEE in the presence and absence of objective recognition and a subjective sense of recollection, therefore, it may be argued that clear evidence for the propositions identified in chapter 2 (see page 62) remains elusive in the marketing literature. As a result the role, relevance and efficacy of the MEE in marketing theory and practice remains unclear. In response, and with a view to establishing a strong foundation on which to facilitate the exploration, application, measurement and control of this phenomenon in marketing theory and practice, the primary purpose of the empirical work in this thesis is to provide a robust examination of the MEE in relation to typical marketing stimuli; and in particular to test each of the propositions stated in chapter 2 (see page 62). To this end, critical aspects of methodology and research design are discussed in detail during the next part of this thesis, prior to the presentation and discussion of results in part III.

Part II

Research Objectives and Methodology

Chapter 5

Research objectives, methodology and design

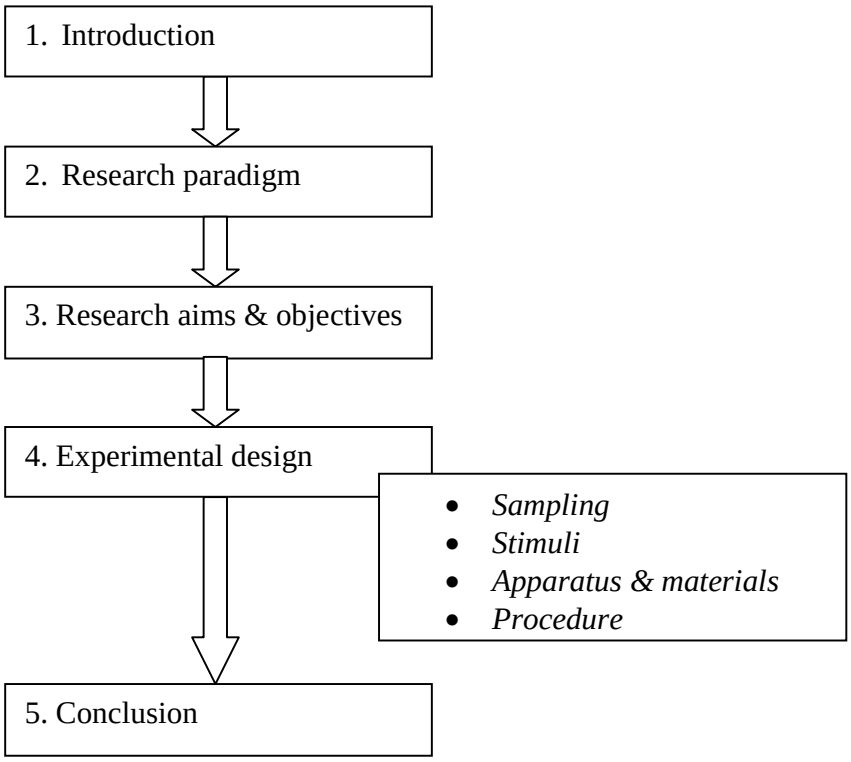
5.1. Introduction

During the first part of this thesis a number of propositions were developed (page 62) that, it is argued, reflect the fundamental basis of current psychological understanding of the *mere exposure effect* (MEE). Following a broad discussion of how this phenomenon has been, could be and should be conceptualised in marketing theory (chapter 3), a detailed critical review of previous empirical research in this domain was then undertaken. In conclusion, it was argued that marketing-specific empirical evidence for the propositions identified in chapter 2 is currently compromised by significant theoretical and methodological limitations, and characterised by somewhat equivocal results across what remains a relatively small stream of the marketing literature. In light of this, it was explained that the overarching aim of this thesis is to test these propositions in a marketing context, and thus to provide a robust, first-principles extension of previous psychological research in this domain. Specifically, this involves the design and execution of a study of the MEE in relation to typical marketing stimuli and brand-related evaluation that is closely aligned (both theoretically and methodologically) to the extant psychology literature.

The purpose of this chapter is to outline the research objectives, methodological approach and experimental design for the empirical work in this thesis. In this respect, the chapter begins with a brief overview of the research paradigm within which the study will be developed. This is then followed by a recap of the propositions distilled from the psychology literature that, if validated in a marketing context, would provide a

foundation for the theoretical conceptualisation, further exploration and practical application of the MEE in this domain. To this end, and in relation to the selected stimuli and measurement techniques, these are translated into a number of hypotheses; the testing of which constitutes the primary objective of the empirical work in this thesis. Having established the aims and objectives of the study, the remainder of the chapter is then given over to a comprehensive explanation of the experimental design - including sampling, stimuli and procedure (see figure 5.1); with critical issues regarding the latter considered further in chapter 6.

Figure 5.1: Structure of chapter 5



5.2. Research Paradigm

During the course of this thesis, the MEE has been conceptualised as a non-conscious processing effect. Specifically, it was noted in chapter 2 (section 2.3.2.2, page 45) that, in the absence of a generic theory of mere exposure, the influential misattribution theories of mere exposure are underpinned by common assumptions as to the nature of the mental processes that underpin this phenomenon; namely, the creation and influence of implicit (i.e. subconscious) memory. In this sense, whilst the ultimate behavioural and attitudinal outcomes of the MEE are consciously experienced (e.g. affective response), the *actual* effects of mere exposure (i.e. the creation and misattribution of implicit processing fluency) occur subconsciously.

On this basis, therefore, mere exposure research has evolved within the positivist tradition; assuming, as it does, that the MEE constitutes a lawful generalisation of human behaviour that is underpinned by the common processes of non-conscious processing (see Bornstein and Craver-Lemley, 2004). By definition, therefore, participants cannot be expected to reflect and report upon their experiences of this phenomenon, as may be required in qualitative research that is conducted within a phenomenological paradigm. That is not to say that such an approach does not have a place in mere exposure research; indeed, it might be particularly appropriate in studies that seek to challenge certain assumptions about the relevance of the MEE in a marketing context. For example, whilst it is assumed that the sheer volume and ubiquity of marketing communications means that most of it receives little or no attention and elaborative processing (see chapter 1, page 4), qualitative research might usefully be employed to explore the ways in which this might differ between consumers, products,

brands, media, etc. In this way, it may shed light on the particular circumstances in which the MEE might be expected to have the greatest impact on consumer decision-making.

However, given that this study specifically endeavours to test existing psychological theory (and thus extend previous psychological research) in a marketing context, and that participants may be expected to be unaware of the processes that are under investigation, the continued adoption of a positivist perspective remains appropriate. Furthermore, the extension of marketing-based mere exposure research within this tradition is important to facilitate direct comparison with previous work and meaningful dialogue with other researchers in the field. To this end, therefore, the thesis draws on existing psychological theory to develop a number of propositions regarding the existence, size, direction and nature of the marketing-based MEE. These are then translated into specific hypotheses for testing by way of experimentation; as will be explained below.

5.3. Research Aims and Objectives

As noted in the introduction to this chapter, the overarching aim of the empirical work in this thesis is to test the three *fundamental* propositions distilled from the literature review in chapter 2 and, in doing so, to provide a robust examination of the occurrence, nature, size and direction of the MEE in a marketing context. To this end, the propositions are transformed into specific hypotheses that reflect the precise nature of the dependent variable, the conditions under which it will be studied and the means by

which it will be measured in this study; as illustrated in table 5.1 (below). The key aspects of experimental design that are inherent in these statements of hypothesis will be discussed in detail during both this and the following chapter.

At this stage, however, it is important to reiterate that the marketing stimuli selected for use in this study are invented brand names (as previously noted in chapter 2, page 62, and indicated in the hypotheses below); the rationale for which will be discussed in section 5.4.2 (page 189). Furthermore, and in light of the possibility that the MEE may be influenced by the relative complexity of the stimuli in question (Bornstein, 1989), these are limited to simple, single-word brand names. However, it was previously acknowledged that marketing cues of this type may take the form of either real words (e.g. 'Virgin') or pseudo-words (i.e. pronounceable non-words, like 'Persil'); and that this is a potentially important distinction in light of meta-analytic indications that meaningful words may produce larger experimental exposure effects than nonsense words (Bornstein, 1989; see chapter 2, page 25). In order to enhance both internal and ecological validity, therefore, an even number of each type of brand name was selected for use in this study. This not only facilitates the identification of word-type as a moderating influence in the testing of the three *fundamental* propositions, but effectively constitutes an additional contribution to the marketing literature in its own right; namely, the relative degree to which real-word and pseudo-word brand names might be expected to produce mere exposure effects. To this end, the relevance and necessity of a fourth *additional* proposition (P4) was acknowledged in chapter 2 (page 62); as illustrated in table 5.1., alongside the specific hypotheses by which it will be tested.

Table 5.1: Primary propositions and related hypotheses for empirical testing

Propositions	**Related Hypotheses**
P1: Mere exposure* to a marketing stimulus will influence affective response to that stimulus when it is subsequently encountered	H1a. Following supraliminal mere exposure, the mean target preference rate for target brand names will be significantly *higher* than that which may be expected to occur by chance; ***or*** H1b. Following supraliminal mere exposure, the mean target preference rate for target brand names will be significantly *lower* than that which may be expected to occur by chance
P2: The size of the marketing-based mere exposure effect will be hindered by the presence of accurate recognition memory for marketing stimulus exposure	H2. Following supraliminal mere exposure, the degree to which the mean preference selection rate for target brand names differs from chance will be significantly lower in the presence of stimulus recognition than in the absence of this
P3: The size of the marketing-based mere exposure effect will be hindered by a subjective sense of confident, contextualized recollection for prior exposure to the marketing stimulus; regardless of recognition accuracy	H3a. Following supraliminal mere exposure, the degree to which the mean *target* preference rate differs from chance will be significantly lower when *accurate* recognition judgments are accompanied by high levels of confidence (i.e. certain/sure) than when they are not (i.e. unsure/guess); ***and*** H3b. Following supraliminal mere exposure, the degree to which the mean *non-target* preference rate differs from chance will be significantly lower when *inaccurate* recognition judgments are accompanied by high levels of false confidence (i.e. certain/sure) than when they are not (i.e. unsure/guess).
P4: The marketing-based mere exposure effect will be significantly larger for real-word brand names than it will for pseudo-word brand names	H4. Under conditions of supraliminal mere exposure, the degree to which the mean target preference rate differs from chance will be significantly larger for real-word brand names than pseudo-word brand names H5a. In the presence of stimulus recognition, the degree to which the mean target preference rate is higher than chance will be significantly larger for real-word brand names than pseudo-word brand names; ***and*** H5b. In the absence of stimulus recognition, the degree to which the mean target preference rate is lower than chance will be significantly larger for real-word brand names than pseudo-word brand names

**The operational definition of mere exposure in this study is brief, repeated exposure to a stimulus in isolation at a level that is just perceptible (see chapter 2, page 66)*

The development of each of the hypotheses in table 5.1 will be explained further during chapter 7, following a detailed discussion of the aspects of research design on which they are founded in this part of the thesis (i.e. the specific nature of the dependent and independent variables and the means by which the former will be measured). At this stage, however, it is perhaps useful to note that H1a/H1b constitute competing hypotheses to test the *direction* of the MEE in this study (should it be found to occur at all). By contrast H3a/H3b and H5a/H5b constitute complimentary hypotheses; reflecting the unfolding nature of the analytical process and, specifically, previous indications that the direction of MEE may differ in the presence and absence of recognition (as will be explained in chapter 7).

Further to the testing of the above propositions (by way of the accompanying hypotheses), additional analysis will be undertaken to rule out alternative explanations on the basis of task order and, if sample size permits, the inherent characteristics of the stimuli at test (i.e. fluency effects that are not exposure-induced; see Whittlesea, 1993). As will be explained in chapter 6 (page 287), the former relates to the possible influence of *affective modulation bias* (Phaf and Rotteveel, 2005); i.e. an increase in the likelihood of perceived recognition as a result of previously stated preference for the stimulus. It may therefore be identified by a between-group comparison of recognition rates in the experimental and control conditions; whereby the only difference is that control participants are not required to make an intervening preference judgment in relation to the same stimuli that then appear in the recognition task (see chapter 6, page 289-290). With regard to the second alternative explanation, and whilst the experiment is carefully

designed to minimise both the influence of inherent fluency effects and subliminal perception in the exposure phase (as will be explained in chapter 6), it is accepted that the latter is likely to occur (to a small extent) as a result of individual differences in perceptual ability. As a by-product, however, it is also acknowledged that, should a sufficient number of participants experience the exposure phase subliminally, this may provide an additional opportunity to check that the observed effects are linked to the exposure phase. In this respect, and on the basis of the discussion in chapter 2 (page 29), it might be expected that a relevant change in the nature of the exposure phase (i.e. subliminal rather than supraliminal perception) will lead to a change (i.e. increase) in the size of the preference bias (Bornstein, 1989; Bornstein and D'Agostino, 1992). The hypotheses for testing with regard to both of these alternative explanations are therefore summarised in table 5.2 below.

Table 5.2: Additional propositions and related hypotheses for empirical testing

Possible alternative explanation	**Further hypotheses**
Inherent fluency effects (i.e. *false familiarity effect*)	H6. In the absence of stimulus recognition, the size of the non-target preference bias will be significantly larger under conditions of subliminal versus supraliminal perception during exposure
Task order (i.e. *affective modulation bias*)	H7. Recognition rates for the target and non-target stimuli will differ significantly between the control and experimental groups.

In light of the stated research objectives of the study (i.e. testing the hypotheses stated in this section), therefore, the remainder of this chapter endeavours to provide a detailed explanation of the experimental design by which they will be addressed; structured around the three core elements of sampling, stimulus selection and experimental procedure.

5.4. Experimental Design

The key aspects of experimental design are discussed in detail during both this and the following chapter. At this point, however, and by way of an overview, it is perhaps important to highlight a number of steps that were taken to address some of the methodological issues associated with previous market research that relates to the MEE (see chapter 4, page 159). In this respect, the key areas in which methodological improvements were sought may be summarised as follows:

- Sample size – a significant increase in sample size was designed to enhance the relative reliability of this study
- Experimental procedure – close control and measurement of the nature and extent of exposure were employed to ensure the necessary conditions for the MEE in this study (i.e. supraliminal perception and the subsequent presence/absence of stimulus recognition and recollection).
- Analytical approach – a far more detailed categorical approach than mean selection rates on forced-choice tests is employed; an approach that was adopted in original studies of the MEE but is subject to significant limitations (as will be discussed in chapter 6, page 238).

During this part of the thesis, each of these factors will be discussed as part of a comprehensive explanation of the methodological approach. To this end, an overview of the experimental design is first provided in this chapter; beginning with sampling and moving on to incorporate the stimuli, materials, apparatus, procedure and measurement techniques. The key issues and considerations that are relevant to each of these areas will then be discussed in more detail during chapter 6.

5.4.1. Sampling

It is evident from the discussion in previous chapters that prior studies of implicit priming and the MEE, whether in psychology or marketing research, exhibit two common traits; relatively small groups of participants in each experimental condition and the use of student samples (see chapter 4, page 159). During the course of this section both the nature of the sample and the process by which it was drawn will be explained in detail. Prior to this, however, the section begins with a discussion of sample size.

5.4.1.1. The size of the sample

Whilst small samples ($n<30$) are extremely common in experimental psychology, they are not necessarily the norm in the wider marketing literature. Indeed, research in this domain is often characterized by significantly larger sample sizes; a response perhaps to the demands of practitioners for extremely high levels of reliability (see Baker, 2002).

With this in mind, and specifically concerns regarding the reliability of indirect tests of implicit memory via performance changes (Buchner and Brandt, 2003), this study utilizes a relatively large sample (n=240) in comparison to previous marketing research in this field (see chapter 4, page 159). Furthermore, it is divided into just two conditions; giving rise to an *n* of 160 in the main experiment and 80 in the recognition control group. In the context of mere exposure research, the former therefore represents the largest sample in a single experimental condition to date.

In determining the specific sample size, primary consideration was given to the nature and power of the planned statistical tests, the anticipated effect size and the degree of confidence required (95%). To this end, a software package called GPower 3.0 was used to provide an indication of the sample size necessary to reveal the presence of the MEE, given the average effect size indicated by Bornstein (1989; see chapter 2, page 23). In addition, however, practical considerations also contributed to the decision regarding sample size. In this respect, two computer suites were secured for the duration of the experiment that, taken together, held a capacity of 120 participants. During the data collection period it was possible to run the entire experiment twice and thus include a total of 240 participants within these resource constraints. As this number exceeded that indicated by the GPower 3.0 calculations, it was deemed to be both sufficient and practical in the context of this study. However, perhaps a more contentious issue with respect to sampling is the use of student participants in mere exposure research. The debate in this regard, and its implications for research design in the current study, are therefore discussed below.

5.4.1.2. The selection of a student sample

The use of student participants potentially confers practical and methodological benefits in the form of accessibility, convenience, location, control, compliance and access to resources (Bello *et al.* 2009; Bergmann and Grahn, 1997; Dasgupta and Hunsinger, 2008). As a result, it may facilitate the generation of relatively large samples, the efficient use of time and resources and lower rates of non-response or drop-out. Furthermore, the relative homogeneity of this group (Peterson, 2001) facilitates the identification (via pretesting) of research stimuli, contexts, questions and tasks that may be considered to be broadly relevant and meaningful by all participants. For all of these reasons student samples have traditionally been adopted in psychological experimentation and are increasingly used in consumer research (see Peterson, 2001; Fuchs *et al.*, 2009).

However, this trend has developed against a backdrop of theoretical concern and criticism regarding the external validity of student samples. Broadly, these revolve around the proposition that students represent a distinct, homogenous group that is not necessarily representative of the wider population (Dill, 1964; Lamb and Stern, 1979; Rubenstein, 1982; Schultz 1969). Specifically, it has been suggested that students are likely to be relatively young and thus possess a lesser degree of life experience (see Dasgupta and Hunsinger, 2008; Sears, 1986). As a result, it is claimed that students are likely to exhibit less-crystallized attitudes, a weaker sense of self and a greater

propensity for attitude and behaviour change (Hoge *et al.*, 1993; Perry, 1999; Sears, 1986). Furthermore, Henry (2008) proposes that, in addition to the potential for intrinsic differences in student and non-student samples, the university environment may also constitute a cultural constraint. On the assumption that such factors may distort the beliefs, attitudes and behaviour of students relative to those of the wider population, and that the former represents a distinct and homogenous group, the generalisability of the results they produce has therefore been theoretically challenged.

Whilst it is important to acknowledge the arguments for and against the use of student samples in research, however, it is perhaps also important to stress that there is as yet little consistent evidence for either. In the realms of marketing resarch, for example, empirical evidence of differences in student versus non-student samples (e.g. Park and Lessig, 1977; Soley and Reid, 1983) is challenged by studies that have found these differences to be negligible (e.g. Bergmann and Grahn, 1997; Brown and Brown, 1993; Sheth, 1970). As Peterson (2001: 453) observes:

> "Despite the enduring and oftentimes vitriolic nature of the debate over the use of college students as research subjects, relatively little empirical evidence exists to inform or buttress the various positions proffered . . . the empirical evidence that does exist is typically ad hoc and inconsistent, does not lend itself to meaningful generalization, and is inconclusive at best."

Furthermore, the argument against the use of student samples in academic research has been subject to significant challenges on theoretical grounds. In this respect, the defence of student sampling may be distilled into three key themes:

1. Non-student samples are not necessarily representative of the target population
2. Student samples are not necessarily homogenous

3. Homogenous student samples are beneficial to theory testing and development

With regard to the first of these, Sears (2008) highlights the fact that telephone surveys of the general US population tend to under-represent less-educated 'Whites' to illustrate his assertion that most samples are in fact unrepresentative (see also Basil, 1996). Secondly, James and Sonner (2001) draw attention to radical changes in the profile of undergraduate students in recent decades and present evidence against the assumption that this is, in fact, an homogenous group. Even if this assumption is maintained, however, a strong case has been made that such homogeneity is in fact beneficial to the testing of theoretical propositions. In line with the claims of Calder *et al.* (1981), Brown and Stayman (1992) and Henry (2008), Malhotra and King (2003: 43) argue that:

> "Many researchers assume that having a random sample from the population of interest provides a stronger test of theory than having a student sample. In fact, the use of an homogenous sample often decreases error variance and provides a stronger test of theory. Selecting homogenous samples can better control random sources of error."

Moreover, it should be noted that the 'wider population' is, in fact, the product of myriad groupings, each of which is both important and homogenous in its own right (see Oakes, 1972). In the field of organizational psychology, for example, Greenberg (1987: 158) argues that:

> "any research population is atypical. Just as the results of studies using student subjects may not be generalizable to the greater population of working people, so may the results of studies using narrowly defined groups of workers be similarly limited."

On this basis, therefore, it has been proposed that, whilst student samples may not necessarily be the most effective means of providing specific, immediately applicable

parameter estimates for the broader population, they may be highly appropriate in the testing, evolution and generation of theory (Bello *et al.*, 2009; Calder *et al.*, 1981; Greenberg, 1987). In such cases, representative samples may be sacrificed in pursuit of the high degree of internal validity that is critical to this process (Cook and Campbell, 1979; Berkowitz and Donnerstein, 1982). Furthermore, it is argued that the testing and development of theory across a wide range of homogenous groups may provide a more effective means of assessing the breadth of its validity and applicability - and identifying specific boundary conditions - than the study of a single, heterogenous sample (Tunnell, 1977; Bass and Firestone, 1980; Dasgupta and Hunsinger, 2008; Greenberg, 1987; Henry, 2008). Whilst the latter might be considered to be generally representative, the extent to which each of the important homogenous groupings that make-up the wider population are actually represented is often extremely limited and at the mercy of chance. With this in mind, Greenberg (1987: 157) concludes that:

> "it is not the purpose of any one study using college students to explain all that may be going on . . . Rather, such research may prove to be a valuable source of insight into some of the psychological processes operating therein."

This point is pertinent to the empirical work in this thesis, and in line with the earlier conclusion of Lamb and Stem (1979). Following a review of the somewhat equivocal empirical results regarding differences between student and non-student responses, these authors concluded that, whilst student samples might not necessarily provide a valid means of studying the beliefs, opinions and interests of a population, they may be considered appropriate to the investigation of widely shared psychological processes; such as memory, decision-making and information processing. On a broader note, and in

light of the discussion above, there appears to be a good degree of consensus that, whilst student samples should be used with caution and restraint, they may be considered useful, valid and appropriate whenever there are clear theoretical grounds to assume they will not significantly distort the outcome (Basil, 1996; Bello *et al.*, 2009; Henry, 2008).

With regard to the current study, therefore, a student sample may be considered to be appropriate for four reasons. Firstly, it relates to the study of psychological processes (i.e. implicit memory and information processing); an endeavour for which student sampling has been deemed to be relatively appropriate (Lamb and Stem, 1979). Secondly, the non-conscious psychological processes that are under investigation are not, by definition, subject to conscious, elaborative thought, nor are they shaped by reflection and mindful reasoning**.** Furthermore, there is no evidence to indicate that the extent and nature of implicit processing is significantly different amongst individuals and groups in the general population (see Bornstein and Craver-Lemley, 2004). Thirdly, this study is concerned with the testing of theoretical propositions and, as such, may be considered to benefit from the enhanced internal validity of a relatively homogenous sample (Greenberg, 1987; Malhotra and King, 2003; Henry, 2008). Finally, a student sample may even be considered *necessary* in light of the fact that the study endeavours to test the extent to which previous psychological findings are replicated in relation to typical marketing stimuli, and thus to clarify the somewhat limited and equivocal evidence in the extant marketing literature. Given that mere exposure research in both disciplines is almost universally characterised by the use of student samples, and on the

assumption that these participants constitute a distinct, homogenous group, changes to this aspect of experimental design may confound conclusions in this respect. Specifically, it may be impossible to determine whether differences in the existence, size, direction and nature of the effects observed in the current study are the product of changes to the stimulus type, context of evaluation or sample profile. That is not to say that the extension of mere exposure research to marketing should not include subsequent comparisons between different types of consumers (as will be discussed in chapter 9); rather that, in this particular investigation, the comparability of results with those of previous psychological studies requires the adoption of a similar (homogenous) sample. For these reasons, the use of students was considered to be not only appropriate and of practical (and potentially theoretical) benefit, but also necessary for the empirical work in this thesis.

5.4.1.3. The sampling process

The sample frame for this study was provided by a 2-hour lecture at Hull University Business School that was attended by 271 undergraduate students. The experiment ran twice during the period of the lecture, with the experimental and control groups represented equally on a pro rata basis in each session. As such, two groups of 80 participants completed the main experiment, whilst two groups of 40 participants completed the control version of this. Each group was spread across two computer suites; these were used simultaneously and accommodated 80 and 40 participants respectively. During each session, therefore, the two conditions were represented

equally (n=20) in the smaller of the two rooms, whilst the experimental condition accounted for 60 of the 80 participants in the larger room. The 31 students in the sample frame who were randomly omitted from the study were taken to an overspill room for a non-participative demonstration of the experiment. Whilst not engaged in the experiment, each group attended a short guest lecture by a visiting academic on an unrelated topic. On completion of both data collection sessions, a full debrief was provided with the opportunity for questions and further discussion.

The number of students attending the lecture was calculated on entry. For the experimental condition 160 cards were produced, each containing the reference number of a specific computer and data collection session. Similarly, 80 cards were produced containing the same information for those in the control group. All of these cards were shuffled together with 31 blank cards (to reflect the fact that 31 of the 271 students present would not be included in either group), split between four research assistants and distributed randomly across the sample frame. In this way, participants were randomly selected for inclusion in the experiment and allocated to one of the two conditions.

All of the participants were asked to sign a consent form prior to the start of the experiment, and were given the opportunity to refrain from participating if they wished. They were also informed that they could withdraw at any point by raising their hand and requesting to do so. Those who chose not to complete the experiment would join the overspill group and be given a non-participative demonstration. None of the participants chose to withdraw from the study although one was unable to take part on medical

grounds (it was explained at the beginning of each session that the experiment contains flashing images and is not suitable for those with epilepsy). This participant was taken to a different room where she was provided with a modified demonstration of the experiment.

5.4.2. Stimuli

It was acknowledged in chapter 2 (page 26) that one of the main reasons for replicating scientific studies in the consumer domain is that there is a need to extend psychological findings in relation to abstract stimuli to those that are typically used in marketing communication. In this respect, it is observed that previous marketing-based studies of fluency effects, and in particular those related to the MEE, have utilised products (e.g. Shapiro, 1999), brand names (e.g. Janiszewski, 1993; Chung and Szymanski (1997) and brand logos (e.g. Vanhuele, 1995). Of these, brand names not only constitute the central and most important brand asset (Kohli, 1997), but are also likely to produce a stronger MEE than abstract and animated logos under experimental conditions (Bornstein, 1989). For these reasons, brand names were selected for use in this study. In order to minimise the influence of previous exposure, experience and attitudes, and thus isolate the influence of the exposure phase in this experiment, these brand names were invented and pretested for prior associations with existing product categories; detailed discussion of which will be provided in section 5.4.2.2 (page 194).

Prior this, however, it should be noted that it was also deemed important to define the product categories to which brand names would be related during this research. In order

to make the task of choosing preferred brand names meaningful to participants, it is necessary to place this in the context of specific products. For example, the question 'which brand name do you prefer?' is not meaningful unless participants are provided with a product category in which to evaluate the stimuli. The question might therefore be phrased, 'The following names have been proposed for a new brand of [PRODUCT]. Which of the two brand names do you like the most?' Thus, whilst the product category does not in itself constitute the target stimulus type in this experiment, initial pretesting and selection of this was important to provide an appropriate context for preference judgments during the experiment. Prior to a discussion of the creation and selection of specific brand names for use in this study, therefore, a brief explanation of product category selection is provided below.

5.4.2.1. Product categories: Pretesting and selection

Prior experimental research into the effects of priming on consumer attitudes has stressed the importance of using brand and product stimuli in categories that are relevant and appropriate to the target population (e.g. Chung and Szymanski, 1997; Shapiro, 1999). This is an important factor in enhancing the ecological validity of experimental results, and in developing tasks that are meaningful to participants. With this in mind, and in light of the fact that participants would be required to evaluate a number of different brand name pairs in the test phase (as will be explained in section 5.4.4, page 211), initial consideration was given to the *number* of product categories that would be both necessary and appropriate. Three main alternatives were considered in this respect:

1. The use of a different product category for each trial[1] (i.e. brand name choice)
2. The use of the same product category for all of the trials
3. A compromise between these approaches, whereby a small range of categories might be used with participants required to make multiple brand name choices in relation to each product type.

As a context in which to consider these options it is important to acknowledge that maximising the number of trials provides a means by which to enhance the reliability of indirect tests of implicit memory effects (see Buchner and Brandt, 2003). With this in mind, the first consideration in this respect is that it is extremely difficult to generate numerous different product categories with a high degree of equivalence in relation to each of the selection criteria (see below). Similarly, in relation to the second option, it is also difficult to generate dozens of brand names that are considered to be equally appropriate for a single product category. Furthermore, this second scenario is more likely to lead to boredom, fatigue and a risk that the requirement to make the same decision in the same product category, over and over again, would be perceived as meaningless. The third option was therefore deemed to be the most appropriate for this study. Specifically, four product categories were used, with participants expected to make a small number of paired-choices in each context (as will be discussed in the following section, participants were ultimately required to make three brand name choices in relation to each of the four product types). The rationale for this was to facilitate comparability in appropriateness between each brand name, enable the

[1] It may be useful to clarify at this point that the brand names in this study are often referred to as 'items' from this point on, whilst the 12 paired-choices in each task of the test phase are referred to as 'trials'

selection of equivalent product categories on key criteria and minimise the influence of boredom and fatigue (Bornstein *et al.*, 1990). Regarding this latter issue, the brand choice-pairs were presented in different, random orders during the two test phase tasks to further reduce the risk of boredom effects. Having identified the number of categories that would be required, specific product types were selected on the basis that they met three criteria; a) familiar to the target population, b) purchased frequently/regularly by the target population, and c) relatively inexpensive (the purpose of this criterion being to reduce perceptions of irrevocability and financial risk and thus the extent of actor involvement during the test phase; see chapter 6, page 291).

In order to operationalise these criteria in the selection of the four product categories, the following steps were taken. Firstly, an audit was completed of the products available in the Student Union shop on the main campus of Hull University. As this store is specifically designed to serve the daily needs of students, it was deemed to provide an appropriate frame from which to develop a list of potential product categories. As a result, 20 categories were selected for further pretesting on the basis that they might reasonably be expected to be well-known, purchased regularly and not usually subject to high levels of actor involvement. Pretesting of these products was undertaken by way of a survey of 35 undergraduate students (who did not did not then take part in the main experiment) to evaluate the *frequency of purchase*. This survey was conducted at the beginning of two second-year undergraduate seminars and followed by an explanation of what the data would be used for and an invitation for feedback from participants in this respect. On this basis, eight products were identified as being purchased by over

90% of the sample with an average frequency of at least once per month; soft drinks, crisps, chocolate bars, biscuits (packets), breakfast cereal, yoghurt, toilet rolls, shampoo.

At this point, however, it was noted that the first four products in the list above could all be regarded as similar in the sense that they are all types of *confectionary*. In order to provide clear distinction in the nature of the selected products, and thus to investigate the MEE in relation to a broader range of categories, only one of these was selected (randomly) for inclusion in the main experiment. Furthermore, participant feedback indicated that, whilst toilet rolls might be purchased frequently by second-year undergraduates (most of whom lived in rented houses) this might not be the case for first-year undergraduates (most of whom lived in serviced halls of residence). With this in mind, the category of *toilet rolls* was also excluded at this point and four products were selected on the basis that they represented a broad range of relevant, familiar, inexpensive consumer goods that were likely to be purchased frequently by participants in the main experiment; these were chocolate bars, breakfast cereal, yoghurt and shampoo.

Having established the product context in which brand stimuli would be positioned, therefore, the next phase of stimulus pretesting and selection concerned the specific nature of the brand names that participants would be exposed to (and required to evaluate) during the experiment. This is a critical element of experimental design in this study and is thus discussed fully in the following subsection.

5.4.2.2. Brand Names: Pretesting and Selection

As discussed in chapter 2 (page 57) one of the current theoretical challenges to mere exposure research is that, whilst the observed affect-bias may indeed be due to relative ease of processing for the stimulus in question, this fluency may not necessarily be the outcome of previous exposure. It could arise, for example, simply as a result of the inherent characteristics of the stimuli between which participants are required to discriminate (see Whittlesea, 1993). In order to minimise this possibility in the current study, pretesting was undertaken to ensure each pair of stimuli in the forced-choice tests of preference and recognition (see section 5.4.4.3, page 216) consisted of brand names that were equivalent in terms of their inherent 'likability'. Furthermore, in order to ensure a degree of ecological validity, whilst minimising the impact of influences outside the experiment, all brand names were pretested for *appropriateness* regarding the product category and the absence of common pre-existing associations with real-world products.

At this point, however, it is important to acknowledge that each target brand name selected for use in this experiment was not only paired with a 'filler' brand name during the forced choice tests of preference and recognition, but was also accompanied by a 'distractor' brand name during the exposure phase; a mechanism that was used to reduce the extent to which target stimuli were actively processed, encoded and thus retrieved during the experiment (as will be explained in chapter 6, page 251). As such, rather than simply developing equivalent choice pairs (i.e. the exposed target and non-exposed filler brand name for each trial in the test phase), pretesting was undertaken with the aim of

creating *triads* of brand names that were considered equally likable and appropriate for the product category. This approach was selected as it facilitates a further means by which to minimise the possibility of systematic preference bias due to the inherent characteristics of a particular stimulus; namely, the counterbalancing of target and distractor stimuli across the sample. In this respect, of the two brand names in each triad that were presented during the exposure sequences, one was then presented as the target stimulus (alongside a 'filler' brand name) in the test phase for half the sample, whilst the other was presented as the target stimulus (alongside the same filler) for the other half. A comparative analysis of the results for targets A and B respectively was then undertaken; the results of which are not indicative of a systematic bias arising from the characteristics of a particular stimulus (see appendix III, page 483). To clarify, therefore, a series of brand triads were developed for inclusion in the main experiment via a process of extensive pretesting. Each triad consisted of a target stimulus, a distractor (for use in the exposure phase), and a filler (or non-target) stimulus that would provide an alternative to the target brand name in forced-choice tests of preference and recognition (see section 5.4.4, page 211). All three brand names in each triad were selected on the basis that they exhibited equivalent ratings on scales related to *liking* and *appropriateness for the product category*, prior to the experimental procedure. Finally, on the basis that brand names may constitute both real and pseudo-words, and that this factor might moderate the size of the MEE (see proposition 4 in table 5.1, page 176), half of the selected triads were composed of real-word brand names and the other half pseudo-word brand names; i.e. pronounceable non-words that could conceivably be real in the context of the language within which they are created, but are not part of the

lexicon. Whilst pseudo-word stimuli are commonly used in psychology research, it should perhaps be acknowledged at this point that the creation of global pseudo-words may be rendered extremely difficult, and perhaps even impossible, by the linguistic diversity of multinational samples. In this respect, it is possible that the 'invented' word inadvertently resembles one that is part of another language or dialect. However, the central issue is whether the word may be reasonably expected to be considered highly obscure and thus without a consistent or common meaning across the audience for which it is intended. In the context of this thesis, therefore, it is perhaps useful to operationally define the term 'pseudo-word' as; *a pronounceable non-word that is not part of the English lexicon, may be reasonably expected to be considered highly obscure by the vast majority of the audience and is unlikely to convey a common meaning.*

The process of pretesting by which the final set of brand names was selected and grouped for use in the experiment will be outlined subsequently. Prior to this, however, it is perhaps important to discuss a key initial decision regarding the validity of experimental mere exposure research in a marketing context; namely, the trade-off between the use of *real* versus *fictitious* brands. In this respect, whilst the ecological validity of real brands is attractive, it is important to note that there is a high likelihood of previous experience and brand knowledge. As such, participants may harbour a preconceived set of brand associations that could significantly moderate exposure-induced changes in affective response during the experiment. That is not to say that mere exposure effects cannot occur for established brands in the real-world environment. Rather it is to acknowledge that, for those stimuli to which participants

have a high degree of prior familiarity, a small number of additional exposures may be unlikely to have a significant influence on preference within the context of a single experiment (Shapiro, 1999). Furthermore, previous exposure may lead to attention switching, enhanced perception and thus greater ability to create explicit memory for the exposure phase (Greenwald and Leavitt, 1984); i.e. the outcomes of mere exposure outside of the experiment might confound the study of this phenomenon within it. Thus, whilst it is acknowledged that the use of real brand names would potentially confer higher levels of ecological validity, there is a significant likelihood that it would be gained at the expense of internal validity. In order to avoid the potentially confounding effects of previous exposure, therefore, real brand names would need to be wholly unfamiliar to participants. Given this, it could be argued that there is little point in using real brand names if they have to be so unfamiliar as to be altogether unrecognisable. As such, and in order to minimise the possibility of contamination by previous recognition and association, the proposed new brands referred to in this study are fictitious (although participants were led to believe otherwise; see chapter 6, page 291 for a discussion of the need for disguise in this respect).

With this in mind, and as a first step in the selection of the brand stimuli in this study, two sets of 80 brand names were created. One of these lists contained only real-word brand names, whilst the other contained pseudo-word brand names. These lists were constructed using the real names (or fragments of these) adopted by small to medium-sized US companies in different product categories to those selected for this experiment; and all were simple, single-word brand names. The latter criterion was applied in

recognition of the possibility that relative stimulus complexity may exert a mediating influence on the MEE in paired-choice judgments (Bornstein, 1989). Whilst the evidence for this is somewhat limited at present, it was considered prudent to control for it in the context of the current study. The frame from which these names were drawn was constructed by amalgamating the lexical aspects of published samples from three specialist logo-design companies in the USA. The rationale for this approach is that it provides a practical means by which to identify brand names that are:

a) fictitious in the context of the product categories specified in this experiment; and
b) unlikely to be recognised as existing brand names by participants; but
c) ecologically valid in the sense that (although not recognised by participants) they have previously been selected as brand names by real-world companies.

The two sets of brand names formed the basis for the first phase of pretesting with a focus group of 12 members of the target population (who did not subsequently take part in the main experiment). In this respect, each set of 80 brand names was divided into four equal subsets; relating to the four product categories selected for use in the experiment (see page 193). The subsets were formulated so that they all contained 20 brand names that the researcher considered to be appropriate for the product category in question. During the first part of the focus group, participants were divided into four small groups of three. Each group was asked to select the 15 most appropriate real-word brand names for each product from the list of 20 provided (i.e. to exclude the 5 brand names they considered to be the least appropriate in each case). The process was then repeated with regard to pseudo-word brand names. The purpose of this reductive process

was to facilitate the removal of brand names that were considered entirely (or relatively) inappropriate by members of the group, without the need for redundant discussion as to which of these were the *most* inappropriate. For each product category, the lists of 15 real-word brand names produced by each subgroup were then displayed and the group as a whole was asked to agree on a single list of 15 brand names for each product that, whilst they may not necessarily be regarded as the *most* appropriate, could nonetheless be considered to be appropriate for that category. The criteria for stimulus selection in this phase, therefore, was that each brand name could only be selected in the category in which it was initially presented and all selected brand names were not considered to be entirely *inappropriate* for the product category by any participant. This process was then repeated with regard to pseudo-word brand names. Via moderated discussion, advocation and negotiation, therefore, consensus was reached on a list of 15 real-word brand names and 15 pseudo-word brand names for each of the four product categories that were widely considered to be appropriate (or at least not *inappropriate)* for the product in question (see table 5.3).

Table 5.3: Brand names selected as appropriate for the product category during qualitative pretesting (in alphabetical order)

	Chocolate Bars	Breakfast Cereal	Yoghurt	Shampoo
Real-word stimuli	Affair	Advantage*	Angel*	Clear
	Apollo	Balance	Barefoot	Create
	Busker	Connect	Cube	Earth
	Esquire*	Excel*	Faith*	Elite
	Flame	Game*	Fly	Envy*
	Hippo*	Harvest*	Fresh	Fusion*
	Kiss*	Jump	Haven*	Gecko
	Legend	Mamas	Passion	Guru
	Merlin*	Munch	Perfect	Honey
	Power	Perform	Polar	Inspire
	Rhino	Physique	Pure	Liberty
	Rocky*	Rapid	Sensation*	Synergy
	Space	Spark	Spirit	Tranquil
	Suave	Team	Sun*	Urban
	Wizard	Wonder	Touch	Vision
Pseudo-word stimuli	Carador	Almega	Aduo	Aliana
	Effero	Almi	Bajaroo	Axira
	Ibia	Calix	Bayou	Belanger
	Jinny	Chama	Boga	Celianz
	Kapnick	Chanda	Danossia	Censola
	Khoja	Comtran	Diehl	Denali
	Magia	Innotrans	Imoo	Fidelis
	Orbis	Jindz	Jasta	Imbarco
	Palmetto	Kedrix	Joojoo	Imperlum
	Raha	Kolodge	Koodley	Lianza
	Shanti	Movixo	Oculo	Lox
	Shasta	Stradix	Seo	Najila
	Slano	Wasatch	Shurtz	Solideon
	Xypher	Wizbit	Yolo*	Tulsani
	Zeco	Xinonix	Zyda	Verizon

* Brand names excluded on the basis of relatively common pre-existing associations with a single real-world company or product (as discussed below).

Note: The brand names in this table are listed in alphabetical order so as not to infer any ordering in the extent to which they were considered to be appropriate. Aside from this being arguably an impossible task in a group of 12 participants, the establishment of such a detailed shared ranking is not necessary in this pretesting phase. As such, respondents were not asked to rank each of the stimuli according to relative appropriateness but merely to decide whether which of the stimuli should be excluded on the grounds that they were relatively inappropriate as brand names in the given product category.

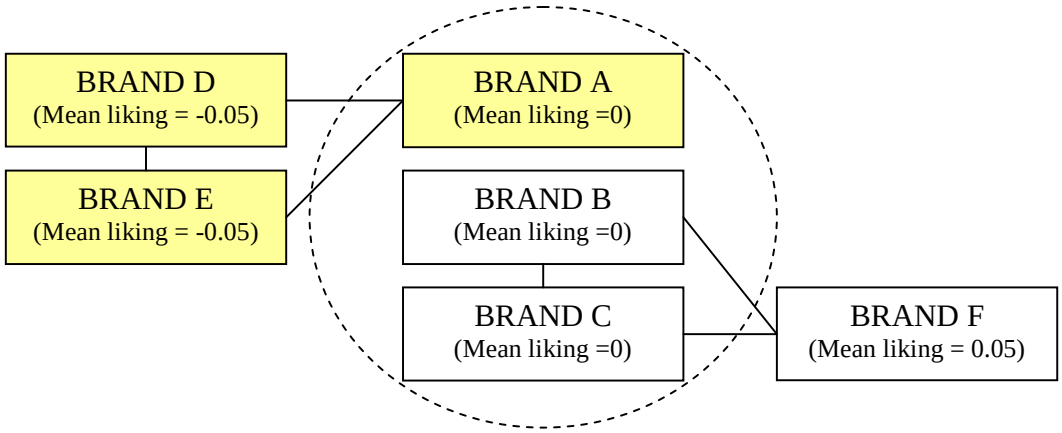
Each of the brand names in the four product category lists was then further pretested for *appropriateness* in relation to the product category, inherent *likability*, and *existing associations* with particular products. This was undertaken by way of a quantitative

survey of 44 members of the target population, who did not then take part in the main experiment. The first two constructs were measured by way of a 5-point likert scale; running, for example, from *strongly dislike* (-2) to *strongly like* (+2) with a neutral point (0). The majority of this data collection took place at the beginning of two undergraduate seminars, and was followed by qualitative discussion with regard to how participants had understood and responded to concepts such as 'liking', 'appropriateness' and 'associations'. During these discussions, it became apparent that some participants had experienced difficulty in distinguishing between the first two of these concepts; considering brand names to be appropriate because they liked them, and likable because they were appropriate. As such, the data regarding *appropriateness* was excluded from the analysis during this phase on the basis that the earlier qualitative phase had perhaps provided a more robust basis on which to make judgments in this respect. However, 17 brand names were excluded at this stage as they were already associated with a particular real-world product by at least 10% of the sample (these are marked with an asterisk in table 5.3, above). The remaining brand names in each product category were then grouped into triads where possible on the basis of the following criteria:

1. The mean liking ratings for each of the three brand names are very similar (to operationalise this, 'similar' mean ratings were considered to be those that did not differ by more then 0.1)
2. The mean liking rating for each brand rating is neutral, or very close to neutral, on the 5-point likert scale (to operationalise this, a 'neutral' mean score was deemed to be between -0.25 and +0.25).

Whilst the first of these criteria is central to distinguishing the influence of the exposure phase in particular (see chapter 6, page 236), the second was deemed to be prudent in light of the fact that most psychological research has focussed on exposure-induced affective response to previously neutral stimuli. Whilst the question of whether the MEE is also comparable in relation to stimuli that are already subject to strong positive or negative feelings may represent an interesting and important direction for future marketing research (see chapter 9, page 426), it is beyond the scope of this study.

Figure 5.2: Brand triad selection to maximise number of potential trials



Furthermore, it should be noted that brand names in each product category were grouped to facilitate the maximum number of triads possible in light of the above criteria, rather than the single 'best' triad in this respect. This is perhaps best explained with reference to the hypothetical example illustrated in figure 5.2 (above). In this scenario, the three brand names that have a mean liking rating of 0 (i.e. precisely neutral and identical) would constitute the best possible triad in light of the criteria above. However, this triad

(ABC) would not be selected if two other brand names exhibited a mean liking rating of -0.05 (DE) whilst one further brand name was rated at +0.05 (F). In this scenario, it would be possible to group the two brand names with the slightly negative mean score with one of the perfectly neutral stimuli (DEA), and the other two neutral brand names with the one that exhibited a slightly positive rating (BCF) to create two triads that both meet the criteria above. In this way, the maximum number of potential trials was created for use in the experiment; a factor that contributes to the enhancement of reliability in studies of this nature (as will be explained in section 6.6, page 266). Specifically, it was possible to create two equivalent (neutral) brand name triads for both real-word and pseudo-word stimuli in each product category with one exception; as illustrated in table 5.4, below.

Table 5.4: Equivalent (neutral) brand name triads in each product category

		Chocolate Bars		**Breakfast Cereal**		**Yoghurt**		**Shampoo**	
		Brand name	Mean liking rating	Brand name	Mean liking rating	Brand name	Mean liking rating	Brand name	Mean liking rating
1st Choice	**Real-words**	Affair Busker Suave	-0.12 -0.12 -0.12	Physique Mamas Jump	0.00 -0.02 -0.05	Fly Cube Polar	-0.02 -0.05 -0.07	Earth Gecko Liberty	0.00 0.05 0.05
	Pseudo-words	Kapnick Shanti Slano	-0.05 -0.05 -0.10	Kolodge Chanda Stradix	0.00 0.02 0.05	Aduo Zyda Oculo	-0.12 -0.12 -0.14	Solideon Tulsani Lianza	0.00 0.02 0.02
2nd Choice	**Real-words**	Legend* Apollo* Space*	0.12 0.14 0.16	Team Connect Spark	-0.14 -0.09 -0.07	*n/a* *n/a* *n/a*	*n/a* *n/a* *n/a*	Guru Create Synergy	0.21 0.12 0.16
	Pseudo-words	Effero Xypher Jinny	0.05 0.07 0.10	Chama* Movixo* Jindz*	-0.14 -0.12 -0.07	Jasta Shurtz Bajaroo	0.02 0.05 0.07	Belanger* Imbarco* Denali*	-0.10 -0.05 -0.02

** Brand names not selected for use in the main experiment, as explained below*

With reference to table 5.4, the first-choice brand name triads in each product category were initially selected with regard to both real-word and pseudo-word stimuli. This

facilitated an 8-trial experiment in which each product category and brand name type (i.e. real versus pseudo-word) was equally represented. As will be discussed in the following chapter (section 6.7.2, page 274), however, both the opportunity and need for the inclusion of additional items and trials was quickly identified during piloting and pretesting of the experimental procedure. As such, consideration was given to selecting the second-choice triad from each of the four product categories and in relation to each type of brand name. As illustrated in the table above, however, no second-choice option was available with regard to real-word brand names for Yoghurt. Whilst a total of seven more trials could have been added at this stage, therefore, it would have led to one product category and, perhaps more importantly, pseudo-word brand names in general being under-represented in the main experiment. Given that the comparison of the MEE on this latter variable constitutes a central objective of the current study (see in table 5.1, page 176), a balance in the number of real-word and pseudo-word trials was considered to be important to the comparability of results. Furthermore, careful consideration was also given to the length of the exposure sequences, the test phase and the experiment as a whole during piloting and pretesting; all of which were sensitive to the number of items/trials used and related to the potentially serious consequences of boredom and fatigue on the validity of the experiment (Bornstein *et al.*, 1990; see chapter 2, page 28). In light of this, it was decided that four more trials should be added to create a 12-trial version of the experiment in which product categories and brand name types were equally represented (see table 5.4, above). To this end, the second-choice real-word pair was selected in the category of Breakfast Cereal and Shampoo, whilst the second-choice

pseudo-word pair was selected with regard to Chocolate Bars and Yoghurt. The rationale for these selections was as follows:

- One of the pseudo-word brand triads must relate to Yoghurt as no second-choice real-word triad is available
- In the category of Chocolate Bars, the three brands in the second-choice pseudo-word triad exhibit greater similarity in their mean liking ratings than those in the second-choice real-word triad for this category.
- In the category of Shampoo, the three brands in the second-choice real-word triad exhibit greater similarity in their mean liking ratings than those in the second-choice real-word triad for this category.
- In the category of Breakfast Cereal, the second choice real-word and pseudo-word triads are almost identical in terms of the degree to which mean liking-ratings vary within them. As any could be selected for use in the experiment, therefore, the real-word triad was chosen to maintain an even balance of brand name types in the new 12-trial version of the experiment.

Having established both the specific brand name stimuli and the product categories with which they would be associated, therefore, the final decision regarding the use of these stimuli relates to which of the three brand names in each triad would *not* be presented during the exposure phase, and would thus serve as a filler (or non-target) stimulus in the paired-choice tests of preference and recognition. As explained at the start of this section, the other two brands would both be presented in the exposure sequences, with one then used as a target stimulus for half of the sample (target A) and the other used as

a distractor. By contrast, the latter stimulus would be presented in the test phase as the target brand name (target B) for the other half of the sample, whilst the former would revert to the role of distractor in the exposure sequences for these participants. The allocation of the three brands in each triad to the roles of 'Target A', 'Target B' and 'Non-Target' respectively was made via a random draw; the results of which are presented in table 5.5, below.

Table 5.5: Selected target and non-target brand names

	Target A	**Target B**	**Filler**
Real-word stimuli	Affair	Busker	Suave
	Connect	Spark	Team
	Physique	Game	Jump
	Fly	Polar	Cube
	Gecko	Liberty	Earth
	Guru	Synergy	Create
Pseudo-word stimuli	Jinny	Xypher	Effero
	Slano	Shanti	Kapnick
	Stradix	Kolodge	Chanda
	Bajaroo	Shurtz	Jasta
	Oculo	Aduo	Zyda
	Tulsani	Solideon	Lianza

Finally, it should be noted that, for the control condition, a series of 'dummy' brand names were required to replace those used in the preference judgment task. As will be explained in section 5.4.4.6 (page 222), while these stimuli should be still be considered appropriate for the product category and not subject to common pre-existing associations, they were not required to be equivalent or neutral in terms of likability; the preference judgment test was no more than a filler task in the control condition. As such, these 'dummy' brand names were identified using a simple process of stratified random selection from those stimuli that remained on each category-appropriate list of real-word

and pseudo-word brand names; i.e. those that were not previously excluded on the basis pre-existing company/product associations or included in the triads selected for the experimental tasks. A summary of the replacement brand names used in the control condition is provided in table 5.6, below.

Table 5.6: Replacement brand names for the preference judgment task in the control condition

	Product category	**Experimental condition targets**	**Control condition replacement targets**	**Experimental condition fillers**	**Control condition replacement fillers**
Real-word stimuli	Chocolate	Affair & Busker	Wizard	Suave	Rhino
	Breakfast cereal	Connect & Game	Munch	Team	Rapid
	Breakfast cereal	Physique & Spark	Perform	Jump	Wonder
	Yoghurt	Fly & Polar	Fresh	Cube	Pure
	Shampoo	Gecko & Liberty	Vision	Earth	Honey
	Shampoo	Guru & Synergy	Tranquil	Create	Clear
Pseudo-word stimuli	Chocolate	Jinny & Xypher	Raha	Effero	Zeco
	Chocolate	Slano & Shanti	Khoja	Kapnick	Carador
	Breakfast cereal	Stradix & Kolodge	Wizbit	Chanda	Comtran
	Yoghurt	Bajaroo & Shurtz	Diehl	Jasta	Bayou
	Yoghurt	Oculo & Aduo	Danossia	Zyda	Boga
	Shampoo	Tulsani & Solideon	Fidelis	Lianza	Aliana

Following the extensive process of stimulus pretesting and selection outlined in this section, therefore, the experiment was formulated as a stand-alone computer-based activity to facilitate simultaneous data collection in large groups (and thus a relatively large sample). The experimental procedure will be explained in detail during section 5.4.4. (page 211). Prior to this, however, a brief outline of the apparatus and materials used in this respect is provided below.

5.4.3. Apparatus and Materials

The experiment was designed and executed using Microsoft Powerpoint, and was contained within a single file for each participant. This file was automatically timed to facilitate control over two key elements of the experimental procedure (each of which is discussed in section 5.4.4, page 211):

- The 3 masked exposure sequences (each presented for a total of 30 seconds)
- The filler tasks (timed so that participants were given one minute for each task, whether this required them to memorise or recall a list of stimuli)[2]

All of the screens (i.e. slides) in the file were designed with a black background and white text/symbols. Brand names were consistently presented in size 44 arial font, and in block capital letters to distinguish these perceptually from other verbal elements of the experiment (e.g. instructions and labels). The presentation of each brand name was executed via a timed block of four screens (see figure 5.3), with the blocks for each brand stimulus following directly on from each other. Each block was constructed as follows:

Screen 1 – Blank MS Powerpoint slide (black) presented for 1s

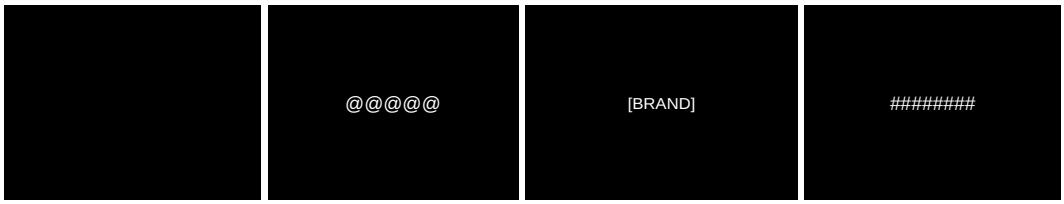
Screen 2 – Centred pre-mask (@@@@@) presented for 100ms

Screen 3 – Centred brand name presented for 50ms

Screen 4 – Centred post-mask (########) presented for 100ms

[2] This is important for two reasons. Firstly, the compression of decision-time may be used to limit the opportunity for elaboration and therefore reduce levels of involvement. Secondly, and from a practical perspective, it ensures that all participants complete the experiment at around the same pace and in particular within the 30 minute data collection session. This, in turn, allows for the experiment to run twice in the 2-hours for which the participants and experimental resources were available.

Figure 5.3: Example block of screens for the mere exposure of a brand name



Screen 1 ***Screen 2*** ***Screen 3*** ***Screen 4***

At this point it should be noted that, whilst specific timings for the automatic transition between screens were set to 50ms within MS Powerpoint (the rationale for which will be explained in chapter 6, page 273), the *actual* exposure durations for each of these screens may have varied slightly depending on the speed of each machine and the refresh rate of each monitor. As such, it is not possible to set timings to the precise millisecond using this software (for this, specialist applications such as Eprime or Matlab are required). The selection of this exposure duration, therefore, is based on the results of pretesting, during which 50ms was found to be the point at which the great majority of participants reported supraliminal perception of the exposed stimuli (see chapter 6, page 273); a key condition under which the MEE is to be tested in this study (see table 5.1, page 176). However, the degree to which the exposed brand names are perceived is likely to vary quite significantly between participants as a result of individual differences in perceptual ability (see Miller, 1991). Furthermore, in endeavouring to set a masked exposure duration that ensures the stimuli are *just perceptible* (Zajonc, 1968) for the majority of participants, it is probable that individual differences will result in subliminal perception amongst a small number of participants. Given the size of the sample, however, this is not necessarily a limitation provided that

the cases in which this occurs can be identified. Indeed, should it occur in a sufficient number of cases (n>30; see Diamantopoulos and Schlegelmilch, 2000) it may in fact confer an additional benefit of facilitating confirmatory comparison of effect size in the presence and absence of conscious perception (with the latter expected to give rise to a larger MEE than the former; see Bornstein, 1989). However, it should be noted that this was not initially considered to be a primary objective of the empirical work in this study and that the original plan was to exclude the small number of subliminal perception cases that might be expected to occur. To this end, therefore, participants were required to report their subjective perceptual experience of the exposure phase at the end of the experiment (as will be discussed in chapter 6, page 246).

All of the computer files used in the experiment were stored on, and opened from, the hard drive of each individual computer to facilitate a degree of control and consistency in the speed of the exposure sequences. Specifically, the alternative (and more convenient) approach of storing and opening all the files from a single networked drive would have meant that exposure duration could be significantly influenced by the speed of the network at a particular moment. As this can vary across computer suites and over time, there was a significant likelihood that it would constitute an additional uncontrolled influence on the nature of perception, and thus the extent of attentive processing, between brand stimuli and participants. All of the machines were of the same specification, make and model and preloaded with the same operating system and software. Preloading the files onto the hard drive of each of these machines therefore minimised variations in the speed of exposure across computers, rooms and sessions. In

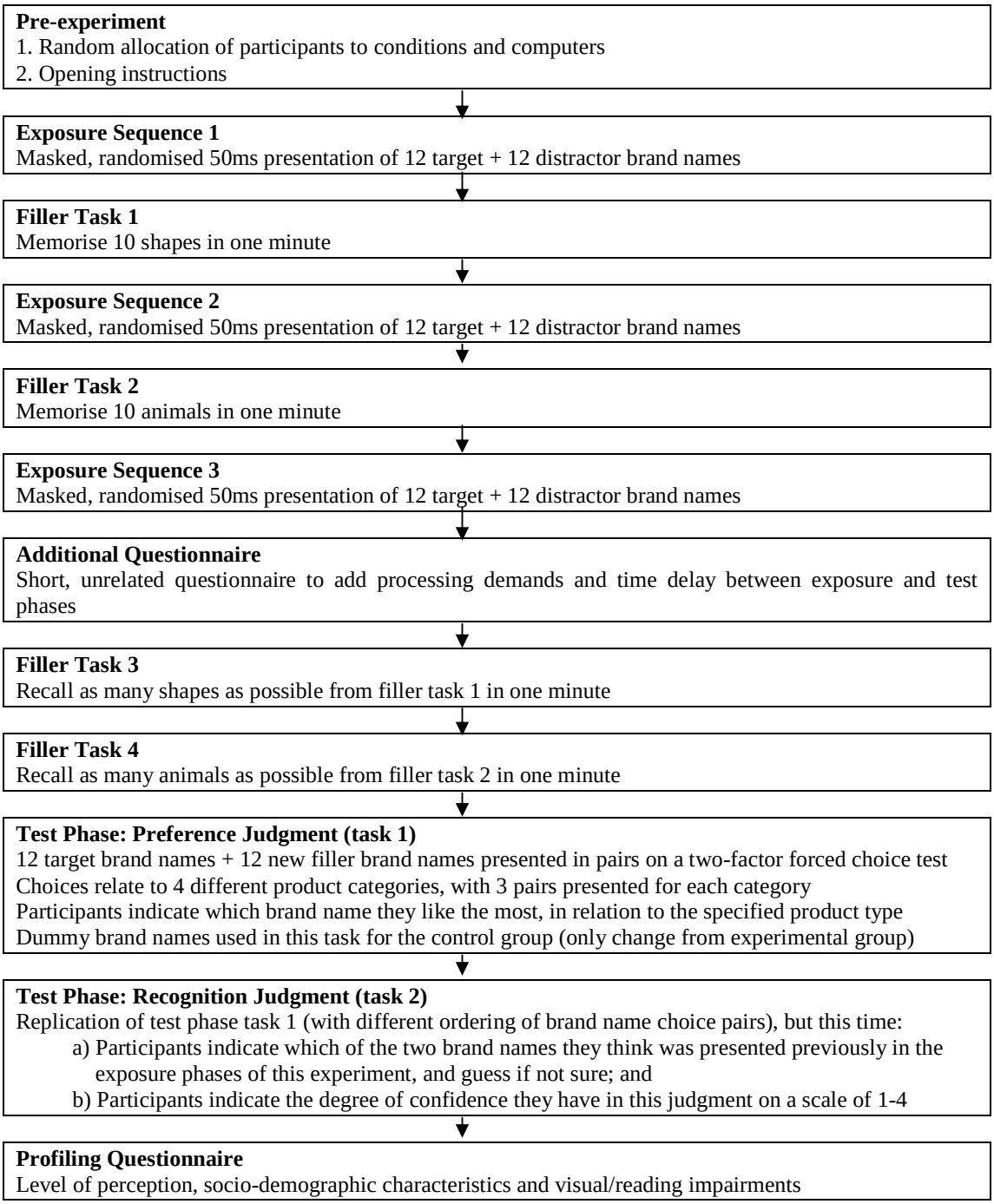
addition, the use of a preloaded file meant that this was the only possible version of the experiment the participant could complete, and thus enhanced the degree of control in the data collection process.

Finally, a task booklet was laid on the desk next to each computer prior to participants entering the room. This was labelled with a participant ID, the room number, date, desk number and the name of the MS Powerpoint file with which the computer on that desk had been preloaded. On each desk, an additional filler questionnaire was also laid out and clearly labelled. Participants were told to complete this only when the instructions on the screen requested them to do so.

5.4.4. Experimental Procedure

The procedure used in this experiment is summarised in figure 5.4, prior to a discussion of each of these phases below.

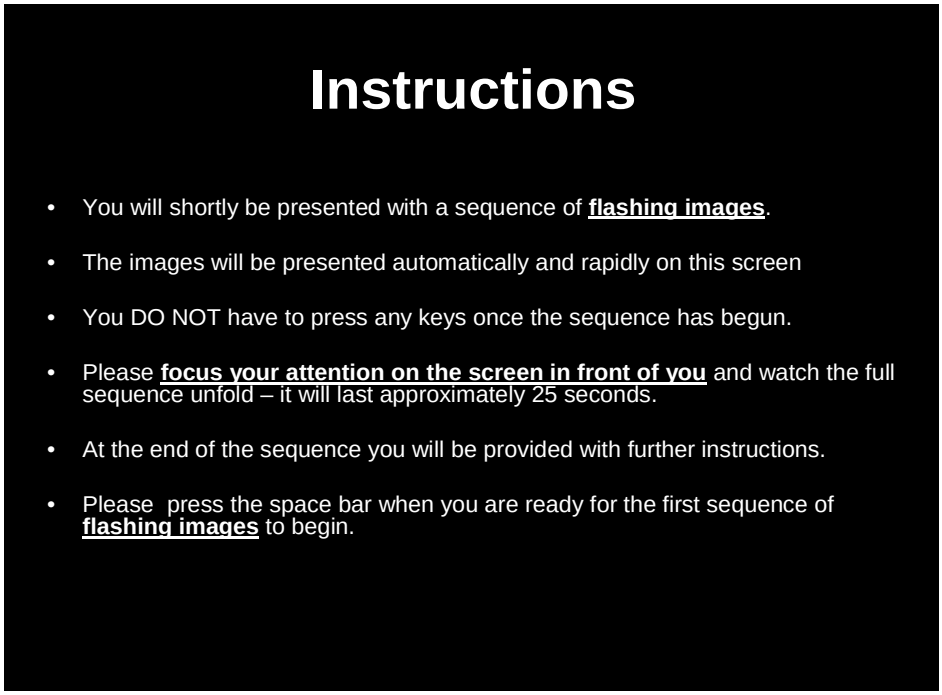
Figure 5.4: Overview of the experimental procedure



5.4.4.1. Pre-Experiment

As outlined in section 5.4.1.3 (page 187), participants were randomly selected and allocated to a condition and computer. Once seated, and following a brief verbal introduction, they were then presented with an opening screen of instructions as illustrated below.

Figure 5.5: Screenshot – Opening Instructions



The two important elements to note regarding these instructions are that participants were asked to:

a) *Focus their attention on the screen* – this is important as the main method of exposure control in this experiment is to physically limit the opportunity for

attentive, elaborative processing via the use of very short exposure durations and stimulus masking. In order to ensure that exposure occurs at all, however, it is critical that participants are looking directly at the screen during these very brief exposures.

b) *Watch the full sequence unfold* – this phrase was selected on the basis that it does not specifically request participants to engage in active cognition during this phase, and instead encourages passive processing (i.e. participants were not instructed to memorise or think about what they were seeing in an active way).

5.4.4.2. Exposure Phase and Filler Tasks

Following the opening instructions, participants were required to press the space bar to begin the first of three exposure sequences. In each of these, the 24 brand names (12 targets and 12 distractors) were automatically presented in a different, previously determined random order (as will be explained in chapter 6, page 283). Each brand name appeared individually and in isolation for 50ms, between 100ms pre and post-masks (the rationale for which are further discussed in chapter 6, page 273).

It should be noted that all of the stimuli were presented visually during the exposure phase. The primary reason for this is that the creation of mere exposure conditions for auditory stimuli is extremely difficult within experimental research (as noted in chapter 4, page 149). The main limitation with such an approach is a lack of control over, or objective measurement of, the extent to which attention is paid to each auditory

stimulus, and thus the extent to which *mere exposure* occurs for each participant. Furthermore, visual presentation is in line with the approach used by the vast majority of marketing studies in this field, and the claim that this is **"**the most widely occurring [presentation modality] and the most relevant for consumer products" (Veryzer, 1999: 503).

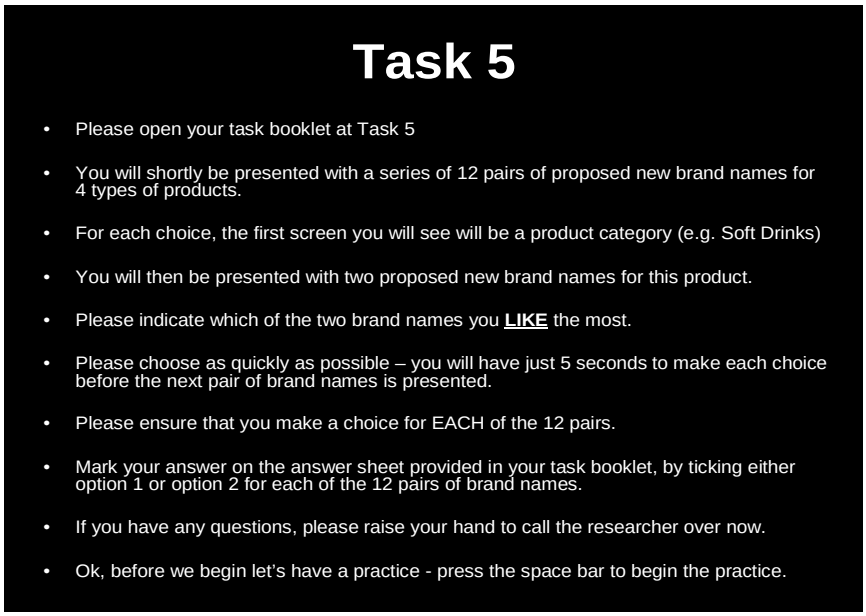
In between each exposure sequence participants were requested to complete a filler task. The first of these (between exposure sequences 1 and 2) required them to memorise a list of 10 shapes during an automatically timed one-minute period. The second (between exposure sequences 2 and 3) was identical but for the fact that participants were asked to memorise a list of animals. These tasks (including the reading of pre- and post-instructions) were designed and pretested to take approximately 2 minutes each. On conclusion of the third and final exposure sequence, participants were then asked to undertake a third filler task involving the completion of a short, simple and entirely unrelated questionnaire; taking approximately five minutes. Finally, to conclude this phase of the experiment, participants were requested to complete two more filler tasks in which they were asked to firstly write down all of the shapes they could recall from filler task 1, and then all of the animals they could remember from filler task 2. They were given one minute to perform each of these activities, and a countdown clock appeared in the bottom right hand corner of the screen. The combined duration of these two final tasks (including the reading of instructions) was approximately four minutes, meaning that the participants were actively engaged in filler tasks for approximately two

minutes between each exposure sequence, and approximately 9 minutes between the end of the third sequence and the beginning of the test phase.

5.4.4.3. Test Phase

Prior to commencing the first of the test phase tasks (i.e. the preference judgment task), participants were engaged for approximately one more minute in reading the instructions for this. A screenshot of these instructions is presented below.

Figure 5.6: Screenshot – Instructions for preference judgment task



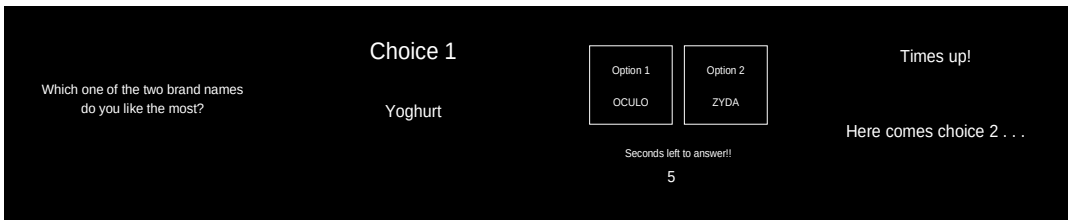
Following this, participants were required to complete two practice trials prior to undertaking the preference task itself. These lasted approximately one further minute, and ensured that participants were involved in around 11 minutes of intensive alternative activities between the end of the exposure phase and the first preference judgment. The

practice trials were identical to the 12 paired-choices participants would complete in the task itself but for the fact that they did not include any of the previously exposed brand names. Instead, they were constructed using brand names that had been discarded during pretesting.

The key aspects of the preference judgment task in this experiment are as follows:

a) Participants were presented with 12 choice pairs, each containing a target brand name (i.e. a brand name that had been presented in each of the three exposure sequences earlier in the experiment) and a non-target (i.e. a new, distractor brand name that had not been presented in any of the exposure sequences).
b) Each of the 12 choices was made in the context of a product category, with three choice pairs randomly presented in relation to each of the four product categories.
c) The 12 choice pairs were presented in one of 20 different, predetermined, random orders for each participant (as will be explained in chapter 6, page 285).
d) Participants were instructed to make their choices as quickly as possible, and were asked the following question at the start of the sequence of choice pairs; *which one of the two brand names do you like the most?*
e) Participants were given a maximum of 5 seconds to make their choice and mark this in the task booklet provided. A countdown clock appeared at the bottom of the screen to show the time ticking down, and the screens for the next choice trial appeared automatically after this period. The process for each test trial is illustrated in figure 5.7 (below).

Figure 5.7: Example of question, product context & brand name choice screenshots



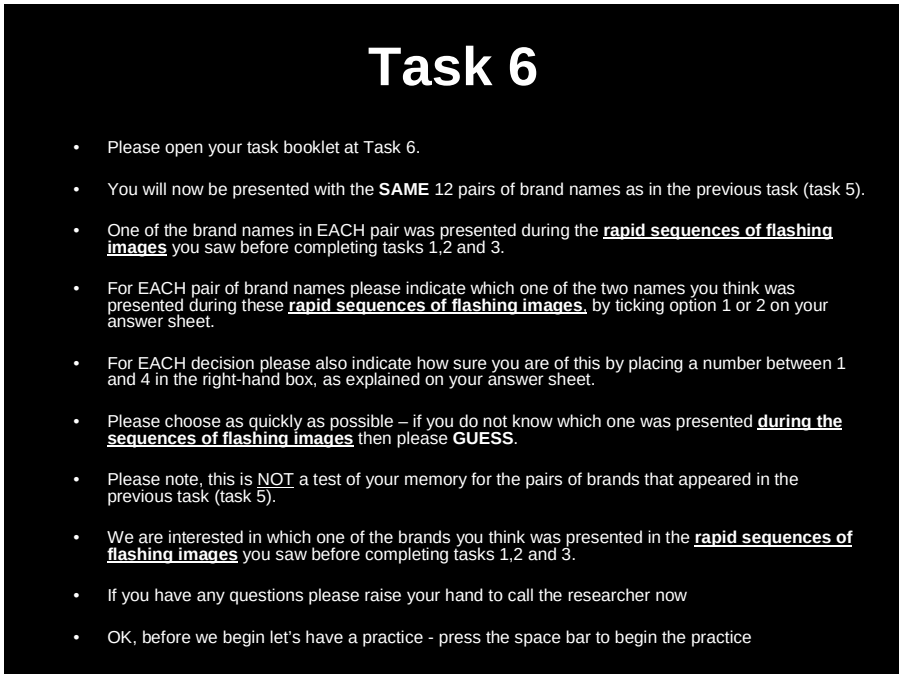
Screen 1 ***Screen 2*** ***Screen 3*** ***Screen 4***

Finally, on completion of the preference judgment task, participants were requested to undertake a recognition task (task 6) to investigate the extent to which they recalled and/or had a sense of familiarity with the brand names presented in the exposure phase. The instructions for this are illustrated in the screenshot below, and the important factors to note are as follows:

- The choice pairs were identical to those in the previous preference task, although they were presented in a different random order.
- Participants indicated their choice by ticking the box marked ‘Option 1’ or ‘Option 2’ for the relevant choice pair in their task booklet.
- Participants were instructed to guess if they did not remember which of the two brand names was presented in the exposure phase – this is important so that the chance value of guessing correctly can be used in the analysis of these results (see chapter 6, page 233).

- Participants were also asked to indicate the degree to which they were confident this choice was correct on a scale of 1 to 4 (whereby; 1= certain, 2 = quite sure, 3 = quite unsure, 4 = guess).
- No time limit was placed on participants during this task as it is important to identify all traces of recognition, and not just very clear memory that is 'top of mind'. As such, participants moved from one choice pair to the next in their own time.

Figure 5.8: Screenshot – Instructions for the recognition judgment task



As in the preference judgment task (task 5), participants were first required to undertake two practice trials. These were identical to the 12 recognition judgments in the task itself but for the fact that they did not include any of the target or distractor brand names used

previously in the experiment. The brand choice pairs from the practice trials for task 5 were replicated in task 6 (just as those for the actual tasks would be).

5.4.4.4. Profiling questionnaire

Finally, participants were required to complete a short 'profiling' questionnaire regarding the following factors:

1. The extent to which they had consciously perceived the brand names presented during the exposure phase of the experiment
2. The socio-demographic factors of age, gender, nationality, first language and bilingualism.
3. Visual and/or reading impairment

With regard to the first of these, the subjective experience of perception was measured by way of the 4-point scale illustrated in figure 5.9; a fuller discussion of which will be provided in chapter 6 (see section 6.3.1.1, page 246). Further to this, specific profiling in relation to some of the key personal characteristics of participants was undertaken for two reasons. Firstly, to facilitate a descriptive analysis of the sample (and thus more precise comparative discussion in relation to previous research) and, secondly, to facilitate exploration of the impact that participants' first language and bilingual/multilingual capabilities might have on the observed effects (if necessary). Whilst there is no previous research to suggest this might be the case, it is important to acknowledge that this study seeks to test the influence of perceptual implicit memory for

real and pseudo-words constructed within the framework of the English language. With this in mind, it is perhaps reasonable to assume, for example, that the physical features of the selected words might be more easily processed by native English speaking participants than those whose first language, and particularly the alphabet on which it is based, is far removed from English. As such, whilst it is not the specific aim of this study to research this issue, it was considered important to acknowledge it as a possible mediating influence and collect data that would facilitate the identification of this if necessary.

Figure 5.9: Scale used to measure level of perception during the exposure phase

1 = I did not see any letters in the flashed images
2 = I saw isolated letters in the flashed images but did not perceive these as words or brand names
3 = I saw rows of letters in the flashed images but did not perceive these as words or brand names
4 = I saw words or brand names in the flashed images

Finally, given that the observed effects are expected to be influenced by the processes of visual and lexical processing, it was considered important to identify cases in which participants had reading difficulties and/or uncorrected visual impairment. The purpose of this was to facilitate either the removal of these cases prior to analysis, or (should a large number be identified) testing for significant differences with the rest of the sample.

5.4.4.5. Closing instructions

On completion of the experiment, the on-screen instructions required participants to remain in their seat and under experimental conditions until every participant in the room had finished. In order to reduce the temptation to disturb others prior to this point, those who finished relatively quickly were handed an additional, unrelated questionnaire to fill-out. The completed materials (i.e. consent form, task booklet and additional questionnaires) were collected from each desk by the researcher once all participants had left the room. On conclusion of the experiment, the participants returned to the lecture theatre where they were provided with a full debrief and the opportunity to ask questions.

5.4.4.6. Procedural changes in the control condition

As will be explained in chapter 6 (section 6.8.3, page 287), the purpose of the control condition in this experiment is to identify the potential for systematic effects as a result of the order in which participants were required to make preference and recognition judgments respectively. Specifically, this relates to the possibility of *affective modulation bias* (Phaf and Rotteveel, 2005); a phenomenon whereby stimuli that have previously been identified as preferred may then be more likely to be adjudged to have been presented previously on this basis alone (i.e. in the absence of genuine, objective recognition memory for prior exposure). In order to identify the influence of this phenomenon, should it occur, a comparative control group was undertaken in which

participants were not required to make any preference judgments in relation to the target brand names and the filler items that appeared alongside them in each choice-pair; only to engage in the recognition task for these stimuli. To this end, initial consideration was given to simply removing the preference judgment task from the control condition. However, this would have the effect of reducing the length of delay between exposure and test, the type and intensity of activities that participants were required to engage in during this period, and thus the comparability of stimulus recognition rates between the two groups. Instead, therefore, the control condition was identical to the experimental condition but for one important alteration; the brand names in the preference judgment task were replaced with 'dummy' stimuli that did not appear in either the exposure phase or the subsequent recognition task. These brand names were drawn randomly from those discarded during pretesting (see table 5.3, page 200) and ensured that, whilst all participants completed an identical experimental procedure, the recognition judgments made in the control group could not possibly be subject to *affective modulation bias* (Phaf and Rotteveel, 2005). As a result, a comparison between recognition rates in the experimental and control conditions of this experiment was planned to assess the degree to which these may have been influenced by the intervening preference task (the results of which are presented and discussed in chapter 7, page 343).

5.5. Summary

The purpose of this chapter has been to identify the research questions at the heart of this study, outline the methodological approach and provide an overview of the key

aspects of experimental design. To this end, the key elements of sampling, stimulus selection, apparatus and experimental procedure have been discussed in some detail The last of these, however, is subject to a number of important and complex issues, including:

- Definition and measurement of the dependent variable
- Manipulation and measurement of the key independent variables (i.e. the nature of perception, the type of brand name and the degree of recognition memory)
- The purpose and design of filler tasks
- The length of delay between exposure and test
- The interdependencies between task duration, the number of items/trials, length of delay and experiment length - and their combined impact on reliability and validity
- Presentation and task order effects, and the use of counterbalancing and randomisation
- Deception, disguise and the creation of low involvement, low attention conditions

The key considerations and decisions in relation to all of these issues are central to the reliability and validity of the experimental design in this study. They are therefore discussed in detail during the following chapter, along with the importance, purpose and process of piloting and pretesting in this study.

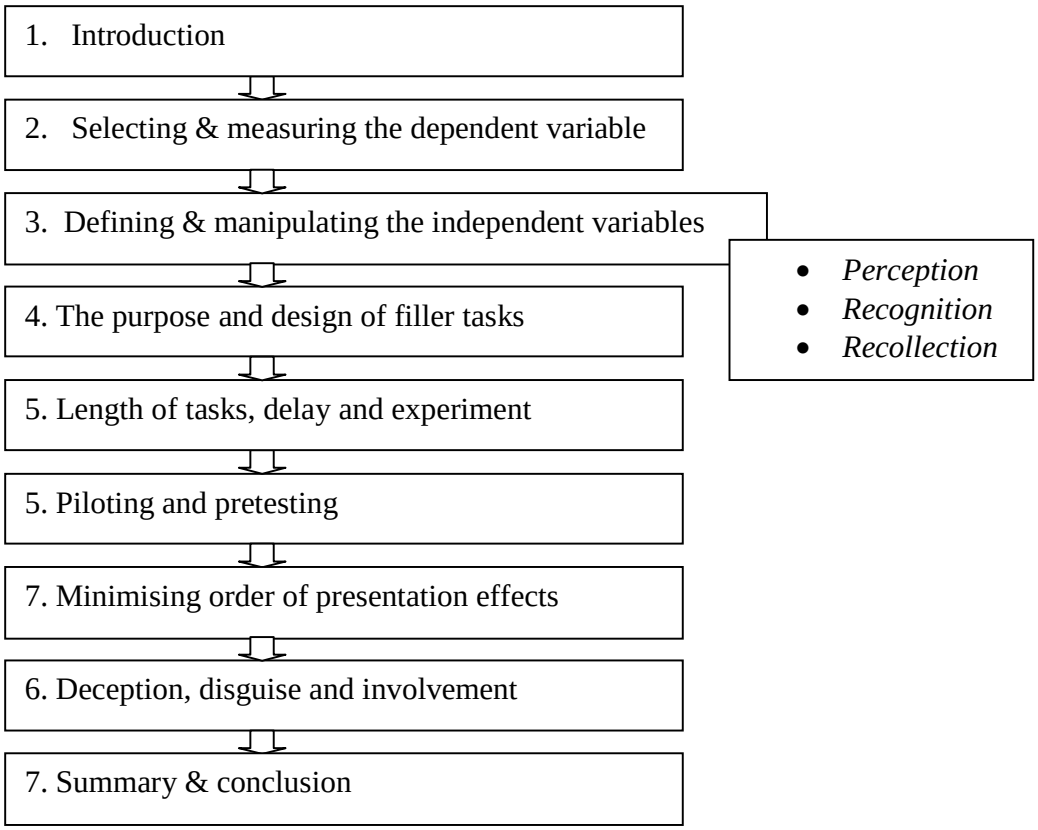
Chapter 6

Critical issues in the research design

6.1. Introduction

During the latter part of the previous chapter, an overview of the experimental procedure was followed by the identification of several issues that are of great importance to the reliability and validity of this study. The purpose of this chapter is to explain and discuss these issues in detail, highlighting the key considerations and decisions in each case (as illustrated in figure 6.1). As a starting point for this, it is first necessary to understand the basis on which the MEE will be identified and thus the selection and measurement of the dependent variable in this study.

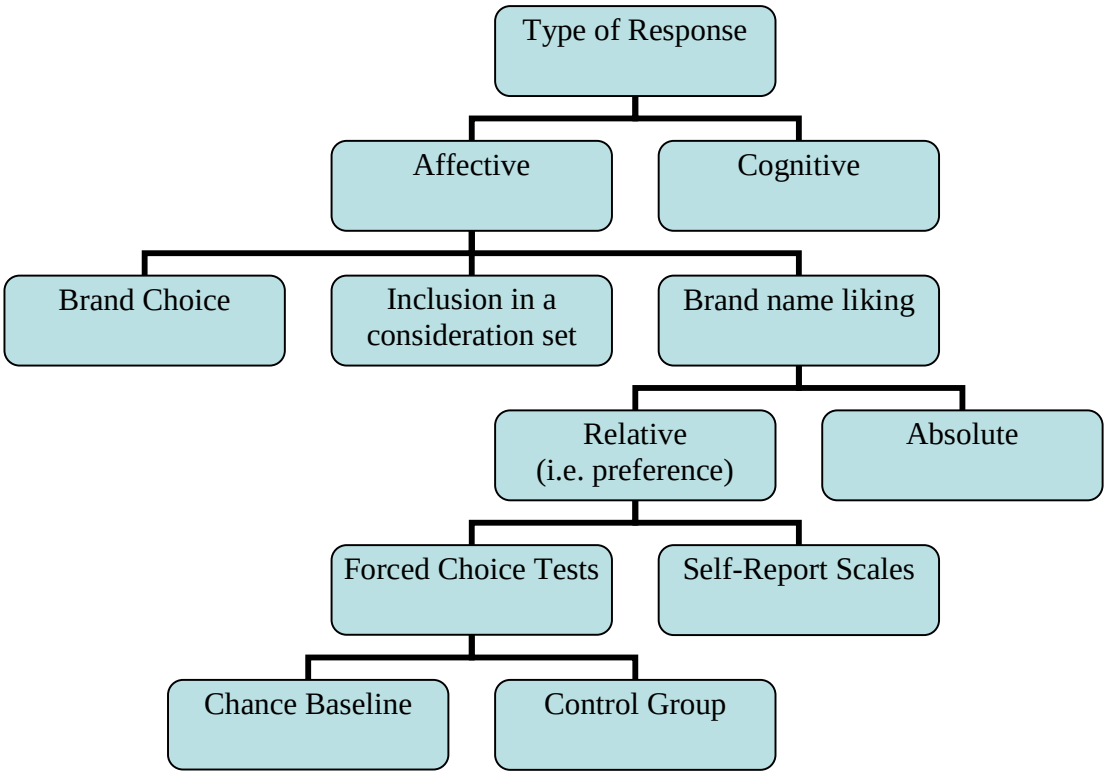
Figure 6.1: Structure of chapter 6



6.2. Selection and measurement of the dependent variable

In line with the vast majority of psychological and marketing research into the MEE (see chapters 2 and 3), the dependent variable in this study will be *affective* response to the target stimuli. As in the original empirical study into the non-conscious MEE by Kunst-Wilson and Zajonc (1980), this will be measured by the degree to which preference frequency for the exposed stimulus differs from chance in a forced-choice test. The key considerations that underpin these, and indeed all decisions regarding the dependent variable in this study are illustrated in figure 6.2, and discussed in detail below.

Figure 6.2: Defining and measuring the dependent variable



6.2.1. Defining the dependent variable

As discussed in chapter 2 (page 19), evidence for the MEE has been presented in relation to both affective and cognitive judgments (for a review see Bornstein, 1989). However, the focus of the original empirical studies of the MEE (Wilson, 1979; Kunst-Wilson and Zajonc, 1980), the principle means by which it has been demonstrated since (see Bornstein, 1989), and arguably the most pertinent outcome of mere exposure in a marketing context is the enhancement of *affect*. Whilst it was noted in chapter 2 that such a response is likely to be mediated by cognition (see section 2.3.1, page 38), it is this ultimate outcome that has been of the greatest interest to psychologists and marketing researchers alike over recent decades (as illustrated by the literature reviewed in chapters 2 and 4); and will thus form the basis on which the MEE is examined in this study.

In defining the specific nature of the affective response under investigation, however, a number of alternatives may be considered. In the extant marketing literature, for example, three forms of affective response are evident; brand choice (e.g. Lee, 2002), inclusion in a consideration set (e.g. Shapiro, 1999) and stimulus liking (e.g. Janiszewski, 1993). In this context, *brand choice* may be seen to provide a direct measure of changes in behavioural response as a result of mere exposure, and thus confer the greatest degree of ecological validity in a marketing context. Alternatively, inclusion of the brand in a consideration set would not only provide a potentially valid

measure of affective response, but may also serve to further reduce the level of involvement that participants have in the decision. In this respect, Cai *et al.* (2004) argue that consumer involvement increases as consumers move through four stages of decision-making; from developing awareness, to the formation of consideration and then choice sets prior to making a final purchase decision. From this perspective, the requirement to make a decision regarding consideration set membership may be assumed to occur with a lower level of involvement than that relating to ultimate brand choice. In the context of the current study, however, the validity of both these approaches may be seriously limited. For example, one might question the ecological validity of asking participants to decide how likely they are to choose one brand over another when they are fully aware that they will never be required, or given the opportunity, to make that choice and thus experience the consequences. Furthermore, the internal validity of these approaches may by limited by the nature of the stimuli in question; namely, simple and novel brand names. In this sense, the absence of any other information or imagery relating to the brand (e.g. the ingredients, size, shape, quality or price of the chocolate bars in question), and the lack of opportunity or requirement to actually consume the product, could result in such questions being perceived as meaningless by participants. More importantly perhaps, it may be argued that, whilst both the choice of brand and its inclusion in a consideration set may be based primarily on affect, this may be preceded, accompanied or succeeded by cognitive judgments (e.g. perceived quality and value-for-money in consumers seeking to maximise utility).

By contrast, it may be argued that stimulus 'liking' constitutes a simple passive feeling (without the need for further cognition), and thus represents a particularly valid measure of affective response. This might explain why it is the most commonly used dependent variable in the realms of psychological mere exposure research (see Bornstein, 1989; Bornstein and Craver-Lemley, 2004). Furthermore, and in the context of affect-based theories of consumer decision-making (see chapter 2, page 38) it may be argued that relative *liking* for a brand asset might be seen as a precursor to inclusion in a consideration set and ultimately brand choice. With this in mind, and in line with the reasoning of Cai *et al.* (2004), one might argue that experiencing a general sense of 'liking' for the brand stimuli requires even lower levels of involvement than inclusion in a consideration set. In the context of this experiment, therefore, brand name liking was considered to be a relatively passive affective response when compared to the more active decision of choosing whether or not to include the brand in a consideration set, and thus constitutes the core aspect of the dependent variable.

As a consequence of this, however, a second important consideration arises with regard to the precise nature of the response that is to be investigated in this study; namely, whether it relates to *relative* or *absolute* liking for the brand name. In this respect, it is important to acknowledge that the MEE is most likely to play a role in rapid stimulus-based discrimination under conditions of low attention and involvement (see chapter 3, page 118). On this basis, it was noted in chapter 1 that the increasing proliferation of brands, messages and media (MacInnis *et al.*, 1991; Skinner and Stephens 2003), coupled with a convergence in the perceived quality of the brands themselves (Heath,

2004) has created a consumption context in which the MEE might be expected to flourish. Specifically, therefore, the marketing-based MEE is likely to be most significant in relation to the formation of *preference* amongst brands that are otherwise equally attractive; as (Baker, 1999: 32) observes:

> "[The mere exposure effect] may significantly impact brand choice decisions when brands tie on tangible criteria (e.g., prior evaluation, benefit possession, etc.), or when consumers do not have the motivation, ability or opportunity to search for more specific information at the time of brand choice."

With this in mind, the most ecologically valid measure of the MEE in this study was deemed to be *relative*, rather than absolute, liking for the brand stimulus. This was operationalised by pretesting brand names to produce triads of target and non-target stimuli that were equivalent in terms of perceived appropriateness for the product category and inherent likability (as discussed in chapter 5, page 194). For each trial, participants were then presented with a product category before being asked to select which of one of two proposed new brand names they liked the most. The precise nature of this task was determined on the basis that it grounds the study in a marketing context, provides a sound rationale for the use of novel (i.e. invented) stimuli and ensures that the experimental task is meaningful to participants; i.e. a valid response can be made without the need for further information about the brand. On reflection, however, it is acknowledged that the degree to which it reflects a typical consumer evaluation may be open to question. In this respect, it may be argued that participants might assume the perspective of marketer, rather than consumer; their judgments therefore reflecting the choices they would make if they were responsible for naming these brands. In response to this, however, it is important to stress that each preference judgment was made

extremely rapidly, under significant time pressure (i.e. a few seconds). As such, careful deliberation of the type a marketing manager might be expected to engage in was not possible and participants were reliant on their immediate affective response to complete the task. Given the rapid and relatively passive nature of this response it may be expected to occur in the same way, and with the same result, regardless of the way in which the question is interpreted, and thus form the basis on which either low involvement decisions are made or further (high involvement) deliberation occurs. For this reason, it is not considered to be a significant limitation in the current study.

In sum, therefore, the selection of stimulus 'liking' as the dependent variable confers the benefit of maximum passivity in the required response (and therefore the lowest level of required involvement), and is closely in line with the paradigm within which the vast majority of psychological mere exposure research has been undertaken. Furthermore, the study of *relative*, rather than absolute, liking for the brand name is deemed to most closely reflect the type of discriminatory judgments that consumers are typically required to make with regard to brand alternatives. On this basis, the dependent variable in this study is specifically defined as brand name *preference*; the typical MEE being revealed by a systematic enhancement of this for the exposed over the non-exposed stimuli. The precise means by which these preferences were measured is discussed below.

6.2.2. Measuring the dependent variable

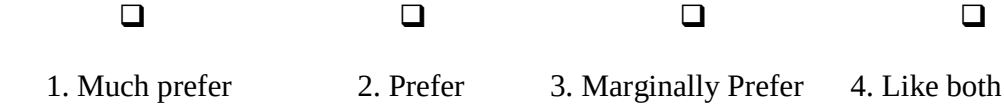
Having identified the specific nature of the effect that is under investigation in this study (i.e. relative preference for novel brand names), the next important question relates to how this should be measured. In this respect, two alternative approaches may be considered; *ratings scales* and *forced-choice tests*. As discussed in Grimes and Kitchen (2007), however, techniques that rely on the self-reporting of conscious perceptions may not necessarily be appropriate for the measurement of the non-conscious MEE. Rather, in the continued absence of reliable, valid and practical physiological techniques, the most effective means by which this can be achieved is via the indirect measurement of performance effects in a behavioural or judgment task.

On this basis, forced-choice tests were used to measure the frequency with which target and non-target stimuli were preferred by participants. This technique was selected as it confers a number of important benefits in the context of this study. Firstly, forced-choice tests facilitate the measurement of rapid, passive, low involvement preference judgments between two stimuli, without the need to self-report conscious perceptions. Indeed, these tests require participants to discriminate clearly between target and non-target stimuli, even if they are not consciously aware of the basis or reason for this decision. As such, they might be seen to confer a significant degree of ecological validity as they closely reflect the rapid, passive, stimulus-based consumer decision-making within which the MEE might be expected to be at its most influential (see chapter 3, page 116). Furthermore, as participants are required to make a choice on

every trial, there is a known chance of the target stimuli being selected purely by chance in this task (e.g. p=0.5 in a 2AFC, p=0.25 in a 4AFC). This allows for measurement of enhanced preference following mere exposure in relation to a chance baseline, and thus negates the need for a control group (as discussed in more detail below). In turn, therefore, this approach facilitates the use of much larger sample sizes in each experimental condition; an important methodological consideration in this study (as noted in chapter 5, page 179).

It should be noted, however, that forced choice tests are subject to a number of criticisms. Perhaps the most notable of these (in the context of this study at least) is that such tests might not provide the sensitivity necessary to measure the precise degree to which enhanced preference occurs as an experimental effect (i.e. whether mere exposure results in large or small shifts in preference). In response to this, the additional use of a scale was considered to clarify the extent of reported preference in the forced-choice task. In this respect, a scale such as the one illustrated in figure 6.3 might be expected to record the degree to which one brand name was preferred over the other in each choice pair:

Figure 6.3: Example scale for the measurement of preference in each pair



In the context of stimulus-based consumer decision-making, however, it may be argued that the important question is whether the MEE induces a tendency to choose one brand over another, regardless of the degree to which preference is consciously perceived and in the absence of the need to verbalise this. As such, a scale that distinguishes between perceived degrees of preference is unnecessary and perhaps even invalid in the context of marketing-based mere exposure research. Furthermore, the use of a scale with a neutral point (see point 4 in figure 6.3) may result in the masking of implicit approach tendencies by allowing participants to 'opt out' of making a preference judgment in the absence of a clear, conscious reason for this. More broadly, the validity of any self-report scales in the measurement of implicit memory effects (such as the MEE) might be questioned on the basis that they reflect only the participants' conscious perceptions of the degree to which they prefer a particular stimulus. Furthermore, the use of these scales increases the level of cognitive engagement at test and thus reduces the ecological validity of the test phase in relation to low involvement consumer decision-making. Indeed, in the context of the misattribution theories of mere exposure (Mandler *et al.*, 1987; Bornstein and D'Agostino, 1992, 1994; see chapter 2, page 45) it might be argued that the use of such scales may in fact eliminate the necessary conditions for the MEE, by replacing the opportunity for passive, instinctive decision-making – underpinned by implicit memory and misattribution - with a requirement for more deliberate, thoughtful reasoning. As such, the measurement of preference in this study was limited to the results of two-factor forced choice tests in relation to each item. Further to this, a relatively large sample was employed to enhance the power of the statistical tests in this

study and thus reduce the likelihood of type II error occurring as a result of a small effect size (the possibility of which was discussed in chapter 2, page 23).

However, whilst the results of forced-choice tests provide an indicator of preference, the important measure in this study is the degree to which this is influenced by mere exposure. As such, a further consideration with regard to the dependent variable relates to the measurement of *difference* between observed preference frequency and that which might be expected in the absence of prior exposure. In the vast majority of previous mere exposure research one of two approaches has been used to measure the effect of the experimental manipulation; comparison with a *control group* or a *chance baseline* (see Bornstein, 1989; Bornstein and Craver-Lemley, 2004). The use of a control group confers the benefit of providing a direct between-group comparison to identify significant differences in the primed versus non-primed conditions. However, this also requires a doubling of the sample size and thus the time and resources required to administer the additional data collection, preparation and analysis. The use of a chance baseline, however, does not require additional data collection but rather the existence of a known chance value that might be expected to occur in the absence of a priming effect. In the context of this experiment the chance value would be equal to the proportion of times the target brand name would be expected to be preferred if participants had chosen entirely randomly (i.e. in the absence of exposure-induced bias). As this study utilizes two-factor forced choice tests to measure brand name preference, random selection would result in the target being selected 50% of the time by chance alone. However, this assumes that the two stimuli in each choice pair are equivalent in

terms their ‘likability’, i.e. that there is nothing more inherently likable about one of the stimuli that would result in participants tending to consistently prefer it. As such, careful pretesting was necessary to ensure that this was the case; as discussed in chapter 5 (see page 194).

In light of the importance of sample size in enhancing the reliability of research into implicit memory (Buchner and Brandt, 2003), a control group approach was deemed to be problematic for two reasons. Firstly, a further division of the sample frame would have considerably reduced the size of the sample in each condition. By contrast, the development of additional control groups for each condition would have required doubling the total sample to nearly 500 participants. Given the detailed nature of this experiment, the size of the sample frame, and time and resource limitations (e.g. research assistants, computer suites, computers, etc.), a sample of such magnitude would have been impractical. As such, comparison to a chance baseline was selected as a means by which to measure the systematic enhancement of preference frequency as a result of mere exposure in this study. A critical implication of this is that the two brand names from which participants are required to choose must be largely equivalent in terms of their inherent likeability. If this is not the case then it is possible that any systematic preference bias could be the result of extraneous factors. However, the difficulty in achieving this became evident during the pretesting of stimuli for use in this study. Whilst it was possible to identify 15 triads of equivalent brand names at this stage (see chapter 5, page 203), groups of four or more would have greatly reduced the possible number of trials (and thus the reliability of results). Given the necessity for the

target brand name to be accompanied by one equivalent stimulus in the exposure phase and another in the test phase, this prohibited the use of forced-choice tests containing more than two factors.

In summary, therefore, the dependent variable in this study, and thus the means by which the MEE will be examined, is the degree to which the selection frequency of previously exposed brand names differs from chance in a series of 2-factor forced-choice tests of preference. In order to test the propositions and hypotheses at the heart of this study (see table 5.1, page 176), however, this variable must be measured under conditions of supraliminal perception, the presence and absence of both objective recognition and subjective recollection, and in relation to real-word versus pseudo-word stimuli. Taken together, these factors thus constitute the independent variables in this study; the definition and manipulation of which will be discussed in section 6.3. Prior to this, however, an important final step in refining the dependent variable for analysis is explained in the section below.

6.2.3. Refining the dependent variable for analysis

In line with the original demonstration of the non-conscious MEE by Kunst-Wilson and Zajonc (1980), and numerous experiments subsequently (e.g. Seamon *et al.* 1983a; Bonanno and Stillings, 1986; Barchas and Perlaki, 1986; Mandler *et al.*, 1987; Murphy and Zajonc, 1993), both affect and recognition are measured in the current study by way of target stimulus selection frequency on 2-factor forced-choice tests. On the basis of the

vast majority of mere exposure research to date, this may be expected to give rise to four possible outcomes, as illustrated in figure 6.4 below.

Figure 6.4: Possible outcomes from 2-factor forced-choice tests of affect and recognition

		Recognition above chance	
		No	**Yes**
Preference above chance	**No**	A	B
	Yes	C	D

With regard to figure 6.4, the absence of any effect at all is reflected in recognition and preference frequencies that do not differ significantly from the level of chance (A). The enhancement of explicit (but not implicit) memory is illustrated by above chance recognition in the absence of an effect on preference (B). The fully non-conscious MEE is typically characterised by enhanced preference under conditions of chance recognition (C), whilst the enhancement of both factors may be considered to reflect the MEE in the presence of recognition (D).

However, whilst not acknowledged in the literature, the overall logic of this approach may be questioned on the grounds that it does not take into account the specific relationship between preference and memory for each participant and stimulus item. In order to explain this problem it is perhaps useful to work through a hypothetical replication of the original experiment of Kunst-Wilson and Zajonc (1980), in which 2-

factor forced choice tests of recognition and affect are administered following repeated exposure to the target stimuli. The statistical (t-test) results for this imaginary data set are presented in figure 6.5 below.

Figure 6.5: Worked example to illustrate limitations of measuring the MEE by comparing mean target preference and recognition frequency

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Target_pref_freq	100	6.0000	6.03023	.60302
Target_recog_freq	100	6.0000	6.03023	.60302

One-Sample Test

	Test Value = 6					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Target_pref_freq	.000	99	1.000	.00000	-1.1965	1.1965
Target_recog_freq	.000	99	1.000	.00000	-1.1965	1.1965

In this extreme hypothetical example, Kunst-Wilson and Zajonc's (1980) experiment is replicated with a sample of 100 participants and 12 trials (i.e. 12 target stimuli and thus 12 choice pairs in each of the two tests), with the following results:

1. Half of the participants (50) ***recognise*** all 12 of the target stimuli and the other half recognise none of them
2. Half of the participants (50) ***prefer*** all 12 of the target stimuli and the other half prefer none of them
3. All of the 50 participants who did not recognise the stimuli account for all of the 60 who prefer them.

In the context of figure 6.5, these findings would lead to the conclusion that both recognition and preference are exactly equivalent to chance and, as such, exposure is found to have no effect whatsoever (figure 6.4: quadrant A). However, these results actually reflect the largest possible *fully non-conscious MEE*; i.e. that every single participant who did not recognise the target stimulus also preferred it (figure 6.4: quadrant C). The underlying criticism, therefore, is that comparing the mean frequency rates of preference and recognition in studies of this nature may lead to type II error. As such, the validity of the forced-choice approach in measuring the MEE may require *within-subject* analysis to reveal the nature and extent of the relationship between affect and recognition. For example, two new dependent variables might be created during data analysis to reflect the mean frequency with which the target stimulus is preferred in the *presence* and *absence* of recognition respectively. In the illustration above the mean preference rate under these two conditions would be 0% and 100% respectively; thus revealing the entirely non-conscious nature of the MEE in this hypothetical example.

In order to ensure the validity of the forced-test approach in this study, therefore, and to facilitate the comparisons required to test proposition 2 (see table 5.1, page 176), reports of stimulus preference will be refined into four dependent variables; reflecting the rate at which this occurs for both the target and non-target brand names in the presence and absence of recognition respectively. To test proposition 3, these variables will then be further refined to reflect preference rates in the presence and absence of confident, contextualised recollection when this is associated with both accurate and inaccurate

recognition. Alongside supraliminal perception these two aspects of memory (i.e. objective recognition and subjective recollection) effectively constitute the conditions under which this study seeks to investigate the influence of mere exposure on affective response, and as such the independent variables. The means by which these are defined, manipulated and measured constitutes an important issue in itself, and is therefore discussed in the section below.

6.3. Defining and manipulating the independent variables

In order to test the hypotheses stated at the beginning of chapter 5 (see table 5.1, page 176), it is necessary to manipulate four independent variables within this study:

1. Perception during the exposure phase; i.e. supraliminal rather than subliminal (all hypotheses)
2. Objective recognition memory; i.e. presence versus absence (H2)
3. Subjective recollection during the test phase; i.e. presence versus absence of clear, confident recollection for prior stimulus exposure (H3a, and H3b)
4. Stimulus type; i.e. real-word versus pseudo-word brand names (H4, H5a and H5b)

The last of these is manipulated entirely by way of experimental design; specifically, the selection of target, filler and distractor brand names so that half are real words and half pronounceable non-words (see chapter 5, section 5.4.2, page 189). However, in light of individual differences in perception and memory ability (see Miller, 1991; Bors and

MacLeod, 1996), and small variations in the computer hardware used by each participant, the precise manipulation of these variables is not possible by way of experimental design alone; requiring supplementary measurement to identify the nature of these factors in each case. The critical considerations and decisions regarding the manipulation and measurement of perception, objective recognition and subjective recollection are discussed in the subsections below.

6.3.1. Manipulating and measuring perception during exposure

In chapter 2 (pages 29-31) it was acknowledged that, whilst subliminal exposure techniques have been universally employed to eliminate the influence of explicit memory in mere exposure research, the effect itself is not necessarily considered to be subliminal in nature. Rather, the MEE may be expected to occur whenever explicit memory for prior exposure is not present at test, regardless of the nature of perception. In the absence of direct evidence for this, however, it remains no more than a proposition; the testing of which constitutes a primary of objective of this thesis (see chapter 5, page 174). To this end, it is therefore necessary to manipulate exposure so that the target and distractor stimuli are *just perceptible* to participants (in line with Zajonc's original definition of the MEE; see chapter 2, page 18).

The methods that have been used to manipulate perception and attention in previous marketing research constitute a key theme of the critical discussion of this literature in chapter 4. In particular, this review highlights the numerous and potentially serious limitations associated with peripheral presentation in what might be termed the

incidental (rather than *mere*) exposure paradigm (e.g. Janiszewski, 1993; Shapiro, 1999; Fang *et al.* 2007). Furthermore, the lack of availability of eye-tracking technology for use in this experiment eliminates the opportunity to measure the exact length of time a stimulus remains in the periphery of attention and the extent to which it receives focal attention. With this in mind, the most effective means by which to manipulate perception in this study, and the one that is most commonly used in psychological mere exposure research (see Bornstein and Craver-Lemley, 2004), is to closely control the *duration* of exposure by combining focal attention with extremely fleeting, masked presentation.

In the context of this study, the necessity for equivalent and minimal supraliminal perception across the sample ideally requires the identification of a precise exposure duration that represents the liminal threshold for all participants. This is impossible, however, in the light of individual differences in perceptual ability (see Miller, 1991). Furthermore, even if it were possible to identify a 'golden exposure duration' at which all stimuli are just perceptible to all participants, the precise execution of this would require the use of a single computer and specialist software (such as Eprime or Matlab). Given resource, sampling and licensing constraints, such an approach would only be possible with an extremely small sample; a common limitation amongst previous marketing research (see chapter 4, page 160) that this study seeks to address. The use of a larger sample in this study, however, is dependent on the use of standard software that can be run simultaneously on multiple computers during group data collection sessions. Furthermore, whilst it is of course possible to identify an exposure duration at which all

participants would perceive the stimuli supraliminally, this would be likely to be relatively long in the light of variations in perceptual ability and apparatus performance. To explain; the duration would need to facilitate supraliminal processing for those at the lowest extreme of perceptual ability, and to account for variations in computer speed and monitor refresh rates across the sample. As such, this approach may be expected to give rise to *extensive* supraliminal perception in a significant number of participants; a condition that is not necessarily in line with Zajonc's (1968) original definition of mere exposure as that which is *just perceptible*. Furthermore, minimal supraliminal perception also plays an important role in restricting the degree to which memory is encoded during exposure, and thus retrieved at test. It is therefore a key method of reducing the extent to which preference judgments are made under conditions of stimulus recollection, without the need for extensive time delays (as will be discussed on page 251).

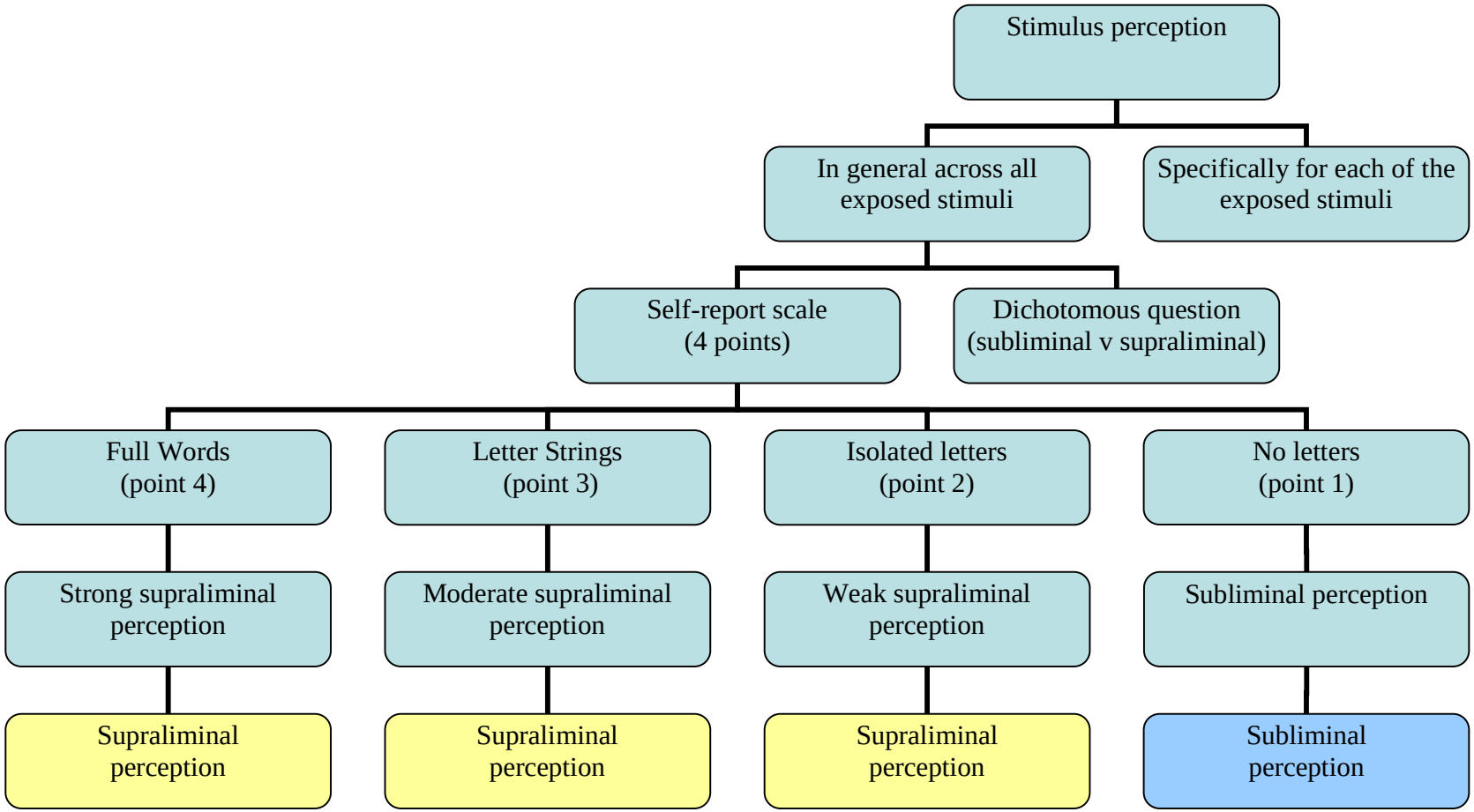
In light of this, an approach was utilised that combines exposure duration control with measurement of the subjective perceptual experience of each participant. Crucially in this respect, an extensive pretesting phase was undertaken to establish an exposure duration at which the majority (approximately 80%) of the sample could be expected to experience the exposure phase supraliminally (as will be explained on page 273). The fact that a minority of participants might be expected to perceive the stimuli subliminally confers two potential benefits in the context of this study. Firstly, it indicates that where supraliminal exposure occurs, it is likely to be relatively close to the liminal threshold. Secondly, should the expected proportion of participants perceive the exposure phase subliminally (approximately 20%), it would provide the opportunity to validate previous psychological findings of a larger MEE under these conditions. Whilst

this does not constitute a primary objective of the study, it may nonetheless provide a useful additional dimension in which to contextualise the results in relation to previous evidence for the non-conscious MEE (see chapter 2, page 21). With this in mind, therefore, and on the basis of pretesting (see page 273), a presentation time of 50ms was set for each stimulus. Whilst it is acknowledged that the actual duration of exposure may differ slightly (as MS Powerpoint software is not designed to be accurate to the millisecond level), it is important to note that it is the *outcome*, and not the duration itself, that is important in this study. As such, participants were required to report their subjective experience of perception during the exposure phase; an aspect of measurement that is discussed in more detail below.

6.3.1.1. Identifying supraliminal versus subliminal perception during exposure

As noted in chapter 5 (page 171), the overarching aim of this study is to investigate the existence, size and nature of the MEE in a marketing context, and under conditions of *supraliminal* perception. Given the likely individual differences in perceptual ability (see Miller, 1991) and minor but potentially influential variations in the speed of the computers used in this study, it is not possible to identify a single exposure duration that ensures perception occurs just above the liminal threshold for all participants. Rather, it is necessary to supplement an exposure duration that maximises the extent to which this occurs in the sample with specific identification of the cases in which it does not. To this end, measurement of the subjective experience of perception was incorporated into the experimental design. The key considerations, decisions and assumptions in this respect are summarised in figure 6.6, and discussed in more detail below.

Figure 6.6: Identifying the subliminal versus supraliminal nature of perception during exposure



With reference to figure 6.6, consideration was first given to when and with what precision participants should be required to report their subjective experience of perception during the exposure phase. In this respect, it is acknowledged that the most precise identification of the nature and extent of perception would require measurement immediately following the presentation of *each* brand name in each of the three exposure sequences. Such an approach, however, would give rise to an extremely long and contrived exposure phase, significantly increasing the likelihood that the MEE will be eliminated by boredom and fatigue (Bornstein *et al.*, 1990). Furthermore, the requirement to regularly and frequently engage in evaluation during exposure would severely undermine the passive nature of this phase, raising the level of attention, engagement and involvement and thus reducing the validity of the experiment as a means by which to study the effects of mere exposure to marketing stimuli. In response to this, an alternative option was selected whereby participants would be required to report their subjective experience of perception in relation to the exposure phase in general, and at the end of the experiment. It is acknowledged that the validity of this approach might be confounded to some extent by the fact that participants may perceive some stimuli but not others, and that their response is based on a memory-based judgment rather than current sensory experience. On balance, however, these potential limitations were adjudged to be outweighed by the problems described above in the context of this study (see appendix III for further technical discussion of this issue).

The second key consideration in relation to this aspect of the experimental design relates to the measurement tool. In this respect, a dichotomous question was initially

considered to identify whether or not participants generally perceived the exposed stimuli subliminally or supraliminally. During qualitative discussions in the first phase of piloting and presting, however, differences were observed in the meaning that participants attached to this concept. For example, whilst some reported the perception of isolated letters within words as supraliminal, others regarded the fact that they were unable to consciously identify the words as a whole as an indication of subliminal perception. In order to address this, and on the basis of qualitative discussions during piloting, the scale was extended to incorporate the four points illustrated in figure 6.6 (page 247). The purpose of this was to facilitate more precise reporting during data collection, and to minimise the need for participants to evaluate the degree to which their experience should be described as subliminal or supraliminal.

At this point, however, it is important to stress that the critical underlying aspect of all hypotheses in this study is the absence of *subliminal* perception (see table 5.1, page 176); a condition that is associated with points 2, 3 and 4 on the scale in figure 6.6 (page 247). For the purpose of testing these hypotheses, therefore, the scale may be collapsed into two categories during data analysis; subliminal (point 1) and supraliminal (points 2, 3 and 4). Indeed, it might be argued that this is necessary if the approach is to effectively minimise the limitations it was designed to address. To explain; it may be tempting to interpret each point on the scale as directly relating to a *level* of perception; ranging from subliminal through varying degrees of strength in relation to supraliminal perception. However, to analyse the data at this level would defeat the objective of the scale and give rise to the same limitation as that initially associated with the

dichotomous question; namely a lack of equivalence in conceptual understanding of each category amongst participants. As a result it is important to stress that the purpose of the four-point scale was to reduce the need for participants to make a complex judgment on the meaning of *perception*, and thus ensure greater equivalence of meaning across the sample. This is only achieved if the scale is then collapsed into one which simply distinguishes subliminal from supraliminal perception, regardless of the degree to which the latter has been deemed to occur.

As mentioned previously, however, whilst the manipulation of minimal supraliminal perception constitutes a necessary condition in its own right, it also provides one method by which another important condition is manipulated in this study; recognition memory. The critical aspects of definition, manipulation and measurement of this third and final independent variable are discussed in the subsection below.

6.3.2. Manipulating and measuring stimulus recognition at test

As illustrated in table 5.1 (page 176), the testing of hypotheses in relation to propositions 2 and 3 requires the creation of two memory conditions; the *presence* and *absence* of accurate stimulus recognition, and the *presence* and *absence* of subjective recollection (see figure 6.7, below). In a similar vein to the approach described above, all of these conditions were engineered by a combination of experimental design (to foster the likelihood of the condition occurring in the experiment) and measurement (to identify the specific cases in which it does appear to have occurred). The key aspects of

the approach in relation to each pair of conditions (i.e. the presence versus absence of objective recognition and subjective recollection respectively) are discussed below.

Figure 6.7: Memory conditions under which exposure-induced affect change will be tested (propositions 2 and 3)

		Subjective Recollection	
		Yes	**No**
Accurate Recognition	**Yes**	1	3
	No	2	4

6.3.2.1. Manipulating the likelihood of memory for exposure to the target stimuli

In section 6.3.1 (page 243) it was noted that the use of extremely fleeting stimulus presentation during the exposure phase may be expected to limit the extent to which explicit memory encoding occurs at the point of perception. In this respect, higher levels of conscious perception are likely to lead to greater encoding of explicit memory for the stimulus exposures. In other words, the degree to which explicit memory encoding occurs might be expected to weaken with the extent of supraliminal perception, and to be eliminated by subliminal perception. In order to ensure that a sufficient number of

preference judgments were made in the absence of accurate recognition, however, and in the light of both individual differences in memory ability (see Bors and MacLeod, 1996) and the relatively short delay between exposure and test (11 mins), it was necessary to supplement efforts to ensure minimal supraliminal perception with measures to further limit the encoding and retrieval of explicit memory.

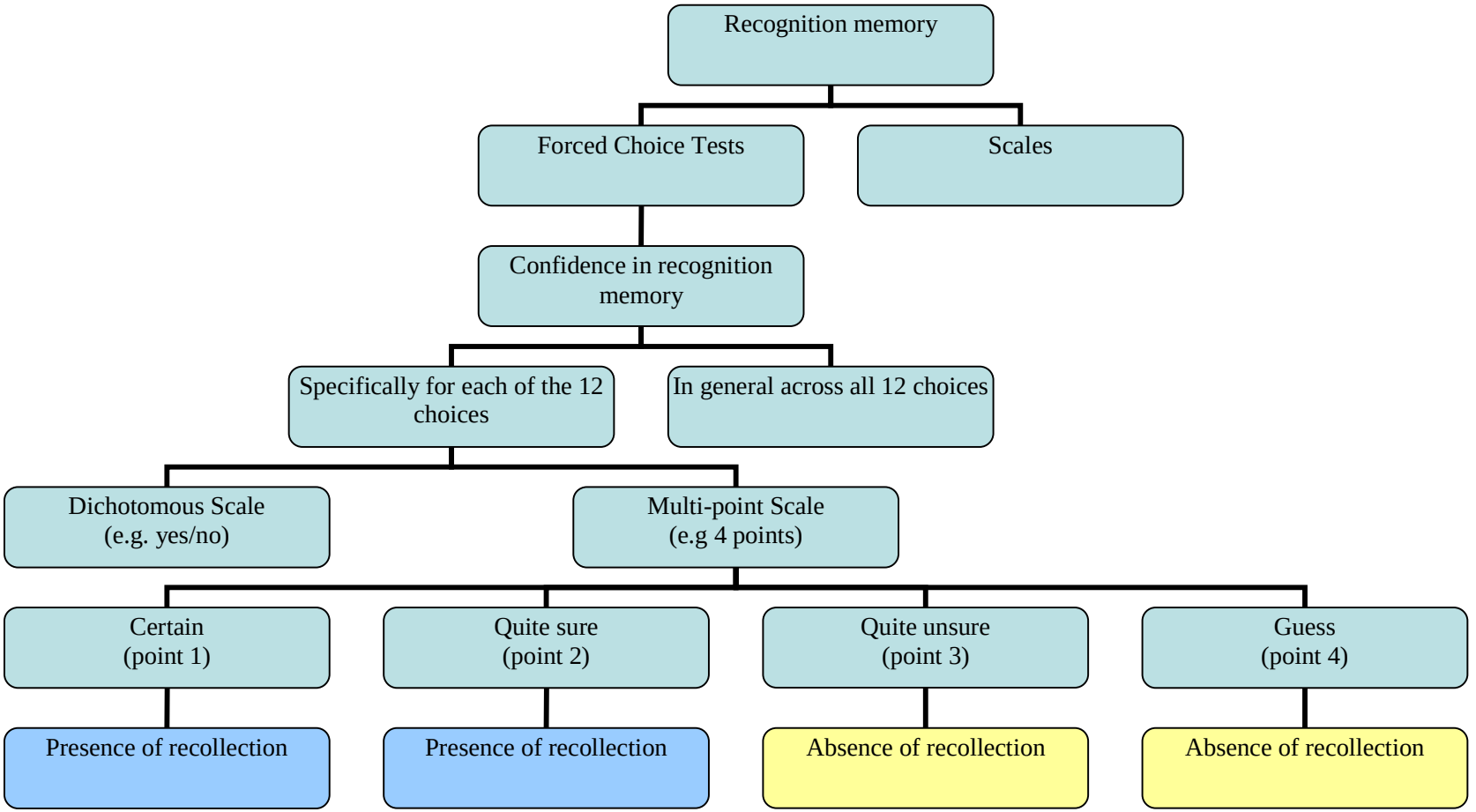
Firstly, and with specific regard to *encoding* during exposure, each stimulus was accompanied by pre and post-masks designed to 'cut-off' processing as soon the stimulus disappeared from the visual field, and thus prevent continued elaboration. Secondly, each exposure sequence contained 12 distractor stimuli (non-target brand names) and 12 target brand names. The purpose of this was to restrict attempts to create and sustain explicit memory for the latter by doubling the number of items in each sequence. Further to this, four filler tasks were used to increase processing demands with regard to encoding and retrieval in explicit memory. Two of these tasks were designed to engage participants in intensive encoding of extraneous stimuli, and were placed between the three exposure sequences. In addition to reducing the extent of encoding, these tasks also served to provide respite from the attentional demands of each exposure sequence (reducing the likelihood of fatigue). The other two tasks were located between the final exposure sequence and the preference judgment task and were designed to engage participants in intensive retrieval of these irrelevant stimuli. The purpose of this was to create a period of delay between exposure and test during which memory resources were actively engaged in an extraneous task; thus increasing the

likelihood of degradation in explicit memory for target stimulus exposure. This outcome was further facilitated by additional distractions and time delays associated with:

a) the completion of an unrelated questionnaire between the exposure and test phases;
b) the completion of two practice preference judgment trials prior to the task itself; and
c) reading and comprehension of on-screen instructions for all filler and test phase tasks.

As with perception, however, the capacity for encoding and retrieval varies between individuals (see Bors and MacLeod, 1996). As such, subsequent measurement was then necessary to identify the specific memory conditions under which each preference judgment was made by each participant. With regard to the hypotheses stated at the beginning of the previous chapter (see table 5.1, page 176), this required the identification of objective recognition memory (H2) and specifically the extent to which this was based on clear, contextualised recollection of the stimulus exposure (H3a and H3b). The key considerations, decisions and elements of the approach in this respect are illustrated in figure 6.8 and discussed in the subsections below.

Figure 6.8: Measuring the presence and absence of recognition and recollection



6.3.2.2 Measuring the presence and absence of stimulus recognition and recollection

As an initial step in the measurement of recognition memory, participants were required to complete a task consisting of 12 two-factor forced choice tests, relating to each of the 12 stimulus pairs. At the beginning of this task they were informed that, for each choice pair, one of the brand names had been presented in the exposure phase and asked to identify which one this was. Participants were instructed to always make a choice, and to guess if they could not remember. The main benefit of a 2-factor forced choice test as a measure of recognition in mere exposure research is that it enables (and indeed encourages) participants to demonstrate the full range of recognition memory for the target, from clear, explicit memory to a vague sense of having seen it before. It therefore avoids the need for self-reporting and eliminates potential inconsistency between participants as to their perceptions of what constitutes 'memory'. For example, during a self-report memory task, two people may have a feeling that they have seen the target before, but are not entirely sure about this. One of these people may have a confident and assertive disposition that encourages them to trust their instincts, be bold and clearly state that they can remember it. The other one may have a nervous disposition that leads them to decide not to run the risk of 'getting it wrong' and to state that they don't actually remember seeing either of the two stimuli presented at test. Self-report measures of memory, and particularly those that are based on dichotomous questions, may therefore be confounded by individual differences amongst participants.

Furthermore, the processes of implicit memory (on which the influential cognition-based theories of mere exposure are founded; see chapter 2, page 46) may be reflected in a tendency to select the target as having been seen before (as a result of enhanced processing fluency) without conscious awareness of this (Mandler *et al.*, 1987; Bornstein and D'Agostino, 1992, 1994). The presence of this may only be revealed, therefore, when participants are forced to make an apparent guess between two or more stimuli.

However, whilst the initial forced-choice tests indicate the objective accuracy of recognition memory, it is important to stress that these results do not necessarily reveal the extent to which the judgment is based on explicit *recollection* (Mandler 1980); a critical variable in the testing of P3 (see table 5.1, page 176). In order to distinguish recollection-based recognition from that which is based on a vague sense of familiarity or guessing it is perhaps useful to draw on Tulving's (1985) distinction between retrieval-based and familiarity-based recognition as essentially akin to 'remembering' and 'knowing'. On the basis that it facilitates the identification of "recollection on one hand, and the familiarity in the absence of recollection on the other," Algarabel and Pitarque (2007: 478) note that the *remember-know* methodology has been extensively adopted in memory research. Furthermore, the authors draw attention to the two factors by which each type of recognition has been distinguished in this literature; *context* and *confidence*. The former refers to the extent to which contextual details of the exposure can be remembered, whilst the latter relates to the subjective experience of memory. The presence of either or both of these factors may be expected to indicate recognition

by way of explicit retrieval, rather than familiarity in the absence of recollection. With this in mind, therefore, *recollection* is operationally defined in the current study as the confident, context-specific, conscious experience of memory for having seen the target stimulus during the exposure phase of the experiment (in line with Lee, 2001b; Wang and Chang, 2004).

On this basis, participants were first required to make a memory judgment as to which of the two brand names was presented during the exposure phase of the experiment. Following each choice, a measure of confidence in this judgment was applied. To this end, consideration was first given to the addition of a dichotomous (yes/no) question to identify whether or not participants believed each recognition judgment to be based on clear, contextualised recollection of the stimulus exposure. However, this was rejected on the basis that it relies heavily on subjective understanding of the concept of *recollection* amongst participants. In line with the measurement of perception (discussed in section 6.3.1.1, above), therefore, confidence scales were adopted to allow participants to report the nature of their memory with more precision, and express varying degrees of certainty/uncertainty with regard to each memory judgment (as recommended by Castelli and Zogmaister, 2000). In this respect, a five-point scale was initially considered (see figure 6.9a, page 259) but rejected on the basis that a neutral point (e.g. neither confident nor unconfident) is illogical in the context of this question (i.e. that a lack of confidence must, by definition, reflect a degree of uncertainty). Instead, the simple three point-scale illustrated in figure 6.9b (page 259) was originally developed to facilitate a distinction between judgments that were made under conditions

of certainty, some uncertainty and no degree of certainty at all (i.e. guessing). During the first phase of piloting, however, differences in participant understanding became apparent with regard to the notion of 'certainty'. In this respect, group discussion revealed that participants who had a clear sense that they had seen one of the stimuli previously, but were not fully confident in their memory judgment, had expressed this in different ways. Whilst some decided that this degree of assuredness constituted 'certainty' others adjudged it to reflect 'some uncertainty'. As such, an extended four-point scale (figure 6.9c, page 259) was designed and applied in subsequent phases of the piloting process (see section 6.7, page 270) to facilitate more precise reporting during data collection. Over the course of these phases, qualitative feedback indicated that points 1 and 2 essentially reflect recollection-based recognition memory. In this respect, the degree of uncertainty that underpinned responses at point 2 was revealed to be extremely small in most cases. By contrast, whilst point 3 may reflect relatively weak, but nonetheless conscious, memory for having encountered the stimulus previously, pilot participants were usually unable to identify the exposure phase as the context in which this occurred with any degree of certainty; often referring instead to a general sense of familiarity that suggested to them that the stimulus they selected was probably the one that was presented previously. As such, whilst it is acknowledged that both a vague sense of familiarity and accurate 'guesses' that are unaccompanied by any sense of contextualised memory may or may not reflect implicit memory for prior stimulus exposure, neither appear to be the product of the subjective sense of *recollection* referred to in P3. By contrast, whilst points 1 and 2 provide a means by which participants may report their subjective experience of memory (to varying degrees),

both types of response may be considered to reflect relatively confident, contextualised recollection of prior exposure. In this respect, therefore, it is important to stress that points 1 and 2 are not necessarily designed to facilitate discrimination between different *degrees* of recollection but rather to remove the need for participants to make a judgment as to the degree of confidence necessary for them to report explicit memory. For the purposes of analysis, therefore, these may be collapsed to provide a measure of subjective recollection.

Figure 6.9: Development of self-report scales for the identification of recollection

a) Initial five-point semantic differential scale (rejected prior to piloting)

1	2	3	4	5
Very certain	Quite certain	Neither certain nor uncertain	Quite uncertain	Very uncertain

b) Original three-point scale (rejected during piloting)

1	2	3
Certain	Uncertain	Guess

c) Final four-point scale (successfully piloted and adopted in the main experiment)

1	2	3	4
Certain	Quite sure	Quite unsure	Guess

In summary, therefore, objective *recognition* and subjective *recollection* are measured by way of an approach that combines forced-choice judgments with confidence scale data to optimize the potential benefits of both performance effects on a memory task

and self-reporting of the qualitative nature of the memory. To explain; whenever participants choose the target stimulus in a two-factor forced-choice memory task, this may or may not be the result of a number of factors; including explicit recollection, a vague but conscious sense of familiarity alone, an implicit approach tendency on the basis of processing fluency or simply a lucky guess. As such, the additional confidence rating attached to each choice enables participants to indicate the degree to which this decision was based on a clear, contextualized sense of recollection for the prior exposures. Furthermore, whilst an absence of genuine explicit memory may be assumed when participants choose the non-target stimuli in a forced-choice test of recognition, it does not necessarily eliminate the possibility of a false sense of recollection. The subjective nature of this raises the possibility that it may still hinder the non-conscious misattribution of processing fluency to affect, and thus the MEE (see Mandler *et al.*, 1987, and Bornstein and D'Agostino, 1992, 1994). As such, the inclusion of an additional confidence scale also provides the opportunity to explore the extent to which this occurs in the current study.

6.4. The purpose and design of filler tasks

As indicated in the previous section, five filler tasks were employed during the course of this experiment. A brief summary of these is provided in table 6.1 below.

Table 6.1: Summary of the 5 filler tasks used in this experiment

Filler Task	Participants required to . . .	Approx duration (inc. instructions)	Location in experiment
1	Memorise a list of 10 shapes in one minute	2 mins	Between exposure sequences 1 & 2
2	Memorise a list of 10 animals in one minute	2 mins	Between exposure sequences 2 & 3
3	Complete an unrelated questionnaire	5 mins	Between exposure and test phases
4	Recall the previous list of 10 shapes in one minute	2 mins	Between exposure and test phases
5	Recall the previous list of 10 shapes in one minte	2 mins	Between exposure and test phases

The purpose of the initial encoding tasks (1 and 2) was two-fold. Firstly, they were used to create a consistent time delay between each of the exposure sequences. In this respect, the tasks facilitated three exposure sequences, with a delay of approximately 2 minutes between them. To some extent, this delay replicates real world conditions in which there are often short gaps between stimulus exposures (e.g. repeated TV or online advertisements, billboards/posters displayed at intervals along a route, etc.). Furthermore, and from a practical perspective, division of the exposure sequences minimises the risk of fatigue, boredom, discomfort and divided attention. These factors would be much more likely to occur if participants were asked to view a single sequence in which each of the 24 brand names was presented 3 times. Such a sequence would require participants to focus and concentrate on flashing imagery for an unbroken period of 90 seconds. The filler tasks facilitated the division of this into three short sequences in which each brand name was presented once. Participants were therefore required to concentrate their attention on the flashing imagery for just 30 seconds at any one time, and were then provided with a two-minute ‘break’ in which they were actively

engaged in another task. Secondly, the requirement to actively and intensively engage in an explicit memory task immediately after each exposure sequence was designed to make it extremely difficult for participants to dwell on the target brand names (i.e. to prevent them from elaborating upon and reinforcing explicit memory for these stimuli). To further disrupt this process, participants were told they would be asked to recall the filler task items later in the experiment. As such, they were required to maintain their memory for the encoded shapes and animals whilst they viewed the remaining exposure sequences and then completed an unrelated questionnaire. Participants were then required to engage in active and intensive free recall of the shapes and animals they had previously encoded, prior to completing the test phase of the experiment.

Taken together therefore, these filler tasks facilitated periods of delay in which conscious, explicit memory resources were intensively occupied in extraneous activities. The overall aim was to reduce the availability of these resources for the processing of target stimuli during the exposure and test phases of the experiment. Further to this, the tasks were also designed to introduce participants to the automatically-timed nature of the experiment, and the notion that they were required to complete each task within the time limit stated on the screen. Thus, they were intended to prepare participants for making rapid, timed decisions in the preference and recognition tasks that constitute the primary dependent measures in this experiment. Similarly, the filler tasks were designed to address the initial nervousness, apprehension and lack of confidence that was sometimes evident during the piloting of the experiment (and indeed prior to the actual experiment itself). In this respect it is important to recognise that experimental conditions can lead to a feeling amongst participants that

their knowledge or ability is being tested. The desire to 'pass' this test, and the apprehension and fear regarding the unknown nature of it, may in turn lead to a relatively high degree of involvement during the experiment. The natural tendency for this to occur in the early stages of the experiment is not necessarily problematic, as the exposure phase is designed to limit the *opportunity*, rather than the motivation, for conscious, elaborative processing. Indeed, a high level of involvement may actually be seen as beneficial at this point, as it is likely to ensure that participants follow the on-screen instructions carefully and focus attention on the screen throughout the exposure sequences. However, in order to replicate the low involvement conditions under which the MEE may be most likely to influence real-world consumer decisions (see chapter 3, page 115) it is important that the subsequent test phase is completed under conditions of *low involvement*. In this respect, whilst the timed nature of the preference judgments restricted the opportunity to elaborate at this stage, it was also important to ensure that participants did not feel a heightened sense of risk, fear or apprehension during the test phase. With this in mind, the filler tasks were designed to be relatively short and easy to complete, with a view to minimising boredom and building confidence in participants prior to the test phase. This was especially important with regard to the first filler task. For this reason, the stimuli for this task were selected on the basis that they were simple, regular, familiar shapes that could be depicted both verbally and pictorially. This enabled participants to use a choice of strategies to memorise the equivalent pictorial and verbal stimuli in this task. Subsequently, the pictorial cues were removed from the second filler task to marginally increase the level of difficulty, and ensure that explicit memory processing was engaged in relation to the same type of (lexical) stimuli used in

the exposure and test phases of the experiment. The selection of shapes and animals for these tasks was made on the basis that they are commonly used in the branding and advertising of consumer products, and thus might be seen to be relevant by participants in the context of a study into perception, memory and preference for brand stimuli.

In summary, therefore, the filler tasks in this experiment were designed to minimise the likelihood of participants explicitly recalling the presentation of target brand names; a possibility that was already restricted by extremely short presentation durations, the presence of 12 distractor stimuli and the masking of all 24 brand names in the exposure phase. The inclusion of these additional tasks was necessary due to the relatively short delay between exposure and test; an issue that is in itself subject to some complex considerations and, as such, is discussed in more detail below.

6.5. Length of delay between study and test

The length of the delay between exposure and test was not specifically measured, but piloting of the experiment indicated that it was approximately 11 minutes on average. In the context of implicit priming research this is a relatively short period**,** and may be seen to have some limitations. For example, it is argued by some researchers that a relatively long delay between exposure and test (e.g. weeks, Shapiro, 1999; and even years, Mitchell, 2006) may be expected to result in the deterioration (and ultimately elimination) of explicit but not implicit memory. As such, changes in the dependent variable may be more clearly linked to the latter after long delays as this is all that remains for the exposure phase. However, whilst higher levels of explicit memory might

be expected in relation to studies that utilize short delays (i.e. minutes), there are a number of compelling theoretical and practical reasons for selecting this approach; not least of which is the fact that there is still no broad consensus as to how long implicit memory effects may persist (see chapter 2, page 34). Given this, it is perhaps prudent to assume that implicit memory may be relatively short-lived under experimental conditions at least. Furthermore, it should be stressed that the rate of depreciation in explicit memory is subject to individual differences (see Bors and MacLeod, 1996), and that natural degradation is not the only means by which explicit memory for stimulus exposures might be diminished or even eliminated. Indeed, it may be argued that such an outcome might be more effectively achieved by a more proactive and controlled approach in this respect.

With this in mind, a number of steps were taken to reduce the extent to which participants were able to consciously remember stimuli from the exposure sequences during the test phase, as discussed in the preceding sections. Additionally, and in relation to experimental control, administering the test phase within the same session as the exposure phase confers a number of other important methodological benefits. For example, it helps to ensure that the experimental conditions are largely identical between the two phases, and between participants. Secondly, it prevents contamination of the results by participants discussing the exposure phase, informally 'testing' each other, reminding or informing each other of which stimuli they had seen and speculating as to the purpose of the experiment. This was deemed to be particularly likely in this study, given that all participants are drawn from a close student body and thus have regular contact outside of the experiment. Finally, and from a practical perspective,

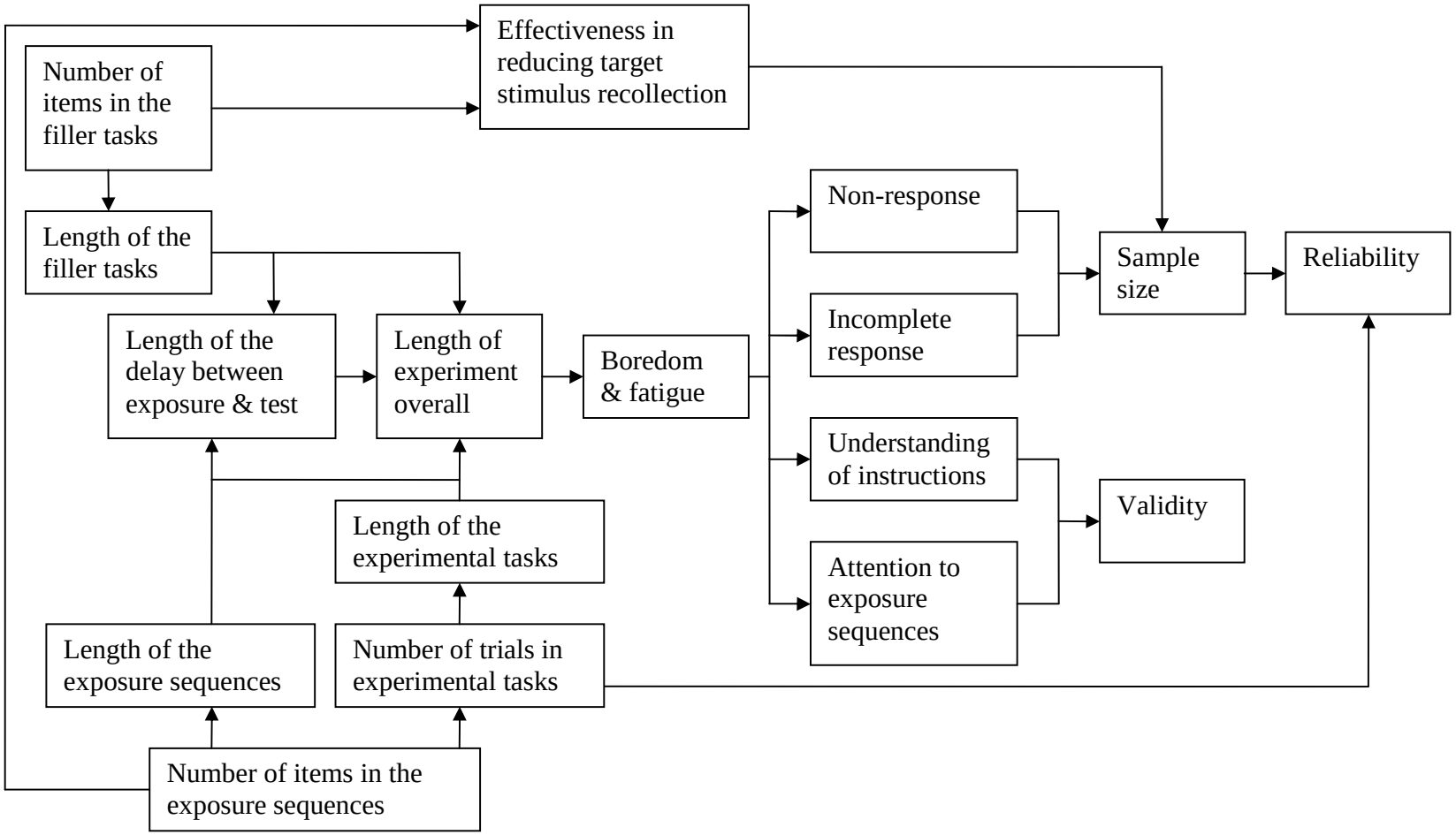
arranging for 240 participants to attend two phases of the experiment on two separate occasions (days, or even weeks, apart) would be likely to result in a large non-response rate and would thus require a much larger sample. In addition, co-ordinating resources such as research assistants, rooms and computer equipment on two separate occasions would have greatly increased the practical difficulties of completing the study.

In summary, therefore, a relatively short delay was selected on the grounds of theoretical and empirical evidence, alongside the requirements of experimental control, the practical considerations of sampling and the availability of resources. However, the specific length of this delay was dependent on the nature and duration of the filler and experimental tasks, and limitations on the length of the experiment overall. The interdependencies between these factors, and their various impacts on the reliability and validity of the study, are numerous and complex; as will be discussed in the following section.

6.6. Number of items/trials and length of tasks, delay & the experiment as a whole

The number of items and trials in each task, the duration of these tasks, the length of delay between exposure and test, and the experiment duration as a whole are connected by a series of interdependent relationships. Not only do these factors influence each other, they ultimately impact upon the reliability and validity of the results in this experiment. These interdependencies and the ways in which they might influence the reliability and validity of results are illustrated in figure 6.10, and discussed in more detail below.

Figure 6.10: Interdependent influence of items, trials, task duration, delay and experiment length on reliability and validity



With regard to figure 6.10, increasing the number of trials in the experimental task has, in itself, been identified as a means by which to enhance the reliability of results in implicit memory research (Buchner and Brandt, 2003). Furthermore, expanding the number of items in the *filler* tasks increases the explicit memory resources required; thus reducing those available for encoding, maintaining and retrieving the target stimuli. In turn, this raises the number of preference judgments made in the absence of recollection, resulting in a larger data set for analysis and enhanced reliability of results.

However, increasing the number of trials, by implication, extends the length of time for which participants are engaged in each task; a factor that may ultimately limit the reliability and, perhaps also, the validity of results. Firstly, given that both the stimuli and the tasks themselves are designed to be very simple (rather than complex, stimulating or challenging), longer tasks may enhance the likelihood of boredom and fatigue effects (Bornstein *et al.*, 1990). In the context of this experiment these may become manifest in lower response rates and higher rates of incomplete response, limiting the size of the data set for analysis and thus the reliability of results. Furthermore, boredom and fatigue may also lead to a lack of attention and motivation for information processing throughout the experiment. In simple terms, this may lead to misunderstanding of the task instructions and thus limitations regarding the validity of these tasks. More importantly perhaps, such limitations may also arise if the degree of attention varies widely between participants in the exposure phase in particular. In this respect, increasing the number of trials in the experimental tasks would, by implication, inflate the number of stimuli (items) in the exposure sequences, and thus the length of

time for which continuous attention is required. However, the extremely rapid presentation of dozens of flashing white images on a black background is likely to place a significant degree of visual strain on participants, and so full attention cannot be expected to be maintained over long periods of time. The selection of too many trials for the experimental tasks could therefore result in overly long exposure sequences and variations in the degree to which mere exposure occurs between participants.

Finally, increasing the length of the filler and experimental tasks (to accommodate more items/trials) may have important implications for the length of delay between the exposure and test phases, and/or the length of the experiment as a whole. In this respect, it is important to reiterate that maximising the delay between exposure and test is an important element of the strategy to minimise explicit memory during the test phase, and thus enhance the reliability of results. Given the need to limit the overall duration of the experiment (and thus prevent the boredom and fatigue effects discussed above), therefore, it is also important to recognise that extending the filler tasks (during the exposure phase) and the experimental tasks (during the test phase) would require the shortening of this delay. In this respect, increasing the number of items/trials may thus serve to reduce the reliability of results overall. With all of this in mind, it was acknowledged that both reliability and validity in this experiment will be maximized by the identification of an optimum balance between the number of items/trials in each task, the length of each task, the delay between exposure and test and the length of the experiment as a whole. To this end, these factors were all considered in during an

extensive period of piloting and pretesting; the process and results of which are discussed in the following section.

6.7. Piloting, pretesting and refining the experimental procedure

As indicated in previous sections, extensive piloting and pretesting of the experiment was undertaken for a number of important reasons. At a general level, and as the experiment was designed to run without the need for intervention by a researcher, this was necessary to ensure clarity and equivalence of meaning with regard to all instructions and the validity of self-report scales (regarding perception and recognition confidence). Further to this, however, careful piloting was also required in relation to task timings, the number of items/trials and the duration of each task. Taken together, these factors have implications for the length of the exposure and test phases, and thus the length of the experiment overall (see section 6.6, page 266); all of which were monitored to ensure the experiment did not become overly long. This was determined by pilot participant reports regarding their subjective experience of the experiment (and in particular feelings of boredom, fatigue or frustration) and the practical considerations of running two data collection sessions within a two-hour period. In addition, and as indicated previously in this chapter, two important elements of the experimental procedure were also pretested:

1. The likely impact of stimulus presentation duration on the nature of perception in the exposure phase (see page 243)

2. The likely impact of the entire experimental design on recognition for the stimulus exposures (see page 250)

The purpose of this section, therefore, is to explain the process by which the experimental procedure was piloted, pretested and refined prior to the main experiment. As a starting point, it should be noted that this was undertaken in five phases to facilitate incremental changes to the experimental design where necessary. In each phase the full experiment was completed by 10 different participants prior to a qualitative discussion of their subjective experience during the experiment. As such, the piloting and pretesting phase was undertaken with a total of 50 participants, all of whom were members of the target population and none of whom subsequently participated in the main study. The key elements of the experimental design in each phase, and indicative results regarding the nature of perception and recognition, are illustrated in table 6.2 and discussed further in the subsections below.

Table 6.2: Summary of experimental designs during 5 phases of pretesting

Design element	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
No. of pretest participants (n)	10	10	10	10	10
Timings for each stimulus exposure:					
Blank screen	1s	1s	1s	1s	1s
Pre-mask	100ms	100ms	100ms	100ms	100ms
Brand name	20ms	30ms	40ms	50ms	60ms
Post-mask	100ms	100ms	100ms	100ms	100ms
Total	1.22s	1.23s	1.24s	1.25s	1.26s
No. of items in exposure sequence:					
Target brand names	8	12	12	12	12
Non-target brand names (Distractors)	8	12	12	12	12
Total	16	24	24	24	24
Length of each exposure sequence	19.52s	24.6s	29.76s	30s	30s
Timings for encoding filler tasks	90s	90s	60s	60s	60s
Timings for retrieval filler tasks	90s	90s	60s	60s	60s
Items for each filler task	15	12	10	10	10
Additional filler task included?	No	No	No	Yes	Yes
Timings for preference task:					
Question screen	3s	5s	5s	5s	5s
Product category screens	3s	3s	3s	3s	3s
Brand name choice screens	3s	3s	5s	5s	5s
Times-up, next choice screens	3s	3s	3s	3s	3s
Trials for preference practice task	2	2	2	2	2
Length of preference practice task	21s	23s	27s	27s	27s
Trials for preference judgment task	8	10	12	12	12
Length of preference judgment task	75s	95s	137s	137s	137s
Quantitative Indicators					
Mean recognition frequency:					
Filler task (shapes)	11.5	9.5	8.2	8.1	7.9
Filler task (animals)	10.6	9.1	7.6	8.3	7.7
Target brand names	5.4	5.9	6.7	6.4	6.8
Mean recognition rate (%):					
Filler task (shapes)	77	79	82	81	79
Filler task (animals)	71	76	76	83	77
Target brand names	68	59	56	53	57
Supraliminal perception frequency	4/10*	6/10	8/10	7/10	8/10

*Perception was measured using a dichotomous yes/no question in the first phase, during which qualitative group discussion indicated that this may result in an underestimation of supraliminal perception. In this respect, some participants assumed that they must recognise a complete word to be able to report supraliminal perception, whilst others deemed this to have occurred if they simply saw some of the letters within the word. Measurement of this variable was therefore undertaken by way of a four-point scale in all subsequent phases (as explained in section 6.3.1.1, page 246).

6.7.1. Exposure duration and the nature of perception

As discussed previously in this chapter, stimulus masking and exposure duration are central factors in the manipulation of both perception and recognition memory in this experiment. With this in mind, careful pretesting was undertaken in relation to the automated presentation timings for each element of the exposure sequences. To this end, initial exposure to the brand names was set at 20ms on the basis of previous findings of frequent subliminal perception below this point (see Cheesman and Merikle, 1984; Greene and Oliva, 2009). This was then increased by 10ms in each subsequent phase of pretesting. Whilst these incremental increases were not expected to result in a linear reduction in the rate of subliminal perception, the intention was to identify a point at which the great majority (approximately 80%) of the main sample could be expected to perceive the exposure sequences supraliminally. This approximate rate was apparent in relation to three consecutive exposure durations (i.e. 40ms, 50ms and 60ms). The mid-point of these exposure durations (i.e. 50ms) was therefore selected for use in this study on the basis that supraliminal processing might still be expected to occur at roughly the same rate should variations in computer hardware cause the actual exposure duration to fluctuate slightly in either direction.

Additionally, it should be noted that other presentation factors (i.e. the blank screen, pre-mask and post-mask) were presented for longer durations to facilitate a situation where the brand names were perceived to be embedded in a dynamic background, rather than simply one of a series of flashing images. This makes for a more comfortable

visual experience and focuses attention on the brand name exposures as the central element of this. Furthermore, the presentation times for the masking and interim screens were maintained throughout the pretest phase to provide a stable 'background' against which to assess changes in perception as a result of brand name exposure duration alone.

6.7.2. Length of exposure sequences, experimental tasks and filler tasks

Variations in the exposure duration (as discussed above) do of course have some small effect on the length of each exposure sequence overall, and thus the amount of time for which participants are required to pay continuous attention to the screen. However, the fact that these differences are measured in milliseconds means their impact is negligible. Rather, the main influence on the length of each exposure sequence is the number of target and distractor items (i.e. brand names) included within it. With this in mind, it is important to recognise that, given the visual strain and relatively unstimulating nature of the task, participants can only be expected to pay full, continuous attention to the screen for a relatively short period of time. As such, too many brand name presentations might result in overly long exposure sequences and thus variations in attention between participants.

As noted previously, however, maximising the number of brand names (and thus trials in the test phase) is potentially an important factor in enhancing the reliability of mere exposure research (Buchner and Brandt, 2003). With this in mind, one objective of the

piloting and pretesting stage was to identify the optimum number of items in the exposure sequences and, by implication, trials for the experimental tasks. To this end, the exposure phase initially contained 16 brand names (half of which were targets and half distractors) and thus 8 paired-choice trials in each task of the test phase. At this point it is perhaps useful to reiterate that an even number of target and distractor stimuli were included in the exposure phase to facilitate the counterbalancing of the target stimuli in the test phase, and thus identify and address relative fluency effects that were not linked to mere exposure. However, whilst the relatively high brand name recollection rates observed at this first stage of pretesting may or may not reflect an insufficient number of stimuli, subsequent qualitative feedback indicated the potential for more brand names to be added. In this respect, participants reported that each exposure sequence seemed to be over very quickly and that they experienced no feeling of discomfort, boredom or fatigue throughout the experiment. In response, initial consideration was given to doubling the number of items (and thus trials) by including a second triad of brand names in each product category; an option that was discounted on the basis that an insufficient number of appropriate brand name triads were available for selection. In this respect, the maximum number of brand name triads that could be included in the experiment without unbalancing the representation of product categories and, more importantly, stimulus type was 12 (as explained in chapter 5, pages 202-205). As such, all of these were included in the second phase of pretesting (facilitating exposure sequences of 24 brand names and paired-choice tasks containing 12 trials) and maintained throughout subsequent phases of pretesting. Overall, this seemed to cause few problems to pilot participants although it should be noted that during group

discussions across the four phases, two participants reported some minor discomfort during the exposure sequences. In phase 3, one of these participants also reported a degree of frustration during the third exposure sequence and boredom towards the end of the experiment, although this was not widely experienced in the group.

The expansion of the experiment to 24 brand names in the exposure phase and, as a result, 12 choice trials in each task of the test phase was initially determined by the limited number of appropriate brand name triads identified during stimulus pretesting. During the process of piloting and pretesting, however, it was subsequently found to reflect the maximum number of items for another important reason. Specifically, this number of brand name stimuli (and thus paired-choice trials) resulted in some pretest participants taking up to 25 minutes to complete the experiment. In addition to the increased potential for boredom and fatigue beyond this point, it was acknowledged that extending the overall duration of the experiment could eliminate the opportunity for two data collection sessions within the allocated two-hour period (see chapter 5, page 181). Whilst further stimulus pretesting, and the identification of more potential brand name triads, could therefore have been undertaken to increase the number of items/trials in the study, it was deemed to be unnecessary and perhaps even counterproductive in light of the extent to which this would increase the length of the experiment.

In line with the experimental tasks, however, it is also important to acknowledge that the length of the filler tasks are also influenced by two factors; the number of items and the length of time participants are given to complete the task. The second of these was

automated to enhance the intensity of the task (and thus the focus of attentive resources) and control the pace (and thus the overall length) of the experiment (as discussed in section 6.6, page 266). Settings in relation to both of these factors were therefore piloted to optimise the effectiveness of the tasks in reducing explicit memory for the target brand names, whilst preventing boredom and fatigue within the experiment as a whole. To this end, participants in the initial phase of pretesting were required to encode or retrieve 15 items during a period of 90s for each of the four memory-based filler tasks. Whilst this appeared to fully engage explicit memory (with no participants successfully recalling all 15 items on the two tests), two important limitations were revealed during the subsequent group discussion. Firstly, some participants were daunted by having to memorise 15 items early in the experiment, and then another 15 items before they had chance to complete the memory retrieval test for the first set. They found it quite taxing and frustrating. Indeed, in response to this, one participant reported that he had decided to focus on just 10 of the items, ignoring the other 5, and was thus able to "switch off for the last 20 seconds or so" (Anon). Secondly, and on a similar note, two participants expressed the opinion that 90 seconds might feel like a long time for these relatively unstimulating tasks and, although they themselves had not experienced this, other participants may become bored. As a result, the number of items for each of the memory-based filler tasks was reduced to 12 in the second pretest phase, although the 90-second time limit was maintained. The rationale for this was to explore the possibility that a more realistic challenge would engage participants more effectively for this amount of time. However, the qualitative feedback at this point was very similar to that of the first phase, especially in relation to the 90-second time period. Using a more

inductive approach, therefore, the design for phase three was inspired by the participant in phase one who had sought to memorise 10 items in approximately one minute. Subsequently, both recognition rates and qualitative discussion indicated that this was an appropriate design, and it was therefore maintained throughout the following two phases (with no further problems identified by participants).

However, as a by-product of reducing the number of filler items (and thus the length of these tasks), the periods of time between the three exposure sequences, and the length of delay between the last of these and the beginning of the test phase, were reduced. Whilst the former does not necessarily constitute a problem (as a sufficient 'break' from exposure was still apparent), the latter might be seen to reduce the time period during which explicit memory for the both the filler task items and, more importantly, the target brand names might degrade prior to the test phase. Although this was not apparent in the quantitative indicators action was taken to ensure that, rather than reducing the length of the experiment, the time savings made in the completion of filler tasks were used to extend this interim period of delay. To this end, an additional filler task was placed in between the final exposure sequence and the first retrieval filler task, in the form of a simple questionnaire about an unrelated topic. This required some reflection on personal experience, was limited to two sides of a single page of A4 paper and took approximately 5 minutes to complete. Participants in the final two phases of pretesting reported that it was neither taxing nor frustrating, and indeed provide a welcome "time out" from the intensity of the computer-based tasks. As such, it served to provide:

a) a further active period of delay between the encoding and retrieval of filler task items, enhancing the difficulty of these tasks whilst avoiding the need for longer lists of items and longer task durations;
b) an extended period of delay between the exposure and test phase of the experiment, increasing the likelihood of explicit memory decay for the target brand names (if indeed this had been encoded during the exposure sequences); and
c) a break from the intensive, automated nature of the experiment and, in particular, from staring at the computer screen.

6.7.3. Automated timings for the preference judgment task

All of the screens in the preference judgment task were automatically timed for a number of reasons. The first, and most important, of these was to limit the degree of involvement in each choice decision via the use of time pressure (as will be discussed on page 291). In line with Chung and Szymanski (1997), the time limit for each judgment was set at 3-seconds during the first two phases of pretesting. However, over the course of the group discussions it became apparent that participants had barely processed the on-screen information before it was gone and they were being introduced to the next trial. As such, some participants reported that they tended to make rapid choices based on recent memory of the brand names that had just disappeared from the screen; a situation that could give rise to two problems in the main experiment. Firstly, the intensity of such a task could lead to participants falling behind, experiencing

frustration and failing to complete it fully. Secondly, given that the mere exposure effect refers specifically to stimulus-based responses (Zajonc, 1968; see Butler and Berry, 2004), the influence of memory-based judgments could potentially be seen to invalidate the results of this study. As such, the time limit was increased to 5-seconds for the final three phases of pretesting and no further problems of this nature were reported.

In addition to those relating to brand choice, all of the other screens in this task were automatically presented for 3-seconds in the first phase of pretesting. The purpose of this was to ensure that the experiment progressed relatively quickly (to prevent boredom) and at a uniform pace for all participants (to enhance control over the length of the experiment). In addition, the standardisation of all screen timings was intended to acclimatise participants to short, automated screen exposures (and thus the need to make rapid judgments) as quickly and effectively as possible. However, whilst this duration was appropriate for the product category and interim screens (which stated that the time was up for the previous choice and the next set of product category/choice pair screens were imminent), it was found to be potentially too rapid for the initial question screen. In this respect, a small number of participants in the first phase of pretesting felt that the question in the practice preference task had disappeared from the screen too quickly. Although they confirmed that they had indeed read and understood the question by the time they made their first preference judgment in the main task, these participants (for whom English was not their first language) expressed some discomfort about this aspect of the experiment. As such, presentation of the question screen in both the practice and main task was extended to 4-seconds in subsequent phases of pretesting and no further

problems of this nature were reported. Finally, the use of a two-trial practice task was consistently reported to be both sufficient and effective in introducing and acclimatising participants to the nature and conditions of the task.

6.7.4. Finalising the experimental procedure

In light of the process of piloting and pretesting described in this section (and summarised in table 6.2, page 272), the experimental design adopted during phase 4 was selected for use in the main experiment. The main reasons for this are that, during this phase:

- The mean recognition rate for brand names (0.53) was relatively close to chance (0.5), indicating that a significant number of preference judgments in the main experiment could be expected to occur in the presence and absence of accurate recognition.
- Supraliminal perception was evident for the majority of the group in this (7/10) and the two neighbouring phases (both 8/10); providing a 'buffer' against significantly different rates of perception occurring as a result of slight differences in the speed at which each computer operated during the main experiment, and potentially facilitating the comparison of subliminal and supraliminal mere exposure effects.
- Mean recognition rates for the filler tasks were considerably below 100%, indicating that they were not so easy as to be successfully completed without the intensive engagement of explicit memory.

- Each task and the experiment as a whole appeared to be of a duration that facilitated the use of all 12 triads of equivalent stimuli that were generated during pretesting, and the practical execution of two group data collection phases within the necessary time period.
- Participants completed the experiment fully and generally without feelings of boredom, fatigue, confusion, frustration or discomfort.

In addition to the specific elements of research design discussed so far in this chapter, however, it is important to note that two further procedural issues are critical to the effectiveness of the experiment. These relate to the identification and minimization of presentation order effects, and the use of deception/disguise; each of which will be discussed in the remainder of this chapter.

6.8. Minimising order of presentation effects: Randomisation, counterbalancing and controls

In this experiment, it was considered important to recognise (and minimise) the potential for ordering effects in both the exposure and test phases. The first of these relates to the presentation order of the 24 brand names (12 targets + 12 distractors) during each of the three exposure sequences. The second relates to the order in which the brand choice pairs are presented in the preference and recognition tasks, and in which the two tasks themselves are undertaken. The potential problems associated with

ordering effects in each of these aspects - and the rationale for decisions taken in this respect - are discussed in the subsections below.

6.8.1. Order of brand name presentation in the exposure sequences

Given that the exposure phase involved three presentation sequences of 24 brand names (12 targets + 12 distractors), it was important to minimise the risk of systematic bias as a result of the order in which the stimuli were presented. For example, a standardised presentation order may result in consistently clear explicit memory for certain brand names, but not others, as result of the primacy or recency of their appearance in the sequence (Wedel and Pieters, 2000). To minimise this, steps were taken to randomize the order in which the 24 brand names were presented in each exposure sequence. Ideally in this respect, specialist software (such as MatLab or Eprime) would be used to randomly generate new presentation orders for each participant in both the exposure and test phases. Unfortunately, as noted previously (on page 244), licensing and sampling limitations prevented the use of these applications in the current study. In the absence of this option, therefore, an alternative approach was adopted that combines a degree of randomization with subsequent measurement to identify evidence of systematic bias. Specifically, three sequences of the 24 brand names were randomly generated using web-based computer software. These were built into the exposure phase of the experiment in the same way for all participants. As such, whilst each participant was exposed to the same three exposure sequences, each of these displayed the brand names in a different, randomly selected order.

It is acknowledged that that this may constitute a methodological limitation regarding the within-subject analysis in this experiment. In this sense, it may be argued that the fact that each participant was initially exposed to the same three sequences of brand names *could* give rise to primacy or recency effects on recognition (see Bower, 2005). Whilst the implication of this may simply be to alter the frequency (and thus perhaps the reliability) with which the MEE might be tested in the presence and absence of memory in this study, it should nonetheless be acknowledged as a potentially extraneous influence. However, it should be noted that none of the 24 brand names was systematically presented towards the beginning or end of all three sequences, and presentation position tended to vary considerably for most items. Furthermore, a by-item analysis provides no evidence to suggest that target recognition rates were influenced by early or late presentation in the exposure phase as a whole (see appendix III for results and further discussion). As such, it is argued that the use of the same three randomly selected exposure sequences should not be considered to be a significant methodological limitation in this study.

Additionally, it should be noted that, in addition to the practical benefits afforded by this approach (e.g. the facilitation of large-scale simultaneous data collection using standard computer software, and thus a much larger sample size), it also adds greater validity to the between-group analyses in this study. In this respect, it may be argued that the fact participants in the experimental and control conditions have been exposed to exactly the

same stimuli, in exactly the same order, enhances the comparability of recognition rates between these two groups.

6.8.2. Presentation order of brand choice pairs in preference and recognition tasks

In addition to the exposure sequences, it is acknowledged that presentation order effects in the two test phase tasks (i.e. preference and recognition) may also give rise to systematic bias in the results of this experiment. Given the use of 2-factor forced-choice tasks (featuring a target and novel filler brand name), systematic bias could arise as a result of:

a) the order in which the 12 trials (i.e. the 12 brand name choice pairs) were presented in each task (e.g. as a result of increasing task competence or boredom/fatigue); and/or
b) the left/right visual presentation of the brand names in each choice pair (e.g. as a result of hemispheric processing specialisation, and thus enhanced processing fluency for verbal stimuli in the right visual field; see Hellige, 1990).

To eliminate the influence of the latter, the left/right visual presentation of the brand names in each choice pair was fully counterbalanced across the sample. The nature of the former, however, and thus the action required to minimize its influence, is similar to that relating to presentation order effects in the exposure phase (see section 6.8.1, above). In this respect, and in the absence of specialist software (e.g. Eprime), fully randomized sequencing of the 12 choice pairs would have required the manual

production of 240 different versions of the experiment within MS Powerpoint (i.e. one file for each participant, each containing randomly generated choice-pair ordering in the test phase). Given the time and resource constraints around this study, however, a more practical solution was developed on the basis of partial randomization. Specifically, 20 different versions of the experiment were manually constructed in MS Powerpoint for use in the experimental condition. In each, the choice pairs in the preference judgment and recognition task were presented in a different, randomly determined order (generated by web-based software). Furthermore, both of these presentation orders were unique to that particular version of the experiment. Each version was then loaded on to 4 of the 80 computers that were used for data collection in this condition. As every computer was used twice in this condition, each version was therefore completed by 8 of the 160 participants. Similarly, in the control condition, the 20 versions - modified only in the sense that the stimuli in the preference judgment task were replaced with entirely novel, 'dummy' brand names (see chapter 5, page 222-223) - were preloaded onto 2 of the 40 machines that were used for data collection in this group. Again, as every computer was used twice in this condition each version was thus completed by 4 of the 80 control participants. Whilst it is acknowledged that this approach does not entirely eliminate the possibility of systematic bias as a result of the order in which brand choice pairs are presented at test, it may confidently be expected to minimise this to the point at which it is extremely unlikely to exert a significant influence, if indeed it occurs at all. In this respect, the results of just 5% of the sample could be influenced by a single presentation order; the effect of which is likely to have a negligible impact on mean rates of preference and recognition across the sample as a whole.

6.8.3. Identifying and accounting for task order effects

Although it is rarely acknowledged in empirical studies of the MEE, the potential for bias as a result of task order constitutes an important methodological issue. The vast majority of mere exposure research is characterized by a test phase in which participants report two judgments; one in relation to affect and the other to stimulus recognition. As such, there are three possible approaches to the ordering of tasks in the test phase, all of which confer benefits and limitations:

1. Recognition task first for all participants
2. Preference task first for all participants
3. Counterbalancing (i.e. recognition task first for half the participants and preference task first for the other half)

Firstly, it may be argued that consistently placing the recognition task before that of preference judgment provides a valid manipulation check of the memory conditions under which affective evaluations are then made (i.e. it ensures a valid measure of recognition immediately prior to the preference judgment task). However, it should be acknowledged that it may also invalidate the subsequent preference judgment as an indicator of the MEE; confounding the link between enhanced preference (or not) and mere exposure by adding an intervening exposure in which participants are required to process the target stimuli attentively, actively and elaborately. In general terms, it may therefore be argued that this approach makes it impossible to distinguish between the effects of *mere exposure* and those of the processing that takes place during the

recognition task. More specifically, however, it may not be possible to identify the nature and direction of the task order effect in this scenario. For example, if the MEE is explained by the misattribution of perceptual fluency to whatever is suggested as "the most parsimonious and reasonable explanation of the experience" (Bornstein and D'Agostino, 1994: 106-107), then it might be expected to result in a familiarity-bias on the initial test of recognition memory. There are no theoretical grounds to assume that once fluency has been attributed to the familiarity of the stimulus, it might then be re-attributed to another factor (e.g. preference). By contrast, however, the theory of hedonic fluency (Winkielman and Cacioppo, 2001) incorporates the notion that the experience of recognition is inherently positive (see chapter 2, page 39). As such, it is not inconceivable that the act of making a recognition judgment (whether this is correct or not) may in itself enhance the likelihood of affect-bias for the same stimulus in a subsequent preference judgment task.

This limitation could be eliminated by placing the preference task *first* for all participants. Such an approach would confer the important benefit of ensuring a valid dependent measure; i.e. a valid indication of preference immediately after mere exposure to the target stimuli. However, in studies whereby the objective is to measure affect in the absence and/or presence of recognition, this approach is subject to a similar limitation as that detailed above. In short, consistently placing the recognition task second may invalidate this as a manipulation check of the memory conditions under which affective response occurs. The basis for this concern is the recent finding that subjective recognition may be artificially enhanced by a prior statement of preference

for the stimulus (*affective modulation bias*; Phaf and Rotteveel, 2005). As a result, the requirement for participants to consistently make preference judgments prior to those of recognition could result in a false memory effect; raising the possibility of type II error in relation to the non-conscious nature of the MEE.

In summary, therefore, only the results of whichever task is placed first may be confidently considered to reflect the influence of mere exposure. The essence of the problem is that an observed effect in the second task may reflect *either* the influence of exposure, task order or a combination of the two. In light of this, a case might be made for counterbalancing the order of the two tasks within the sample. Whilst this would not necessarily eliminate the limitations identified above, comparative analysis may at least facilitate the identification of task order effects. However, the validity of this approach may be challenged on the basis that the requirement to first make a recognition judgment might be expected to either limit or enhance the likelihood of a subsequent affect-bias for the selected stimulus (as explained above). Furthermore, it is conceivable that these two effects might occur simultaneously within the sample, thus masking the true extent of each.

In developing a more effective solution to this conundrum, therefore, it is important to begin from a clear, basic understanding of how experimental evidence for the mere exposure effect may be elicited. In this respect, support for the MEE would be provided by enhanced preference for the target stimuli in either the presence or absence of recognition memory for previous mere exposure, *at the point at which the preference*

judgment is made. The final part of this statement is particularly important and highlights the fact that affect is the dependent variable, whilst the extent and nature of recognition constitutes a manipulation check to indicate the memory conditions under which this occurs. With this in mind, it may be argued that the key factor in the selection of task order should be the maintenance of a valid measure of *affect* following the exposure phase, and the absence of intervening attentive processing of the target or distractor stimuli. Furthermore, whilst the possible effects of previously stated recognition on preference are potentially complex and bi-directional (as explained above), that of previously stated preference on recognition is uni-directional (i.e. positive; Phaf and Rotteveel, 2005). Critically, however, this enhanced memory is not present *at the time the preference judgment is made*, occurring only subsequently on the basis of responses to the previous task. Given this, it should be possible to assess the likelihood of an effect arising from an initial preference judgment on the results of a subsequent recognition task by way of a control group in which the former is effectively removed; i.e. both the target and non-target stimuli that appear in the recognition task are replaced by 'dummy' stimuli in the intervening preference judgment task that do not appear anywhere else in the experiment. Specifically, this would be indicated by a significant difference in target recognition rates between the control and experimental conditions. Whilst neither this approach, nor that of counterbalancing, can eliminate the influence of task order effects, it is nonetheless important to identify and account for these should they occur. The consistent elicitation of affective response prior to recognition judgments, coupled with the use of a recognition-only control group would

appear to provide the most effective means by which to do this, and will thus be adopted during the empirical phase of this thesis.

6.9. Deception, disguise & the creation of low involvement, low attention conditions

As discussed in chapter 3 (section 3.5, page 115) the influence of the MEE in a marketing context might be expected to be maximized by (and may even be dependent upon) conditions of low *audience* and *actor* involvement (Greenwald and Leavitt, 1984); the first of which relates specifically to low attention during exposure to brand stimuli, whilst the second refers to the degree of elaborative cognition and behaviour during brand choice. To the extent that these are necessary conditions for the marketing-based MEE, their creation in the context of experimental research may therefore be extremely important. However, it is notoriously difficult to engineer experimental conditions of low involvement in an experimental setting; the contrived nature of which may be expected to lead to interest, intrigue, anxiety and/or fear, and thus artificially high levels of involvement**.** Nonetheless, efforts to minimise this should constitute an important aspect of marketing-based mere exposure research.

In order to understand the specific means by which this might be achieved, it is perhaps useful to acknowledge that involvement is mediated by the *opportunity, ability and/or motivation* to elaborate (see MacInnis and Jaworski, 1989). In a media and consumption environment that is characterised by fragmentation, clutter, noise and a proliferation of similar brands (MacInnis *et al.*, 1991; Ha and Litman, 1997; Skinner and Stephens, 2003), the absence of high involvement consumer behaviour may be the result of any or

all of these factors. In experimental research, therefore, measures may be taken with a view to artificially controlling these factors, limiting the extent of conscious, elaborative processing and thus replicating conditions of low attention, engagement and involvement in the real world environment (see MacInnis and Jaworski, 1989). For example, a relatively common technique to minimise audience involvement (i.e. attention and elaboration during exposure) is to position a 'decoy task' as the main purpose of the study, and therefore the main focus for attentive processing (e.g. Janiszewski, 1993; Shapiro, 1999; Fang *et al.*, 2007). The target stimuli are then presented outside of this task and, it is presumed, perceived to be irrelevant and thus not worthy of attention and elaboration (Janiszewski, 1988). Specifically, the use of deception and disguise in this peripheral (or *incidental*) exposure paradigm is designed to reduce the *motivation* of respondents to engage in conscious, elaborative processing and thus reduce the level of audience involvement. In turn, it is expected that this will limit the extent to which participants seek to memorise the target stimuli and thus their ability to use explicit retrieval during the test phase.

In the context of this thesis, however, the incidental exposure paradigm may be subject to an important limitation in that it does not necessarily distinguish between the effects of *mere exposure* and *classical conditioning* (as discussed in chapter 2, page 56). Alternatively, therefore, the use of a highly controlled exposure phase may be used to physically limit the *opportunity* for attentive processing, and thus the extent to which target stimuli are elaborated upon and encoded in explicit memory. As such, it provides a controlled means by which to create low audience involvement without the need for additional stimuli. Furthermore, whilst restricting the *motivation* to engage in attentive,

elaborative processing necessarily requires the use of deception (i.e. a 'decoy' task), the same is not true of methods that limit the *opportunity* or *ability* to elaborate. This is an important point in the context of ethical concerns regarding the use of deception and disguise in psychology and consumer research; a situation that has led to calls for this to be limited where possible, and only used when there is no alternative way of obtaining the same data in a non-deceptive way (see Smith, Kimmel and Klein, 2009).

With all of this in mind, the condition of low *audience* involvement was engineered by the requirement for participants to passively observe sequences of extremely fleeting, masked exposures of the target stimuli amidst a 'clutter' of distractors. In this way the *opportunity* for attentive, elaborative processing was limited, and the need for deception minimized. Instead, a brief, but rather vague, explanation was given at the outset, indicating that the purpose of this study was to investigate "issues of perception, memory and affective response in relation to brand stimuli." However, in order to ensure the questions were meaningful in the context of the study, a small element of disguise was necessary in the question related to preference judgment. Specifically, this stated that the two stimuli in each choice pair were proposed new brand names for a new product to be launched in a particular category. This is not true, but was necessary to place the preference task in a meaningful context and thus help participants to imagine choosing, buying or consuming each brand of the specified product.

Further to this, a number of other steps were taken to restrict the level of *actor* involvement in the test phase of this study. Firstly, relatively inexpensive products were

selected to provide a context for the brand name preference decision (see chapter 5, page 192). The purpose of this was to reduce perceptions of irrevocability and perceived financial risk in an imagined brand choice situation; two of the major drivers of high involvement behaviour (see Laurent and Kapferer, 1985). Secondly, steps were taken to further reduce the opportunity for elaboration during the preference judgment task in particular (in line with the recommendations of Andrews, 1988). To this end, participants were instructed to make their choices as quickly as possible and a maximum time limit of 5 seconds per choice was built into the MS powerpoint presentation. This is a similar approach to that used in the study by Chung and Szymanski (1997), in which participants were limited to 3 seconds in the choice task. The slightly longer duration in the current experiment was deemed necessary as the choice pairs were automatically presented in quick succession and, as explained in section 6.7.3 (page 279), some pilot participants experienced difficulties in making stimulus-based decisions within the 3-second time limit. Finally, dependent measures were selected that would negate the need for verbal, introspective responses from participants in relation to the target stimuli. Specifically, these were limited to performance effects in the first instance; namely the frequency with which the target brand name was preferred over a novel filler brand name. The only time introspection was required on the part of respondents was in relation to the confidence scale for each choice in the final recognition task. At this stage, however, greater opportunity for elaboration is necessary, and indeed desirable, to establish the presence of varying degrees of recognition memory for the target stimuli (not just that which is top-of-mind). As such, no time limits were placed on the choices made in this respect, and

introspection was encouraged to establish how confident the participants were of their memory judgments.

6.10. Summary and conclusion

In conclusion, therefore, this chapter has sought to provide a comprehensive and detailed discussion of the wide range of issues, considerations and decisions that are central to the reliability and validity of the experimental procedure in this study. Primarily these relate to two critical elements of the research design; measuring the MEE and the manipulation of key independent variables. The depth of the discussion in this respect reflects the complexity of the mere exposure phenomenon and the challenges associated with its empirical examination. As such, the careful identification and consideration of each of the issues raised in this chapter is of critical importance to the overall aims of the thesis; namely, the provision of a theoretically and methodologically robust examination of the MEE in a marketing context. In this respect, it is hoped that the chapter provides a clear and detailed explanation of the research design outlined previously (in chapter 5), and a strong foundation on which to accept the validity and reliability of empirical results. These results are presented and analysed in the following chapter, prior to a detailed discussion of the conclusions, implications, limitations and contributions of the thesis in chapters 8 and 9.

Part III

Results, Conclusions and Discussion

Chapter 7

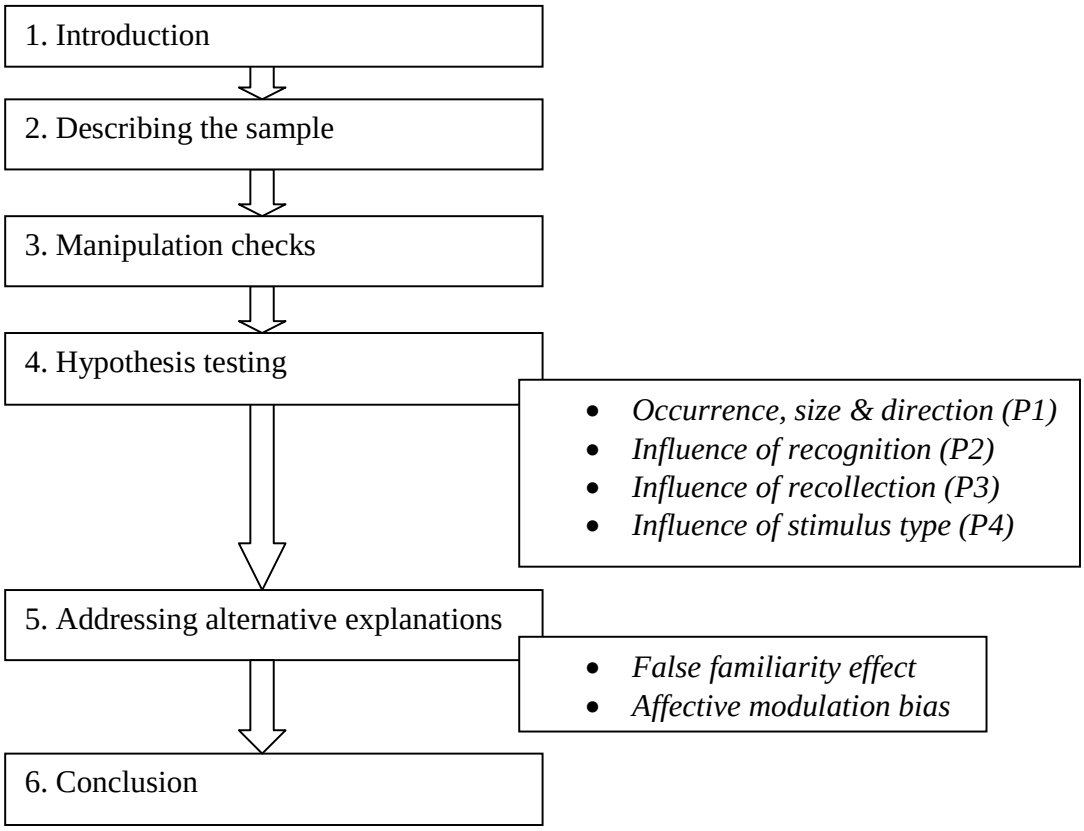
Data analysis and results

7.1. Introduction

As stated at the beginning of chapter 5, the primary objective of the empirical work in this thesis is to test four propositions by way of a series of related hypotheses; as illustrated in table 7.1 (page 300). In light of the experimental design (explained in part II), and in particular the measurement approach adopted, the initial purpose of this chapter is to explain the development of these hypotheses and present the results of statistical testing in each case. However, in light of the theoretical and methodological challenges highlighted previously in this thesis, a further process of hypothesis development and testing will then be undertaken to assess the possibility of two alternative explanations of the observed effects:

1. The influence of a false familiarity effect (Whittlesea, 1993; see chapter 2, page 57)
2. The influence of a task order effect (Phaf and Rotteveel, 2005; see chapter 6, page 287)

Figure 7.1: Structure of chapter 7



The structure of this chapter is summarised in figure 7.1, above. On this basis, the analysis contained within is intended to provide a clear indication of the extent to which each of the four propositions in table 7.1 is supported (or not), and thus constitute a robust examination of the existence, size and nature of the marketing-based MEE. The primary purpose of this chapter, therefore, is to present and interpret the results of statistical testing and thus provide a foundation for reflection, discussion and conclusion in the following chapter. Prior to this, however, a series of descriptive analyses and manipulation checks are undertaken to clarify the context for hypothesis testing in this study.

Table 7.1: Primary propositions and related hypotheses for empirical testing

Propositions	**Related Hypotheses**
P1: Mere exposure* to a marketing stimulus will influence affective response to that stimulus when it is subsequently encountered	H1a. Following supraliminal mere exposure, the mean target preference rate for target brand names will be significantly *higher* than that which may be expected to occur by chance; ***or*** H1b. Following supraliminal mere exposure, the mean target preference rate for target brand names will be significantly *lower* than that which may be expected to occur by chance
P2: The size of the marketing-based mere exposure effect will be hindered by the presence of accurate recognition memory for marketing stimulus exposure	H2. Following supraliminal mere exposure, the degree to which the mean preference selection rate for target brand names differs from chance will be significantly lower in the presence of stimulus recognition than in the absence of this
P3: The size of the marketing-based mere exposure effect will be hindered by a subjective sense of confident, contextualized recollection for prior exposure to the marketing stimulus; regardless of recognition accuracy	H3a. Following supraliminal mere exposure, the degree to which the mean *target* preference rate differs from chance will be significantly lower when *accurate* recognition judgments are accompanied by high levels of confidence (i.e. certain/sure) than when they are not (i.e. unsure/guess); ***and*** H3b. Following supraliminal mere exposure, the degree to which the mean *non-target* preference rate differs from chance will be significantly lower when *inaccurate* recognition judgments are accompanied by high levels of false confidence (i.e. certain/sure) than when they are not (i.e. unsure/guess).
P4: The marketing-based mere exposure effect will be significantly larger for real-word brand names than it will for pseudo-word brand names	H4. Under conditions of supraliminal mere exposure, the degree to which the mean target preference rate differs from chance will be significantly larger for real-word brand names than pseudo-word brand names H5a. In the presence of stimulus recognition, the degree to which the mean target preference rate is higher than chance will be significantly larger for real-word brand names than pseudo-word brand names; ***and*** H5b. In the absence of stimulus recognition, the degree to which the mean target preference rate is lower than chance will be significantly larger for real-word brand names than pseudo-word brand names

**The operational definition of mere exposure in this study is brief, repeated exposure to a stimulus in isolation at a level that is just perceptible (see chapter 2, page 66)*

7.2. Describing the Sample

As a context in which to interpret the results of subsequent analyses in this chapter, it is perhaps useful to begin by describing the sample. In this respect, profile data was collected with regard to the age and gender of participants, along with their nationality, first language and whether or not they were bilingual. Whilst there is no evidence in the literature that the MEE is influenced by personal differences (Bornstein and Craver-Lemley, 2004), it is not inconceivable that varying degrees of prior experience with word and letter forms might confound the effects of exposure-induced processing fluency within the experiment; a central factor in the influential misattribution theories of this phenomenon (see chapter 2, page 45). As such, an exploration of the degree to which the results are comparable across different nationalities and languages may be required in the context of this study. In order to assess the need (and indeed the potential) for such analysis, however, it is first necessary to profile the sample in these terms. The results of descriptive analysis in this respect are presented in appendix I. However, the key findings in this respect may be concisely summarised as follows:

- The vast majority of participants (approx. 90%) are aged between 18 and 24
- There are slightly more female participants than male, with approximately a 55-45% split in the experimental group and a 60-40% split in the control group
- The majority of participants in the experimental group are from the UK and Ireland (69%), with other European countries (9%) and those of the Far East (14%) accounting for most of the remaining participants.

- The nationality profile is similar in the control group, but for an increase in the proportion of European participants (18%) at the expense of those who are specifically from the UK and Ireland (61%)
- English is the first language of the majority of participants (70% in the experimental group and 61% in the control), and the basis of the alphabet used by around 80% of the sample.

In summary, therefore, it is apparent that the majority of the participants in this study speak English as their first language (usually on the basis of them being native to the UK and Ireland), and that the first language of an even larger majority (approximately 80%) is based on the English alphabet. Whilst it may be possible to compare the results of native and non-native English speakers, therefore, the frequency of participants whose first language is not based on the English alphabet (n=17) is too small for statistical testing (i.e. n>30; see Diamantopoulos and Schlegelmilch, 2000). Similarly, the vast majority of respondents are of a similar age (18-24); negating the need (and indeed the potential) for statistical comparison on this basis. Furthermore, it is perhaps useful to note at this point that all of the results presented subsequently in this chapter were analysed by both gender and English as a first language, with no significant between-group differences apparent at any point. As such, the value of the descriptive data discussed in this section is limited to providing background context in which to interpret the findings from this study.

7.3. Manipulation checks: Perception, recognition and recollection

As explained in chapter 6 (section 6.3, page 242), the conditions under which this study aims to investigate preference bias as a result of mere exposure are characterised by supraliminal perception during exposure and the presence and/or absence of memory for this at test. As such, the experiment was designed to facilitate the manipulation and measurement of perception, objective recognition and subjective recollection (see chapter 6). Prior to an analysis of the mere exposure effect, therefore, it is perhaps useful to identify the extent to which preference judgments were made under conditions of supraliminal (versus subliminal) perception, and the absence/presence of both accurate recognition and a subjective sense of recollection for the stimulus exposures. To this end, the results of descriptive analysis are presented in figures 7.2 to 7.7, below. At this point it is perhaps useful to note that throughout the analysis and discussion in this chapter previously exposed stimuli are referred to as ‘target’ brand names, whilst the filler stimuli that appear during the test phase only are referred to as ‘non-target’ brand names. As such, the rates at which previously exposed stimuli are preferred and recognised are consistently referred to as the ‘target preference rate’ and ‘target recognition rate’ respectively.

Figure 7.2: Frequency of subliminal and supraliminal perception in the sample

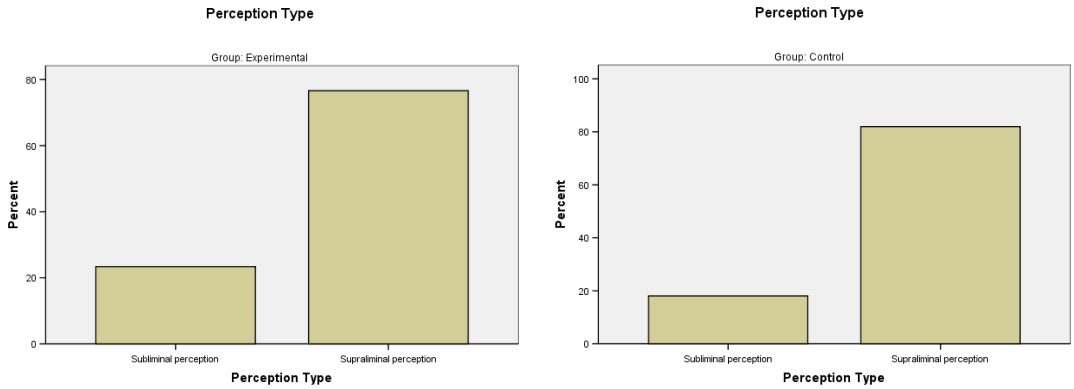


Figure 7.3: Distribution of target recognition rates

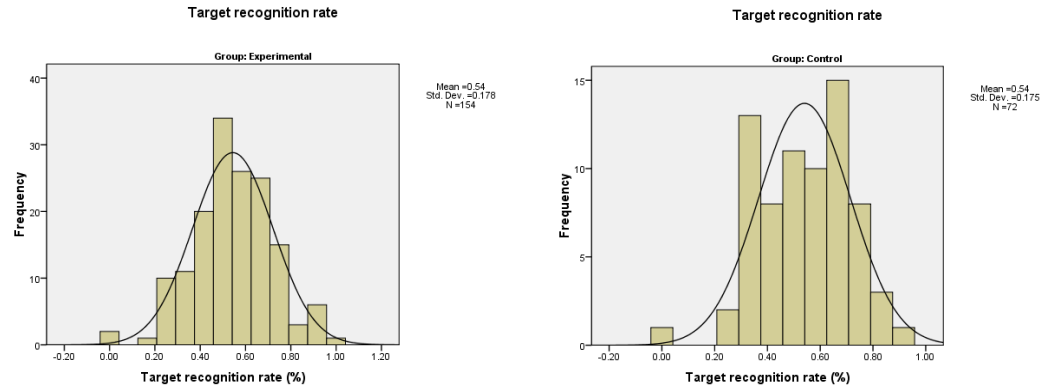


Figure 7.4: Distribution of target recognition rates under conditions of recollection

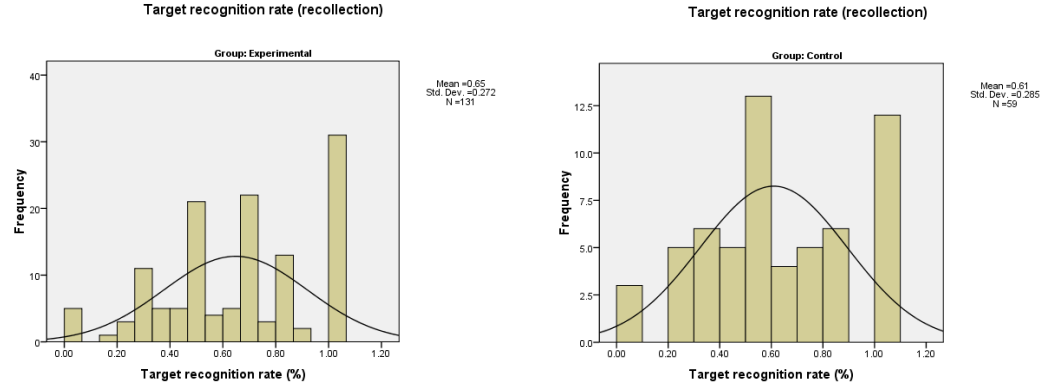


Figure 7.5: Distribution of target recognition rates under conditions of non-recollection

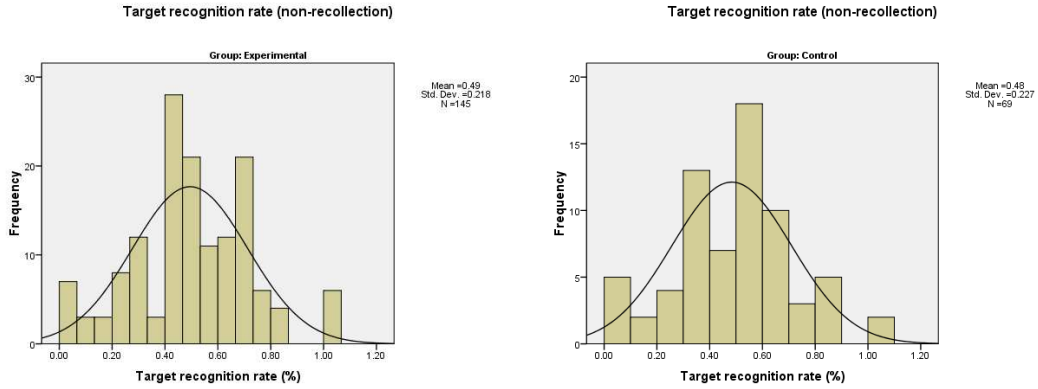
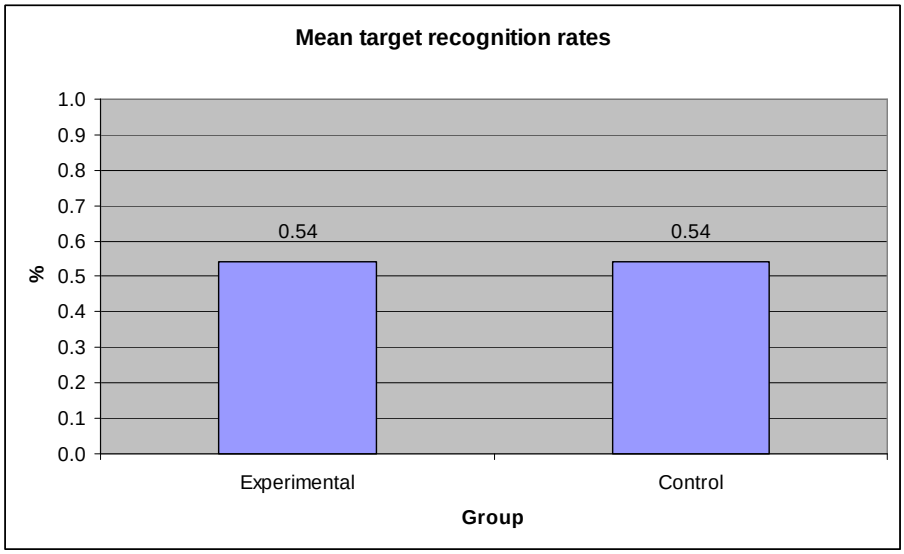


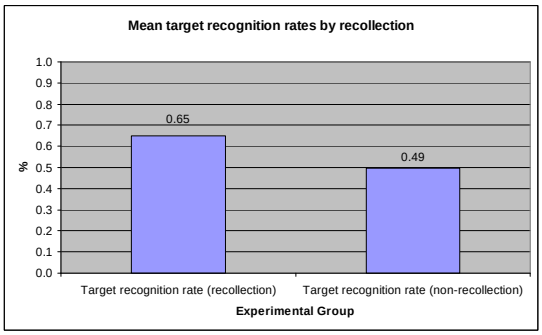
Figure 7.6: Comparing mean target recognition rates to chance baseline (50%)

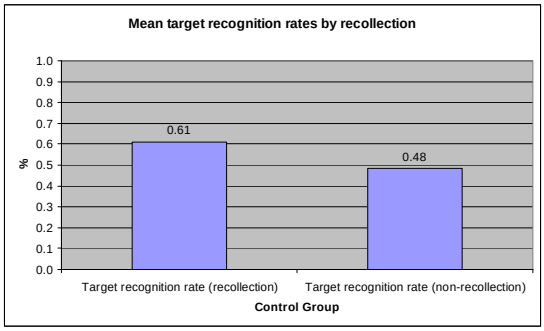


One-Sample Statistics					
Group		**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Experimental	Target recognition rate	154	0.544	0.178	0.014
Control	Target recognition rate	72	0.541	0.175	0.021

One-Sample Test							
		Test Value = 0.5					
						95% Confidence Interval of the Difference	
Group		**t**	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Lower**	**Upper**
Experimental	Target recognition rate	3.064	153	0.003	0.044	0.016	0.072
Control	Target recognition rate	1.968	71	0.053	0.041	-0.001	0.082

Figure 7.7: Comparing mean target recognition rates to chance baseline (50%) under conditions of 'recollection' and 'non-recollection'





One-Sample Statistics					
Group		**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Experimental	Target recognition rate (recollection)	131	0.648	0.272	0.024
	Target recognition rate (non-recollection)	145	0.495	0.218	0.018
Control	Target recognition rate (recollection)	59	0.609	0.285	0.037
	Target recognition rate (non-recollection)	69	0.484	0.227	0.027

One-Sample Test							
		Test Value = 0.5					
						95% Confidence Interval of the Difference	
Group		**t**	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Lower**	**Upper**
Experimental	Target recognition rate (recollection)	6.239	130	0.000	0.148	0.101	0.195
	Target recognition rate (non-recollection)	-0.286	144	0.775	-0.005	-0.041	0.031
Control	Target recognition rate (recollection)	2.935	58	0.005	0.109	0.035	0.183
	Target recognition rate (non-recollection)	-0.600	68	0.550	-0.016	-0.071	0.038

With reference to the figures above, the majority of participants reported that they experienced the exposure phase under conditions of supraliminal perception (77% in the experimental group and 82% in the control). As a result, 36 participants (23%) in the experimental group reported subliminal perception during the exposure phase; facilitating a statistical comparison between preference bias in the presence and absence of conscious perception, and thus the validation of previous psychological research into the non-conscious MEE (see chapter 2, page 21). As noted in chapter 5 (page 178), this comparison also provides a useful means by which to link the observed effects directly to the exposure phase and thus distinguish the MEE from the *false familiarity effect*

(Whittlesea, 1993). Secondly, accurate recognition of the target stimuli is marginally, though significantly, above the level of chance in both the experimental ($M=0.544$, $t=3.064$, $p<0.01$) and control group ($M=0.541$, $t=1.968$, $p=0.05$; see figure 7.6). As illustrated in figure 7.7, however, this appears to be mediated by confidence in the memory judgment; i.e. the degree to which the judgment is based on certain or sure recollection of stimulus exposures. In this respect, the key findings may be summarised as follows:

- Under conditions of recollection (i.e. when participants are certain or at least quite sure of their memory judgment), accurate recognition of the target stimuli is significantly above chance.
- Under conditions of non-recollection (i.e. when participants are quite unsure or simply guessing) accurate recognition of the target stimuli is at chance.

Given that a significant recognition bias for the target stimuli is only apparent under conditions of confident recollection, it may be fair to assume that explicit memory (and thus the moderation of the MEE) is limited to this condition; i.e. that accurate recognition judgments in the absence of confident recollection are the result of guessing. Whilst this may be true in some cases, however, it is not necessarily so for all. Indeed it should be acknowledged that correct recognition judgments may be based on a genuine sense of familiarity with the stimulus as a result of prior exposure; the implications of which for the MEE are as yet unclear (see chapter 2, page 29). As such, it is considered prudent in this study to examine the outcome of preference judgments that are specifically made in the presence and absence of accurate recognition (P2) and a

subjective sense of recollection (P3) respectively. To this end, hypotheses are developed and tested in the next section, following those that are related to the occurrence, size and direction of the MEE regardless of memory for prior exposure (P1).

7.4. Hypothesis testing: Analysing the occurrence, size, direction and nature of the marketing-based MEE

As previously stated in chapter 5 (page 174), the primary objective of the empirical research in this thesis is to examine the four propositions in table 7.1 (page 300) as a means by which to investigate the existence, size, direction and nature of the MEE in a marketing context. In the following four subsections, therefore, and in light of the experimental design outlined in part II, a series of hypotheses will be formulated and tested with a view to assessing each of these propositions. This analysis begins with an examination of the first proposition and thus the occurrence, size and direction of the MEE regardless of memory for prior exposure.

7.4.1. Testing the occurrence, size and direction of the MEE (P1)

The primary purpose of this section is to examine the extent to which the results of this study provide support for the first of the four propositions for testing in this thesis, as stated below:

> P1: Mere exposure to a marketing stimulus will significantly influence affective response to that stimulus when it is subsequently encountered

It is important to acknowledge that this proposition does not draw a distinction between the MEE in the presence and absence of recognition, nor does it incorporate any assumptions regarding the direction of the response-bias. In this respect, it should be recalled that, whilst the vast majority of mere exposure research supports the positive enhancement of affect in adults (see Bornstein, 1989), there are a small number of exceptions; one of which is published in the marketing literature (Lee 1994; see chapter 4, page 142). As such, it is considered prudent to test this proposition by way of two alternative hypotheses, as stated below:

> H1a. Following supraliminal mere exposure, the mean target preference rate for target brand names will be significantly *higher* than that which may be expected to occur by chance; ***or***
>
> H1b. Following supraliminal mere exposure, the mean target preference rate for target brand names will be significantly *lower* than that which may be expected to occur by chance

P1 may be deemed to be validated by evidence in support of either of these hypotheses, while the direction of the MEE may be clearly distinguished by support for one over the other. The results of analysis in this respect are presented in figure 7.8, and discussed below.

Figure 7.8: Mean target preference rate compared to chance baseline (50%)

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Target preference rate	154	0.475	0.148	0.012

One-Sample Test						
	Test Value = 0.5					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Target preference rate	-2.128	153	0.035	-0.025	-0.049	-0.002

As illustrated in figure 7.8, under conditions of supraliminal perception during the exposure phase, the mean rate of preference is significantly lower than chance ($M=0.475$, $t=-2.128$, $p<0.05$); providing support for H1b, and thus P1. Furthermore, this validation of H1b (rather than H1a) indicates the presence of a reverse MEE in this study; a finding that is somewhat rare in previous mere exposure research (see chapter 2, page 20). Although the size of this effect is small ($r= 0.2$), it should be acknowledged that it may be moderated by the presence of memory for the exposed stimuli (see chapter 2, page 29). Given that accurate target recognition occurs above the rate of chance in the sample ($M=0.544$, $t=3.064$, $p<0.01$), it might therefore be expected to have a limiting influence on the size of the observed effect. In order to test this, however, and specifically to validate the assumptions of P2, it is necessary to examine target preference in the presence and absence of recognition respectively; as will be outlined in the following section.

7.4.2. Testing the moderating influence of objective recognition on the MEE (P2)

The degree to which the MEE is moderated by recognition memory is an important issue in its own right as it has implications for how, when and to what extent the MEE is

likely to occur in a marketing context. As acknowledged above, however, it may also be of importance in explaining the relatively limited size of the effect observed in support of H1b. In order to fully test P1, therefore, it is necessary to consider this alongside the second proposition stated in the introduction to this chapter:

> P2: The size of the marketing-based mere exposure effect will be hindered by the presence of recognition memory for marketing stimulus exposure

Within the extant psychology literature, it is proposed that recognition of a stimulus as having been previously exposed gives rise to an MEE that is approximately half the size of that found in the absence of stimulus recognition (see Bornstein, 1989; Bornstein and Craver-Lemley, 2004). However, it is important to reiterate that empirical evidence for this is generally provided by studies that eliminate the possibility of stimulus recognition via subliminal stimulus exposures (see chapter 2, page 29). One of the primary aims of this study is to validate the proposition that an absence of recognition memory alone will moderate the size of the MEE, by examining this phenomenon under conditions of supraliminal exposure. In the context of the experimental research in this thesis, therefore, support for P2 may be provided by evidence that preference frequency for the target stimuli differs from chance to a significantly greater degree in the absence, rather than the presence, of stimulus recognition. With this in mind, the second hypothesis for testing in this study is stated as follows:

H2. Following supraliminal mere exposure, the degree to which the mean preference selection rate for target brand names differs from chance will be significantly lower in the presence of stimulus recognition than in the absence of this

In order to test this hypothesis, the rate of preference for target brand names in both the absence and presence of accurate recognition was calculated for each participant. To the extent that the mean target preference rate is above or below chance in each memory condition, one of two possible effects may emerge, as illustrated in figure 7.9.

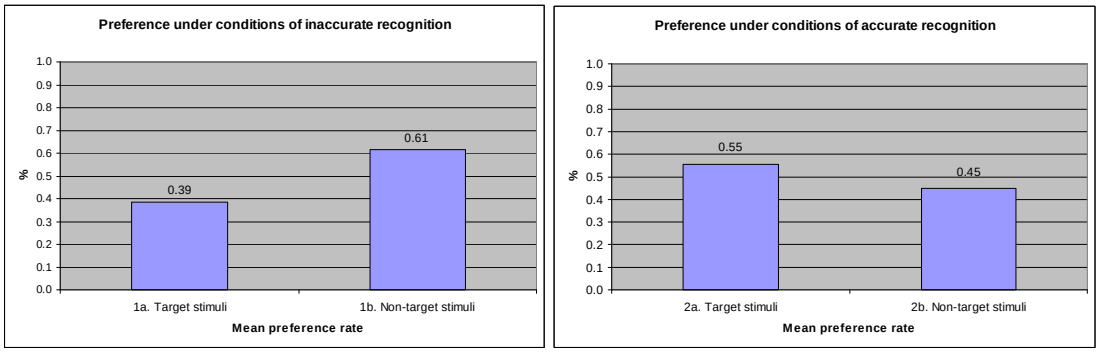
Figure 7.9: Four possible preference effects as a result of mere exposure

		Target Stimulus Recognition	
		No	**Yes**
Target Stimulus Preference	**>chance**	**Effect 1a** Classic MEE	**Effect 2a** Classic MEE
	<chance	**Effect 1b** Reverse MEE	**Effect 2b** Reverse MEE

With regard to figure 7.9, the MEE is referred to as ‘classic’ when it relates to the enhancement of preference for the exposed (target) stimuli (effect 1), and ‘reverse’ when it relates to a novelty-bias for the unexposed (non-target) stimuli (effect 2). In this study, the classic (positive) MEE that is commonly observed in adults would therefore be revealed by a mean rate of preference for the target stimuli that is above the level of

chance (50%) in the presence and/or absence of recognition. Similarly, a reverse MEE (i.e. an exposure-induced novelty bias as commonly observed in children; see chapter 2, page 20) would be evidenced by a mean rate of target preference that is significantly below this chance baseline. As such, it may be argued that the analytical approach in this section not only facilitates testing of the existence of the MEE in the presence and absence of recognition (H2), but also provides a means by which to identify the direction of observed effects in each memory condition. As such, it perhaps provides a more appropriate means by which to test H1a and H1b (see page 309). The results of data analysis in this respect are thus presented in figure 7.10, and discussed below.

Figure 7.10: Mean preference rates in the absence and presence of recognition compared to chance baseline (50%)



One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
1a. Target preference rate in the absence of recognition	153	0.386	0.267	0.022
1b. Non-target preference rate in the absence of recognition	153	0.614	0.267	0.022
2a. Target preference rate in the presence of recognition	154	0.553	0.224	0.018
2b. Non-target preference rate in the presence of recognition	154	0.447	0.224	0.018

		One-Sample Test					
		Test Value = 0.5					
						95% Confidence Interval of the Difference	
Group		t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Experimental	1a. Target preference rate in the absence of recognition	-5.272	152	0.000	-0.114	-0.156	-0.071
Experimental	1b. Non-target preference rate in the absence of recognition	5.296	152	0.000	0.114	0.072	0.157
Experimental	2a. Target preference rate in the presence of recognition	2.953	153	0.004	0.053	0.018	0.089
Experimental	2b. Non-target preference rate in the presence of recognition	-2.914	153	0.004	-0.053	-0.088	-0.017

Paired Samples Test									
		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	1a. Target preference rate in the absence of recognition - 2a. Target preference rate in the presence of recognition	-0.167	0.376	0.030	-0.228	-0.107	-5.504	152	0.000
Pair 2	1b. Non-target preference rate in the absence of recognition - 2b. Non-target preference rate in the presence of recognition	0.167	0.376	0.030	0.107	0.227	5.496	152	0.000

With respect to figure 7.10, it might firstly be observed that the t-statistics for effects 2a and 2b are not an exact mirror image of those for effects 1a and 1b respectively. This may appear to be contrary to expectations, given that each selection of a stimulus as preferred is made at the expense of the alternative stimulus in the choice pair. The slight differences, however, are simply the result of rounding error in the calculation of the mean preference rate for each participant to two decimal places. They are extremely slight and have a negligible impact on the significance of test results throughout the analysis in this chapter. With regard to the above results, therefore, the mean target preference rate is *above* chance in the presence of accurate recognition ($M=0.553$, $t=2.953$, $p<0.01$), and *below* chance in the absence of this ($M=0.386$, $t=-5.296$, $p<0.01$); resulting in a significant difference in the target preference bias observed under conditions of recognition and non-recognition ($M=-0.167$, $t=-5.504$, $p<0.01$). Furthermore, and in line with previous studies of the MEE (see Bornstein, 1989), the observed preference bias is twice as large in the absence of recognition ($r=0.4$) than in the presence of such memory ($r=0.2$)

These findings are of both interest and importance on two counts. Firstly, they may be seen to provide support for P2 in this study; indicating that, under conditions of supraliminal mere exposure, recognition memory does indeed moderate the *size* of the subsequent affect bias. With reference to the discussion in chapter 2 (section 2.2.3.3.1, page 29), therefore, it may be implied that the results presented above suggest that

findings of a larger non-conscious MEE in the psychology literature are not necessarily a function of the universal use of subliminal exposure, and validate previous assumptions that recognition moderates the size of the MEE. In which case, they may be more appropriately explained by implicit misattribution, unencumbered by conscious memory (Bornstein and D'Agostino, 1992, 1994), rather than a reduction in boredom and fatigue during the experiment (Bornstein *et al.*, 1990; see chapter 2, page 31). Secondly, somewhat surprisingly and perhaps more importantly, the results indicate that, whilst stimulus recognition may moderate the size of the MEE, it might also mediate the *direction* in which it occurs. Furthermore, the simultaneous occurrence of a preference bias in two opposing directions provides support for both H1a *and* H1b; rather than simply the latter, as implied by the data presented in the previous section. Indeed, this result may be important from a methodological perspective as it demonstrates the potential invalidity of mere exposure research that does not specifically account for the relationship between recognition and affect in the creation of the MEE.

It is acknowledged that the validity of the statistical results above may be undermined to some extent by the fact that the frequency distributions are somewhat removed from normal; particularly with regard to effects 1a and 1b (see appendix II). In the interests of consistency, however, and given that the one-sample t-test is considered to be relatively robust in such circumstances (Field, 2005), this approach may still be considered to be an important means by which to test the hypotheses relating to P1 and P2. Nevertheless, it is perhaps prudent to supplement the above results with those of non-parametric

testing to assess the degree to which confident conclusions may be drawn in this respect. To this end, and following the removal of cases in which target preference is at exactly the level of chance, one-sample chi-square analysis may be undertaken to assess the frequency with which target preference differs from this baseline in each direction (supplementing the one-sample t-test results above). Secondly, a Wilcoxon Signed Ranks test might be used as a non-parametric alternative to the paired-sample t-test applied previously. The results of these analyses are presented in figure 7.11 and discussed below.

Figure 7.11: Comparing the distribution of preference rates for target and non-target stimuli to a chance baseline in the absence and presence of recognition (One Sample Chi-Square)

1a. Distribution of target preference in the absence of recognition (=chance removed)			
	Observed N	**Expected N**	**Residual**
Above chance (>50%)	38	67.5	-29.5
Below chance (<50%)	97	67.5	29.5
Total	135		

1b. Distribution of non-target preference in the absence of recognition (=chance removed)			
	Observed N	**Expected N**	**Residual**
Above chance (>50%)	98	67.5	30.5
Below chance (<50%)	37	67.5	-30.5
Total	135		

2a. Distribution of target preference in the presence of recognition (=chance removed)			
	Observed N	**Expected N**	**Residual**
Above chance (>50%)	80	67.5	12.5
Below chance (<50%)	55	67.5	-12.5
Total	135		

2b. Distribution of non-target preference in the presence of recognition (=chance removed)			
	Observed N	**Expected N**	**Residual**
Above chance (>50%)	55	67.5	-12.5
Below chance (<50%)	80	67.5	12.5
Total	135		

Test Statistics				
	1a. Distribution of target preference in the absence of recognition (=chance removed)	1b. Distribution of non-target preference in the absence of recognition (=chance removed)	2a. Distribution of target preference in the presence of recognition (=chance removed)	2b. Distribution of non-target preference in the presence of recognition (=chance removed)
Chi-Square	25.785	27.563	4.630	4.630
df	1	1	1	1
Asymp. Sig.	0.000	0.000	0.031	0.031

With reference to figure 7.11, the results indicate a significant target preference bias in the presence of recognition (2a; Chi-square=4.630, $p<0.05$) and a significant non-target preference bias in the absence of recognition (1b; Chi-square=27.563, $p<0.01$). Given that the pattern and extent of these results is almost identical to those of the one-sample t-tests in figure 7.10, it may be argued that the weight of evidence supports the conclusion that the direction of the MEE is mediated by recognition memory. However, in light of the possibility that accurate, objective recognition in this study may be underpinned by the presence of subjective recollection (see page 307), it is conceivable that it is this latter variable that exerts the critical mediating influence on the direction of the MEE. If this were the case, the same pattern of results may be expected to occur in the presence and absence of the subjective experience of memory, even when this is inaccurate; i.e. when incorrect recognition judgements are made on the basis of confident, false recollection. Indeed, this is encapsulated in the third proposition to be tested in this study, the results of which are presented and discussed in the following section.

7.4.3. Testing the moderating influence of subjective recollection on the MEE (P3)

At this point, it is important to reiterate that the enhanced rate of target recognition in this study may in itself be mediated by the extent to which participants are sure of their memory judgment. As illustrated in figure 7.7 (page 306), accurate recognition occurs at a frequency that is above the level of chance only under conditions of clear, confident recollection for the stimulus exposures ($M=0.648$, $t=6.239$, $p<0.01$). In cases where participants report a lack of confident recollection, objective recognition rates for the target stimuli do not differ from chance ($M=0.495$, $t=-0.286$, $p=0.775$). With this in mind, this part of the analysis is designed to explore the possibility that exposure-induced preference bias will in fact be hindered by subjective recollection (regardless of accuracy), rather than objective recognition of the target stimuli (Vanhuele, 1995; see chapter 4, page 157). This is encapsulated in the third proposition to be tested in this study, as stated below:

> P3: The size of the marketing-based mere exposure effect will be hindered by a subjective sense of confident, contextualized recollection for prior exposure; regardless of recognition accuracy

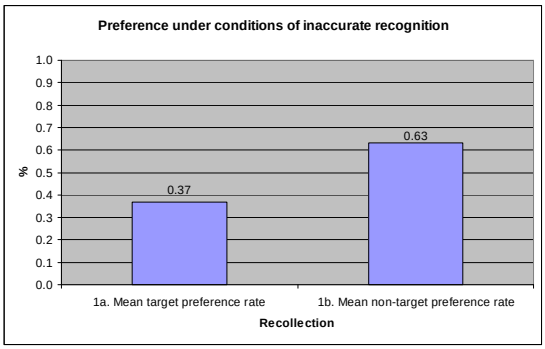
In line with Lee (2001b) and Wang and Chang (2004), recollection is operationally defined in this study as clear, confident, contextualised memory for the stimulus exposures and measured by the degree to which participants are sure of their selection during each paired-choice test of recognition (chapter 6, page 257). Importantly, it is the

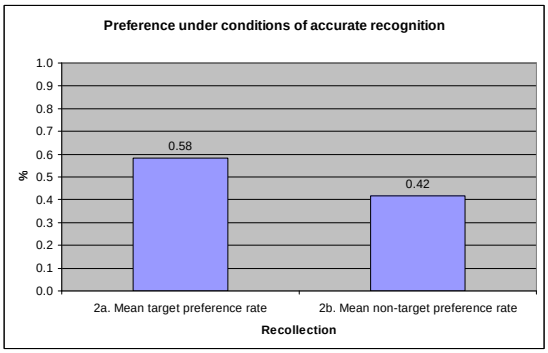
subjective experience of memory that is identified as the inhibitory factor in this proposition, rather than the accuracy of the recognition judgment. As such, it may be validated by evidence that the experience of recollection (be it genuine or false) moderates the preference biases that were previously observed in the presence and absence of accurate recognition (see section 7.4.2, page 310). This is encapsulated in the two-part hypothesis below:

> H3a. Following supraliminal mere exposure, the degree to which the mean *target* preference rate differs from chance will be significantly smaller when *accurate* recognition judgments are accompanied by high levels of confidence (i.e. certain/sure) than when they are not (i.e. unsure/guess); ***and***
>
> H3b. Following supraliminal mere exposure, the degree to which the mean *non-target* preference rate differs from chance will be significantly smaller when *inaccurate* recognition judgments are accompanied by high levels of false confidence (i.e. certain/sure) than when they are not (i.e. unsure/guess).

Evidence for the moderating role of subjective recollection, regardless of objective recognition, would be provided in the event that *both* of the above hypotheses are supported in this study. In this respect, the results of statistical testing are presented in figures 7.12 to 7.14, and discussed below.

Figure 7.12: Comparing mean preference rates to chance baseline (50%) in the absence and presence of recognition under conditions of 'recollection'

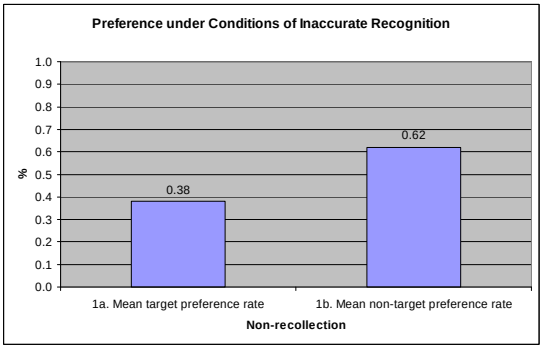


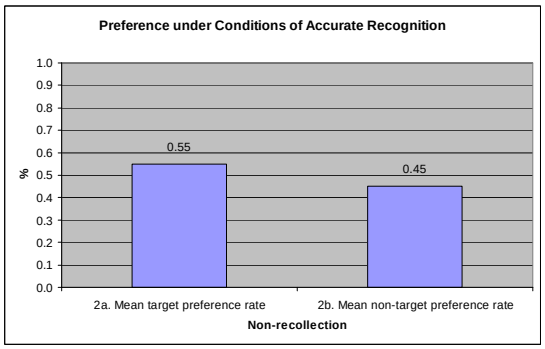


One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
1a. Target preference rate in the absence of recognition	100	0.368	0.372	0.037
1b. Non-target preference rate in the absence of recognition	100	0.632	0.372	0.037
2a. Target preference rate in the presence of recognition	126	0.582	0.332	0.030
2b. Non-target preference rate in the presence of recognition	126	0.418	0.332	0.030

One-Sample Test						
	Test Value = 0.5					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
1a. Target preference rate in the absence of recognition	-3.542	99	0.001	-0.132	-0.205	-0.058
1b. Non-target preference rate in the absence of recognition	3.542	99	0.001	0.132	0.058	0.205
2a. Target preference rate in the presence of recognition	2.776	125	0.006	0.082	0.024	0.141
2b. Non-target preference rate in the presence of recognition	-2.767	125	0.007	-0.082	-0.140	-0.023

Figure 7.13: Comparing mean preference rates to chance baseline (50%) in the absence and presence of recognition under conditions of 'non-recollection'





One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
1a. Target preference rate in the absence of recognition	139	0.381	0.297	0.025
1b. Non-target preference rate in the absence of recognition	139	0.619	0.297	0.025
2a. Target preference rate in the presence of recognition	138	0.548	0.298	0.025
2b. Non-target preference rate in the presence of recognition	138	0.452	0.298	0.025

One-Sample Test						
	Test Value = 0.5					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
1a. Target preference rate in the absence of recognition	-4.726	138	0.000	-0.119	-0.169	-0.069
1b. Non-target preference rate in the absence of recognition	4.726	138	0.000	0.119	0.069	0.169
2a. Target preference rate in the presence of recognition	1.889	137	0.061	0.048	-0.002	0.098
2b. Non-target preference rate in the presence of recognition	-1.880	137	0.062	-0.048	-0.098	0.002

Figure 7.14: Comparing mean preference rates in the absence and presence of recognition under conditions of recollection versus non-recollection

Paired Samples Test									
		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	1a. Target stimuli preference rate in the absence of recognition (recollection) - 1a. Target stimuli preference rate in the absence of recognition (non-recollection)	0.002	0.487	0.052	-0.102	0.107	0.047	85	0.963
Pair 2	1b. Non-target stimuli preference rate in the absence of recognition (recollection) - 1b. Non-target stimuli preference rate in the absence of recognition (non-recollection)	-0.002	0.487	0.052	-0.107	0.102	-0.047	85	0.963
Pair 3	2a. Target stimuli preference rate in the presence of recognition (recollection) - 2a. Target stimuli preference rate in the presence of recognition (non-recollection)	0.030	0.435	0.041	-0.052	0.112	0.730	109	0.467
Pair 4	2b. Non-target stimuli preference rate in the presence of recognition (recollection) - 2b. Non-target stimuli preference rate in the presence of recognition (non-recollection)	-0.030	0.435	0.041	-0.112	0.052	-0.728	109	0.468

As illustrated in figure 7.14 (above), the absence or presence of recollection does not appear to give rise to significant differences in either the classic MEE that occurs in the presence of accurate recognition (2a: M=0.03, t=0.730, p=0.467), nor the reverse MEE that is apparent in the absence of this (1b: M=-0.002, t=-0.047, p=0.963). However, it is perhaps important to note that, whilst the latter is a statistically significant effect in both the presence and absence of (false) recollection, the former is only so when participants experience a confident sense of (accurate) recollection (see figures 7.12 and 7.13, above). To clarify; whilst evidence of a significant target preference bias (2a) is clearly evident in the presence of recollection it is less evident (and not statistically significant) in the absence of this. Although the mean target preference rates are not dramatically different in this respect, recollection-based differences in the MEE in the presence of

accurate recognition (2a) but not the absence of this (1b), coupled with the previously observed directional difference in these two effects (see page 313-314), may indicate that the two effects are qualitatively different; a possibility that will be discussed further in the following section and subsequent chapters.

Once again, however, the fact that the frequencies for the observed effects are not normally distributed (see appendix II) may require that the t-test results above are supplemented by those of non-parametric analysis. In line with the approach adopted in section 7.4.2, therefore, cases in which target preference is at exactly the level of chance were removed prior to one-sample chi-square analysis in each condition. Finally, the paired sample t-test (figure 7.14), was replaced by a Wilcoxon Signed Rank test to examine the extent to which significant differences are apparent under conditions of 'certain/sure recollection' and 'unsure/guessing' respectively. The results of these non-parametric analyses are presented in figures 7.15 and 7.16, and discussed below.

Figure 7.15: Comparing the distribution of preference rates for target and non-target stimuli to a chance baseline in the absence and presence of recognition

a) Under conditions of recollection

1a. Distribution of target preference in the absence of recognition (=chance removed)			
	Observed N	**Expected N**	**Residual**
Above chance (>50%)	26	41.5	-15.5
Below chance (<50%)	57	41.5	15.5
Total	83		

1b. Distribution of non-target preference in the absence of recognition (=chance removed)			
	Observed N	**Expected N**	**Residual**
Above chance (>50%)	57	41.5	15.5
Below chance (<50%)	26	41.5	-15.5
Total	83		

2a. Distribution of target preference in the presence of recognition (=chance removed)			
	Observed N	**Expected N**	**Residual**
Above chance (>50%)	66	51.5	14.5
Below chance (<50%)	37	51.5	-14.5
Total	103		

2b. Distribution of non-target preference in the presence of recognition (=chance removed)			
	Observed N	**Expected N**	**Residual**
Above chance (>50%)	37	51.5	-14.5
Below chance (<50%)	66	51.5	14.5
Total	103		

Test Statistics				
	1a. Distribution of target preference in the absence of recognition (=chance removed)	1b. Distribution of non-target preference in the absence of recognition (=chance removed)	2a. Distribution of target preference in the presence of recognition (=chance removed)	2b. Distribution of non-target preference in the presence of recognition (=chance removed)
Chi-Square	11.578	11.578	8.165	8.165
df	1	1	1	1
Asymp. Sig.	0.001	0.001	0.004	0.004

b) Under conditions of non-recollection

1a. Distribution of target preference in the absence of recognition (=chance removed)			
	Observed N	**Expected N**	**Residual**
Above chance (>50%)	31	53.5	-22.5
Below chance (<50%)	76	53.5	22.5
Total	107		

1b. Distribution of non-target preference in the absence of recognition (=chance removed)			
	Observed N	**Expected N**	**Residual**
Above chance (>50%)	76	53.5	22.5
Below chance (<50%)	31	53.5	-22.5
Total	107		

2a. Distribution of target preference in the presence of recognition (=chance removed)			
	Observed N	**Expected N**	**Residual**
Above chance (>50%)	66	58.5	7.5
Below chance (<50%)	51	58.5	-7.5
Total	117		

2b. Distribution of non-target preference in the presence of recognition (=chance removed)			
	Observed N	**Expected N**	**Residual**
Above chance (>50%)	51	58.5	-7.5
Below chance (<50%)	66	58.5	7.5
Total	117		

Test Statistics				
	1a. Distribution of target preference in the absence of recognition (=chance removed)	**1b. Distribution of non-target preference in the absence of recognition (=chance removed)**	**2a. Distribution of target preference in the presence of recognition (=chance removed)**	**2b. Distribution of non-target preference in the presence of recognition (=chance removed)**
Chi-Square	18.925	18.925	1.923	1.923
df	1	1	1	1
Asymp. Sig.	0.000	0.000	0.166	0.166

Figure 7.16: Comparing target and non-target preference rates in the absence and presence of recognition under conditions of recollection versus unsure recollection

Test Statistics				
	1a. Distribution of target preference in the absence of recognition (=chance removed)	**1b. Distribution of non-target preference in the absence of recognition (=chance removed)**	**2a. Distribution of target preference in the presence of recognition (=chance removed)**	**2b. Distribution of non-target preference in the presence of recognition (=chance removed)**
Z	-1.342	-1.342	-1.414	-1.414
Asymp. Sig. (2-tailed)	0.180	0.180	0.157	0.157

In short, the results presented above are directly in line with those of parametric testing. In this respect, they provide confirmation that the non-target preference bias in the absence of recognition (1b) does not differ under conditions of recollection and non-recollection ($Z=-1.342$, $p=0.180$). This effect is significant when the memory illusion is based on a false sense of recollection (Chi-square=11.578, $p<0.01$) and when it is not (Chi-square=18.925, $p<0.01$). On the assumption that the observed preference bias reflects a reverse MEE in the absence of recognition, therefore, it may be concluded that this particular effect is not moderated by a sense of subjective recollection; i.e. that H3b is not supported in this study. However, whilst the preference-bias for target stimuli (2a) is statistically significant when accurate recognition is based on confident recollection (Chi-square=8.165, $p<0.01$), this is not the case when it is not (Chi-square=1.923, $p=0.166$). Not only do the results fail to support H3a, therefore, but it might be argued that the classic, positive MEE that is observed in the presence of recognition may in fact be *enhanced* by subjective recollection. Whilst this interpretation should perhaps be treated with caution, particularly in the absence of statistically significant paired-sample differences ($Z=-0.784$, $p=0.433$), it could be seen to raise the possibility that the preference effects observed in the absence and presence of objective recognition reflect two different phenomena; a reverse implicit MEE that is not moderated by false recollection, and a classic, explicit MEE that is, in fact, *enhanced* by this subjective experience.

As a final caveat, however, it should be noted that the substantive size of each effect does not appear to be significantly moderated by the subjective experience of memory.

In this respect, the size of the classic MEE in the presence of accurate recognition is identical (r=0.2) under conditions of both recollection and non-recollection, whilst that of the reverse MEE in the absence of recognition is only marginally reduced by a confident, though false, sense of contextualised memory (from r=0.4 to r=0.3). On this basis, therefore, it is perhaps prudent to conclude that neither H3a nor H3b are unequivocally supported by the results presented in this section, and thus P3 is not validated. However, the proposition that the effects observed in the absence and presence of recognition reflect two qualitatively different forms of the MEE is revived in the following section; and on the basis of much clearer empirical evidence.

7.4.4. Examining the mediating influence of brand name type on the MEE (P4)

The results presented to this point would appear to provide support for the existence of the MEE in a marketing context (P1), and the moderating influence of recognition memory (P2) but with one important (and surprising) qualification; that this factor may also mediate the *direction* of the effect. Specifically, the classic, positive enhancement of affective response that is commonly found in adults is only evident in the presence of accurate recognition, whilst a larger, *reverse* MEE is apparent in the absence of such memory. Furthermore, whilst robust statistical evidence for the influence of subjective recollection remains elusive in this study, it has been tentatively suggested that, far from having a moderating influence, it may in fact *enhance* the classic, positive MEE when it is associated with accurate recognition (and have a neutral impact on the reverse implicit MEE when it reflects false memory).

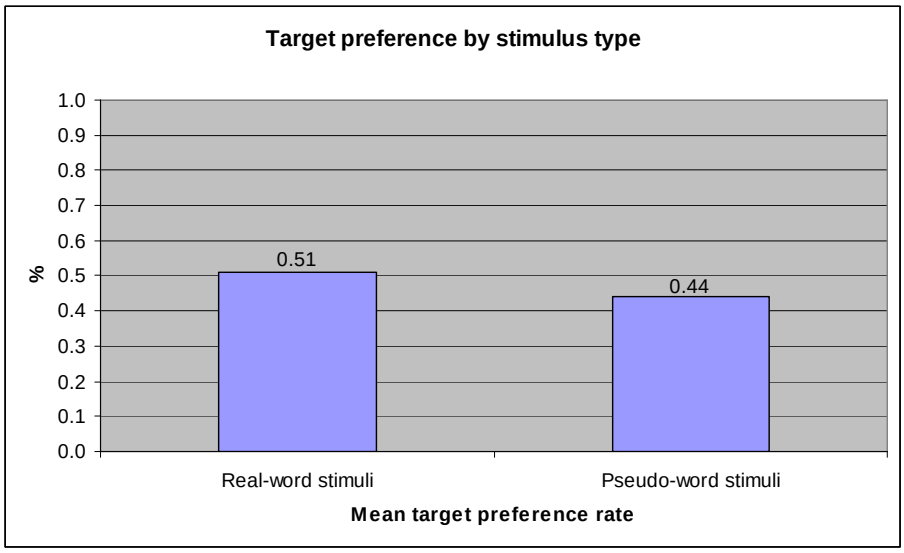
As noted in part II, however, it should be acknowledged that the nature of the selected stimuli (i.e. brand names) may also exert a mediating influence on the results of this study. In this respect, whilst the use of both real-word and pseudo-word brand names contributes to the ecological validity and generalisability of the findings it also gives rise to potential variations in the size of the MEE. Specifically, this relates to the fact that real-word stimuli have previously tended to produce larger experimental MEEs than nonsense words and ideograms (Bornstein, 1989; see page 25). Given that brand names are often composed of either commonly occurring real words or invented pseudo-words (i.e. pronounceable non-words), it may therefore be proposed that:

> P4: The marketing-based mere exposure effect will be significantly larger for real-word brand names than it will for pseudo-word brand names

In the context of this study, it might be expected that this proposition would be supported if the degree to which the mean target preference rate differs from chance is significantly larger for real-word brand names than pseudo-word brand names. In this respect the following hypothesis might be formulated:

> H4. Under conditions of supraliminal mere exposure, the degree to which the mean target preference rate differs from chance will be significantly larger for real-word brand names than pseudo-word brand names

Figure 7.17: Comparing mean target preference rates to the chance baseline (50%) for real-word and pseudo-word brand names



One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Target preference rate (real-word stimuli)	154	0.510	0.207	0.017
Target preference rate (pseudo-word stimuli)	154	0.439	0.201	0.016

One-Sample Test						
	Test Value = 0.5					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Target preference rate (real-word stimuli)	0.583	153	0.561	0.010	-0.023	0.043
Target preference rate (pseudo-word stimuli)	-3.749	153	0.000	-0.061	-0.093	-0.029

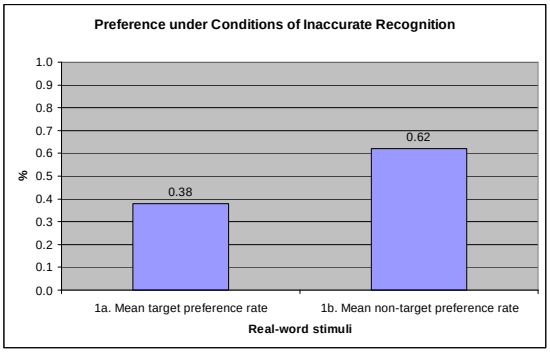
As illustrated in figure 7.17 (above), the non-target preference bias that was previously found in the sample as a whole (M=0.475, t=-2.128, p<0.05: see page 310), is only in fact evident in relation to those choice-pairs containing pseudo-word brand names (M=0.439, t=-3.749, p<0.01). By contrast, the results pertaining to real-word brand names do not differ significantly from chance (M=0.510, t=0.583, p=0.561). The absence of any preference bias in relation to real-word stimuli (r=0.0), alongside a moderate reverse MEE for pseudo-word stimuli (r=0.3) may thus be seen to contradict

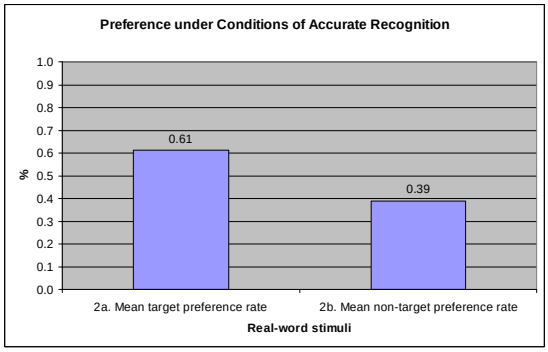
the predictions made in H4. However, at this point it is important to reiterate that the direction of the MEE has previously been found to be diametrically opposed in the presence and absence of recognition in this study (see page 313-314); a factor that may confound the results of the simple analysis above. In order to account for this, it is therefore necessary to examine the influence of stimulus type in each of these memory conditions in turn, and thus to divide the hypothesis above into two parts:

> H5a. In the presence of stimulus recognition, the degree to which the mean target preference rate is higher than chance will be significantly larger for real-word brand names than pseudo-word brand names; ***and***
>
> H5b. In the absence of stimulus recognition, the degree to which the mean target preference rate is lower than chance will be significantly larger for real-word brand names than pseudo-word brand names

On this basis, it may be argued that that P4 would be fully validated by evidence in support of both elements of the above hypothesis. To this end, the data set was split by stimulus type prior to a replication of the analysis undertaken in section 7.4.2; the results of which are presented in figures 7.18 to 7.20, and discussed below.

Figure 7.18: Comparing mean preference rates for real-word brand names to the chance baseline (50%) in the absence and presence of recognition

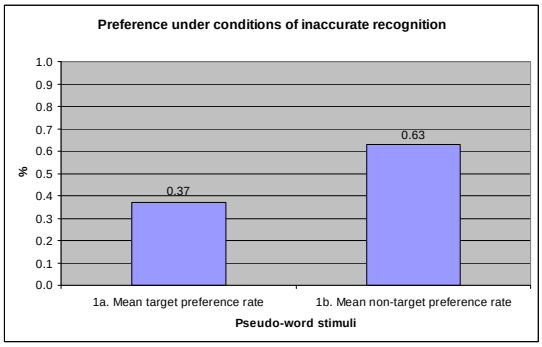


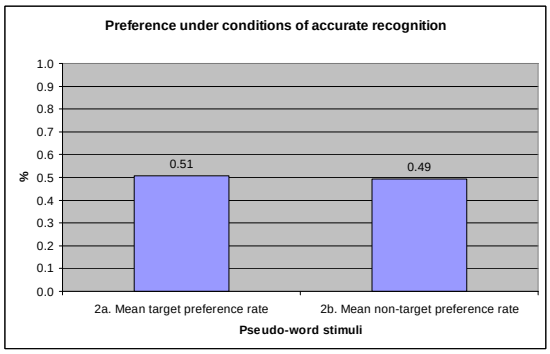


One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
1a. Target preference rate in the absence of recognition	141	0.380	0.340	0.029
1b. Non-target preference rate in the absence of recognition	141	0.620	0.340	0.029
2a. Target preference rate in the presence of recognition	151	0.612	0.300	0.024
2b. Non-target preference rate in the presence of recognition	151	0.388	0.300	0.024

One-Sample Test						
	Test Value = 0.5					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
1a. Target preference rate in the absence of recognition	-4.185	140	0.000	-0.120	-0.177	-0.063
1b. Non-target preference rate in the absence of recognition	4.185	140	0.000	0.120	0.063	0.177
2a. Target preference rate in the presence of recognition	4.569	150	0.000	0.112	0.063	0.160
2b. Non-target preference rate in the presence of recognition	-4.569	150	0.000	-0.112	-0.160	-0.063

Figure 7.19: Comparing mean preference rates for pseudo-word brand names to the chance baseline (50%) in the absence and presence of recognition





One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
1a. Target preference rate in the absence of recognition	150	0.371	0.318	0.026
1b. Non-target preference rate in the absence of recognition	150	0.629	0.318	0.026
2a. Target preference rate in the presence of recognition	153	0.508	0.312	0.025
2b. Non-target preference rate in the presence of recognition	153	0.492	0.312	0.025

One-Sample Test						
	Test Value = 0.5					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
1a. Target preference rate in the absence of recognition	-4.979	149	0.000	-0.129	-0.181	-0.078
1b. Non-target preference rate in the absence of recognition	4.979	149	0.000	0.129	0.078	0.181
2a. Target preference rate in the presence of recognition	0.301	152	0.764	0.008	-0.042	0.057
2b. Non-target preference rate in the presence of recognition	-0.301	152	0.764	-0.008	-0.057	0.042

Figure 7.20: Comparing mean preference rates for real-word and pseudo-word brand names in the absence and presence of recognition

Paired Samples Test									
		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	1a. Target stimuli preference rate in the absence of recognition (real-word stimuli) - 1a. Target stimuli preference rate in the absence of recognition (pseudo-word stimuli)	0.031	0.420	0.036	-0.040	0.101	0.854	137	0.395
Pair 2	1b. Non-target stimuli preference rate in the absence of recognition (real-word stimuli) - 1b. Non-target stimuli preference rate in the absence of recognition (pseudo-word stimuli)	-0.031	0.420	0.036	-0.101	0.040	-0.854	137	0.395
Pair 3	2a. Target stimuli preference rate in the presence of recognition (real-word stimuli) - 2a. Target stimuli preference rate in the presence of recognition (pseudo-word stimuli)	0.105	0.405	0.033	0.039	0.170	3.160	149	0.002
Pair 4	2b. Non-target stimuli preference rate in the presence of recognition (real-word stimuli) - 2b. Non-target stimuli preference rate in the presence of recognition (pseudo-word stimuli)	-0.105	0.405	0.033	-0.170	-0.039	-3.160	149	0.002

As illustrated in the figures above, an almost identical non-target preference bias is evident in the absence of recognition (1b) for both real-word (M=0.620, t=4.185, p<0.01) and pseudo-word brand names (M=0.629, t=4.979, p<0.01), with no significant differences apparent between the two types of stimuli (M=-0.031, t=-0.854, p=0.395). In this respect both real-word (r=0.3) and pseudo-word (r=0.4) brand names appear to give rise to a moderate reverse MEE. By contrast, however, the target preference bias that was previously observed in the presence of recognition (2a) is only in fact apparent for real-word brand names (M=0.612, t=4.569, p<0.01), with a mean target preference rate that is very close to chance for pseudo-word stimuli (M=0.508, t=0.301, p=0.764). In the presence of memory, therefore, a similarly moderate classic MEE (r=0.3) is evident

with respect to real-word brand names, but not those that constitute pseudo-words (r=0.0)

Taken together, therefore, the results may be seen to provide support for H5a but not H5b. While this is not sufficient to validate P4, perhaps, it revives the possibility that the two effects may be influenced differently, and thus reflect two qualitatively different forms of the MEE. In contrast to the somewhat weak indications of this that were acknowledged in the previous section, however, the results above provide a much stronger empirical foundation for this claim. Specifically, they provide a more robust indication that the classic, positive MEE that is observed in the presence of recognition is mediated by stimulus type, whilst the reverse MEE that occurs in the absence of objective memory is not. Before this conclusion can be confidently drawn, however, and in light of the fact that the frequencies for each effect are not normally distributed (see appendix II), it is once again prudent to conduct further non-parametric analysis. To this end, and in line with the approach adopted throughout this chapter, one-sample chi-square and Wilcoxon signed-rank tests are utilised; the results of which are presented in figures 7.21 and 7.22, and discussed below.

Figure 7.21: Comparing the distribution of target and non-target preference rates for to a chance baseline in the absence and presence of recognition

a) Real-word brand names only

1a. Distribution of target preference in the absence of recognition (=chance removed)			
	Observed N	**Expected N**	**Residual**
Above chance (>50%)	41	59	-18
Below chance (<50%)	77	59	18
Total	118		

1b. Distribution of non-target preference in the absence of recognition (=chance removed)			
	Observed N	**Expected N**	**Residual**
Above chance (>50%)	77	59	18
Below chance (<50%)	41	59	-18
Total	118		

2a. Distribution of target preference in the presence of recognition (=chance removed)			
	Observed N	**Expected N**	**Residual**
Above chance (>50%)	86	61.5	24.5
Below chance (<50%)	37	61.5	-24.5
Total	123		

2b. Distribution of non-target preference in the presence of recognition (=chance removed)			
	Observed N	**Expected N**	**Residual**
Above chance (>50%)	37	61.5	-24.5
Below chance (<50%)	86	61.5	24.5
Total	123		

Test Statistics				
	1a. Distribution of target preference in the absence of recognition (=chance removed)	1b. Distribution of non-target preference in the absence of recognition (=chance removed)	2a. Distribution of target preference in the presence of recognition (=chance removed)	2b. Distribution of non-target preference in the presence of recognition (=chance removed)
Chi-Square	10.983	10.983	19.520	19.520
df	1	1	1	1
Asymp. Sig.	0.001	0.001	0.000	0.000

b) Pseudo-word brand names only

1a. Distribution of target preference in the absence of recognition (=chance removed)			
	Observed N	Expected N	Residual
Above chance (>50%)	30	58.5	-28.5
Below chance (<50%)	87	58.5	28.5
Total	117		

1b. Distribution of non-target preference in the absence of recognition (=chance removed)			
	Observed N	Expected N	Residual
Above chance (>50%)	87	58.5	28.5
Below chance (<50%)	30	58.5	-28.5
Total	117		

2a. Distribution of target preference in the presence of recognition (=chance removed)			
	Observed N	Expected N	Residual
Above chance (>50%)	66	63	3
Below chance (<50%)	60	63	-3
Total	126		

2b. Distribution of non-target preference in the presence of recognition (=chance removed)			
	Observed N	Expected N	Residual
Above chance (>50%)	60	63	-3
Below chance (<50%)	66	63	3
Total	126		

Test Statistics				
	1a. Distribution of target preference in the absence of recognition (=chance removed)	1b. Distribution of non-target preference in the absence of recognition (=chance removed)	2a. Distribution of target preference in the presence of recognition (=chance removed)	2b. Distribution of non-target preference in the presence of recognition (=chance removed)
Chi-Square	27.769	27.769	0.286	0.286
df	1	1	1	1
Asymp. Sig.	0.000	0.000	0.593	0.593

Figure 7.22: Comparing preference rates for real-word versus pseudo-word brand names in the absence and presence of recognition (Wilcoxon)

Test Statistics				
	1a. Distribution of target preference in the absence of recognition (=chance removed)	1b. Distribution of non-target preference in the absence of recognition (=chance removed)	2a. Distribution of target preference in the presence of recognition (=chance removed)	2b. Distribution of non-target preference in the presence of recognition (=chance removed)
Z	-1.300	-1.300	-2.160	-2.160
Asymp. Sig. (2-tailed)	0.194	0.194	0.031	0.031

In line with those of parametric testing (see figures 7.18 to 7.20), the above results confirm that the significant non-target preference bias observed in the absence of recognition (1b) is robust across stimulus type, whilst the target preference bias in the presence of recognition (2a) is not. Specifically, this latter effect (2a) is once again apparent only in relation to real-word stimuli (Chi-square=19.520, $p<0.01$), occurring close to the level of chance for pseudo-word brand names (Chi-square=0.286, $p=0.593$). As a result, significant differences are apparent in the target preference bias (2a) that is evident in relation to each type of stimulus ($Z=-2.160$, $p<0.05$).

Given the consistent pattern of the results in this phase of the analysis, the weight of evidence would seem to clearly indicate that, whilst target preference in the presence of recognition (2a) is likely to be mediated by stimulus type, the reverse MEE that is apparent in the absence of recognition (1b) is not. In simple terms, therefore, it might be concluded that whilst P4 is only partially validated in this study, support for H5a but not H5b may provide evidence that the preference biases observed in the presence and absence of recognition respectively reflect two qualitatively different forms of the mere exposure phenomenon; a classic, positive MEE that is underpinned by explicit memory, and a reverse MEE that is the product of implicit processing alone**.** At this point, however, it is important to acknowledge the potential for two alternative interpretations of the results presented to this point in the chapter. The first of these stems from the theoretical challenge presented by the *false familiarity effect* (Whittlesea, 1993), as discussed in chapter 2 (section 2.4.2, page 57). The second relates to the methodological issue of task order effects and, in particular, the possibility of *affective modulation bias*

(Phaf and Rotteveel, 2005; see chapter 6, 286). Both of these alternative explanations are discussed and tested in section 7.5.

7.5. Acknowledging and addressing alternative interpretations

Throughout this chapter, evidence for the MEE has been determined on the basis of the degree to which a systematic and significant preference bias for either the target or non-target stimuli is apparent in the absence and presence of recognition. In each condition, two possible effects were identified; a classic, positive MEE and a reverse MEE (as illustrated in figure 7.23a). However, it is important to acknowledge that, in light of the fact that 2-factor forced choice tests were used to record recognition judgments in this study, an inaccurate selection in this respect may indicate either a simple absence of memory for the target stimulus exposure, or the presence of false memory for the non-target stimulus. Throughout, the former interpretation has been adopted; leading to the conclusion that a non-target preference bias - and thus a reverse MEE - is apparent in the absence of accurate recognition of the target stimuli (see section 7.4.2., page 310). If inaccurate recognition judgments are assumed to reflect false memory, however, it may be argued that the results essentially reflect a preference bias for stimuli that are subjectively 'recognised', regardless of the accuracy of this memory judgment; i.e. that the preference-bias is a by-product of the *false familiarity effect* (Whittlesea, 1993; see chapter 2, page 57) rather than the MEE (see figure 7.23b). Additionally, it is acknowledged that the correlation between stimulus preference and recognition - and the fact that preference judgments were always made first – also gives rise to the

possibility that the latter is simply a function of the former; i.e. that the results reflect *affective modulation bias* **(**Phaf and Rotteveel, 2005**;** see chapter 6, page 287) rather than mere exposure. Both of these alternative explanations must be examined before the results of this study can be confidently accepted as evidence of a classic and reverse MEE that is mediated by stimulus recognition. The purpose of the following two sections, therefore, is to present and discuss the results of additional analysis in relation to each of these challenges in turn.

Figure 7.23a: Possible preference effects in the presence and absence of target stimulus recognition (original assumption)

		Target Stimulus Recognition	
		No	**Yes**
Target Stimulus Preference	**>Chance**	**1a** Classic MEE	**2a** Classic MEE
	<Chance	**1b** Reverse MEE	**2b** Reverse MEE

Figure 7.23b: Possible preference effects in the presence of target and non-target recognition (alternative assumptions)

		Stimulus Recognition	
		Non-Target	**Target**
Target Stimulus Preference	**>Chance**	**1a** Classic MEE	**2a** Classic MEE
	<Chance	**1b** Reverse MEE *or* Classic FFE	**2b** Reverse MEE

7.5.1. Non-target preference in the absence of accurate stimulus recognition: A product of mere exposure or false familiarity?

As noted in the introduction above, the first challenge to the validity of the results as evidence for the MEE stems from the fact that an inaccurate selection on paired-choice tests of recognition may reflect either an absence of memory, or the presence of false memory for the non-target stimulus. Furthermore, the latter may constitute a cognitive illusion as a result of one stimulus being easier to process than the other; a phenomenon that is termed the *false familiarity effect* (Whittlesea, 1993; see chapter 2, page 57). However, this misattribution of processing fluency to another quality of the stimulus is the very same mechanism that is identified in arguably the most prominent theory of mere exposure (Bornstein and D'Agostino, 1992, 1994; see chapter 2, page 45). Whilst the notion that processing fluency may be misattributed to either familiarity, preference or a whole host of other cognitive and affective responses is not in dispute (see chapter 2,. page 45), the key point of difference between the false familiarity effect (FFE) and the MEE is the source of the processing fluency advantage; in the former it is the inherent characteristics of the stimulus (in the present) whilst in the latter it is mere exposure (in the past). With this in mind, it may be argued that the finding of a non-target preference bias in the presence of false recognition for these same, non-target stimuli indicates that it is a by-product of the FFE; i.e. that the relative processing fluency that underpins false recognition, and is entirely unrelated to prior exposure, also gives rise to a preference bias via the mechanism of misattribution. Indeed, this claim

may be extended to the preference-bias that is observed for target stimuli in the presence of accurate recognition. Specifically, in the absence of direct evidence that mere exposure is the source of the processing fluency that leads to accurate recognition (and the accompanying preference bias), it is possible that both responses are based on the relative perceptual characteristics of the stimuli at test; i.e. that all familiarity is, in fact, *false familiarity* in this study. As such, the first important issue to address is whether the results of this study do indeed reflect the MEE rather than the FFE.

The scope for this particular criticism may to some extent be traced to a limitation regarding the pretesting of stimuli in this study. Whilst the two stimuli in each choice pair were carefully pretested and selected to ensure equivalence in *likability*, the issue of relative processing fluency was not addressed at this point. It is acknowledged, therefore, that further pretesting of each pair of (affectively equivalent and neutral) stimuli could have been undertaken to identify the degree to which systematic preference-bias may be expected to occur in each pair without the influence of a prior exposure phase. In the absence of this, it is also recognised that a further phase of data collection might have been employed to assess the degree to which each choice-pair may have given rise to non-exposure induced preference bias in the main experiment. Should this have been found to be the case in relation to a particular choice-pair, the analysis detailed in this chapter could then be repeated with this trial removed (see appendix II for further technical discussion in this respect). In the context of this specific study, however, it is important to stress that this issue may be addressed analytically, without the need for further data collection. In this respect, the key

question is whether or not the observed preference-bias can be shown to be sensitive to relevant changes in the nature of the exposure phase; an avenue of analysis that is facilitated by individual differences in perceptual ability and experience within the sample.

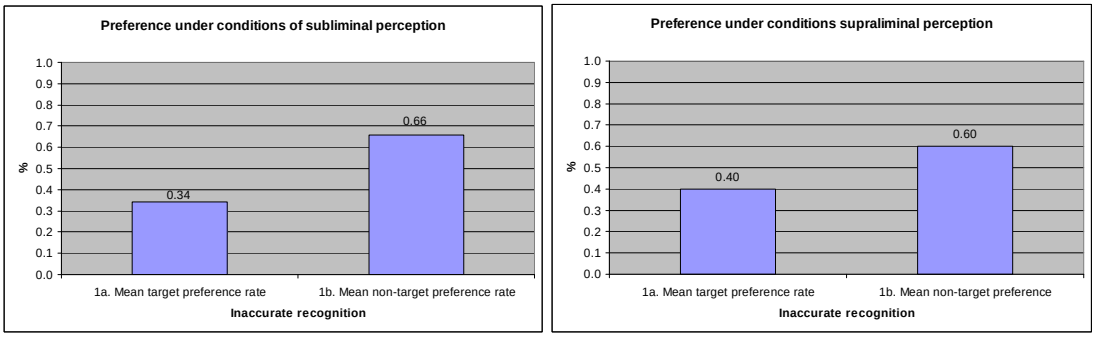
In explanation of the analytical approach taken to distinguish the MEE from the FEE in this study, it is first important to reiterate that evidence for the moderating influence of stimulus recognition on the size of the MEE is inferred from experiments in which subliminal exposure has been used to eliminate the possibility of this (see chapter 2, page 29). In particular, these previous investigations demonstrate a consistently larger MEE under conditions of subliminal perception; an outcome that was initially explained with reference to a possible reduction in the experience of boredom and fatigue (see Bornstein, 1989). More recently, it has been suggested that the larger effect sizes observed in these studies reflect the extremely effective elimination of recognition memory in studies that utilise subliminal mere exposure (e.g. Bornstein and D'Agostino, 1992, 1994; see chapter 2, page 30); a proposition that receives support from the current findings (see section 7.4.2, page 310). Whichever mechanism is responsible for findings of the consistently larger MEE under conditions of subliminal exposure, however, the fact remains that it is a characteristic that is not, by definition, shared by the FFE (for which no previous exposure is required); and thus presents a means by which to distinguish between the two effects in the current study. Specifically, the non-target preference bias that is evident in the absence of recognition might be

confidently adjudged to reflect the MEE if it is significantly larger under conditions of subliminal perception, as encapsulated in the following hypothesis:

> H6. In the absence of stimulus recognition, the size of the non-target preference bias will be significantly larger under conditions of subliminal versus supraliminal perception during exposure

As a caveat to this approach, however, it should perhaps be acknowledged that, in light of the absence of conscious perception (and thus explicit memory encoding) in the subliminal condition, a similar comparison of the preference-bias that occurs in the presence of accurate, objective memory is illogical. Indeed, the finding that the moderate target preference bias in this latter condition (r=0.3) is not, as might be expected, entirely eliminated under conditions of subliminal perception (r=0.1) is most likely due to the fact perception was measured at the phase rather than item-level. As such, it is conceivable that some cases of 'subliminal perception' might be contaminated by a small number of items that were in fact perceived supraliminally; a potential limitation that was acknowledged in chapter 6 (page 247) and is discussed in more detail in appendix III. However, it must be considered extremely unlikely that the FFE would explain this particular form of preference bias but not that which occurs in the *absence* of accurate recognition memory. Should H4 be supported, therefore, it may be confidently assumed that the findings reflect the MEE rather than the FFE in both memory conditions. To this end, the results of statistical testing are presented in figures 7.24 and 7.25, and discussed below.

Figure 7.24: Comparing preference bias in the absence of recognition under conditions of subliminal and supraliminal perception



One-Sample Statistics					
Perception Type		**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Subliminal perception	1a. Target preference rate in the absence of recognition	36	0.342	0.230	0.038
	1b. Non-target preference rate in the absence of recognition	36	0.658	0.230	0.038
Supraliminal perception	1a. Target preference rate in the absence of recognition	117	0.400	0.277	0.026
	1b. Non-target preference rate in the absence of recognition	117	0.601	0.277	0.026

One-Sample Test							
		Test Value = 0.5					
						95% Confidence Interval of the Difference	
Perception Type		**t**	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Lower**	**Upper**
Subliminal perception	1a. Target preference rate in the absence of recognition	-4.121	35	0.000	-0.158	-0.236	-0.080
	1b. Non-target preference rate in the absence of recognition	4.121	35	0.000	0.158	0.080	0.236
Supraliminal perception	1a. Target preference rate in the absence of recognition	-3.916	116	0.000	-0.100	-0.151	-0.050
	1b. Non-target preference rate in the absence of recognition	3.942	116	0.000	0.101	0.050	0.152

Figure 7.25: Comparing mean preference rates in the absence/presence of recognition under conditions of subliminal versus supraliminal perception

Group Statistics					
	Perception Type	**N**	**Mean**	**. Deviat**	**Std. Error Mean**
1a. Target stimuli preference rate in the absence of recognition	Subliminal perception	36	0.342	0.230	0.038
	Supraliminal perception	117	0.400	0.277	0.026
1b. Non-target stimuli preference rate in the absence of recognition	Subliminal perception	36	0.658	0.230	0.038
	Supraliminal perception	117	0.601	0.277	0.026

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**Lower**	**Upper**
1a. Target stimuli preference rate in the absence of recognition	Equal variances assumed	1.824	0.179	-1.132	151	0.260	-0.058	0.051	-0.158	0.043
	Equal variances not assumed			-1.249	69	0.216	-0.058	0.046	-0.149	0.034
1b. Non-target stimuli preference rate in the absence of recognition	Equal variances assumed	1.858	0.175	1.118	151	0.265	0.057	0.051	-0.044	0.157
	Equal variances not assumed			1.234	69	0.221	0.057	0.046	-0.035	0.149

As illustrated in the figures above, a significant non-target preference bias (1b) is observed in both the subliminal (M=0.658,t=4.121, p<0.01) and supraliminal group

(M=0.601, t=3.942, p<0.01), with no significant differences apparent in a simple between-group comparison (M=0.057, t=1.118, p=0.265). However, the relevant statistic that is specifically referred to in H4 is the substantive *size* of this effect. In this respect, and in line with Bornstein's (1989) seminal meta-analysis of mere exposure research, the effect is twice as large under conditions of subliminal (r=0.6) rather than supraliminal perception (r=0.3). On this basis, H4 would appear to be supported; providing a clear indication that the results presented in previous sections of this chapter reflect the MEE (rather than the FFE). Before this conclusion can be drawn, however, one further alternative explanation must also be ruled out; namely, the possibility that the results reflect *affective modulation bias* (Phaf and Rotteveel, 2005) as a result of task order.

7.5.2. Non-target preference bias in the absence of accurate stimulus recognition: A product of task order rather than mere exposure?

In light of the correlation between preference and recognition bias for both the target and non-target stimuli in this study, the possibility of *affective modulation bias* (Phaf and Rotteveel, 2005) cannot be ignored. To recap, this phenomenon refers to the enhanced likelihood of subjective recognition for a stimulus that has previously been identified as preferred (see chapter 6, page 288).With this in mind, it may be argued that the sensitivity of the observed effects to changes in the nature of exposure (see section 7.5.1.) provides evidence of a direct link in this respect; diminishing the validity of an alternative explanation based on task order in the test phase alone. In order to confirm

this, however, a planned comparison between recognition rates in the experimental and control conditions may be used to assess the moderating influence of the intervening preference task. Indeed, the control group was established specifically to identify the likelihood of task order effects, and in particular the possibility of affective modulation bias (see chapter 6, page 288). To this end, control participants were required to complete the full experiment, with both the target and non-target brand names replaced by equivalent 'dummy' stimuli in the preference judgment task. As a result, the recognition rates observed in each condition may be compared to isolate the influence of an intervening requirement to make preference judgments regarding these same stimuli in the main experiment. In this respect, a task order effect would be indicated by support for the following hypothesis:

> H7. Recognition rates for the target and non-target stimuli will differ significantly between the control and experimental groups.

As previously indicated (see figure 7.6, page 305), however, the mean recognition rate (M=0.54) was found to be almost identical in both the experimental and control condition; confirmation of which is provided by the finding of no significant between group differences in this respect (M=0.003, t=0.132, p=0.895). Given that H7 is not supported, therefore, and in light of the evidence for a direct link between the size of the observed effects and the nature of the exposure phase (see section 7.5.1, page 338), it may be confidently assumed that neither task order nor the FFE is responsible for the preference effects observed in this study; and that they do in fact reflect the MEE. In the

final section of this chapter a summary of the findings is thus provided, prior to a detailed discussion of conclusions and implications (in chapter 8), and an overview of the main contributions and limitations of the work in this thesis (chapter 9).

7.6. Conclusion

In summary, the findings of this study indicate that mere exposure to novel brand names results in:

1. A classic, positive preference-bias for previously exposed stimuli that is:
    a) dependent on the *presence* of recognition memory;
    b) severely restricted, and most likely eliminated, by subliminal perception during exposure;
    c) potentially enhanced by confident, contextualised recollection of previous exposure; and
    d) evident only in relation to real-word (as opposed to pseudo-word) brand names.
2. A novelty preference-bias for unexposed stimuli that is:
    a) dependent on the *absence* of recognition memory;
    b) enhanced by subliminal perception during exposure;
    c) not influenced by the degree to which false recollection occurs; and
    d) not mediated by the real-word versus pseudo-word nature of brand names.

Whilst it is acknowledged that both of these effects may, on the face of it, appear to reflect an identical preference-bias on the basis of subjective recognition (i.e. that

participants tend to prefer stimuli they deem to be recognised (regardless of the accuracy of this judgment), the fact that they are influenced differently by factors such as perception, brand name type and perhaps recollection indicate that they are, in fact, two qualitatively different types of effect. These may be defined as the *explicit* and *implicit* MEE respectively; the second of which occurs in reverse during this study, whilst the first reflects the classic, positive influence of mere exposure on affective response (see chapter 2, page 20). This conclusion and its implications for theory and practice will be discussed in detail during the following chapter. In drawing this chapter to a close, however, it is perhaps important to specifically summarise the extent to which the above findings support the four propositions that provide the impetus for this study. To recap, these are stated as follows:

> P1: Mere exposure to a marketing stimulus will significantly influence affective response to that stimulus when it is subsequently encountered
>
> P2: The size of the marketing-based mere exposure effect will be hindered by the presence of recognition memory for marketing stimulus exposure
>
> P3: The size of the marketing-based mere exposure effect will be hindered by a subjective sense of confident, contextualized recollection for prior exposure to the marketing stimulus; regardless of recognition accuracy
>
> P4: The marketing-based mere exposure effect will be significantly larger for real-word brand names than it will for pseudo-word brand names

On the basis of the results presented in this chapter it may be argued that both propositions 1 and 2 are supported; although a more interesting, important and

unexpected finding with regard to the latter is that recognition also appears to mediate the *direction* of the MEE. In this respect, the classic, positive MEE that has been commonly observed in adults (see chapter 2, page 20) is only found to occur in the presence of accurate stimulus recognition in this study, whilst a larger *reverse* MEE is evident under conditions of inaccurate stimulus recognition. By contrast, proposition 3 is not validated by the results of this study. Indeed, whilst little clear evidence is found for the influence of subjective recollection, there are some (relatively weak) indications that this factor may, if anything, *enhance* the MEE when it is associated with accurate objective recognition. Finally, proposition 4 receives only partial support in this study. In this respect, the reverse MEE that is apparent in the absence of recognition does not appear to be influenced by brand name type, whilst the classic form of this effect (that is evident in the presence of recognition) is significant *only* in relation to real-word brand names. This finding is potentially of great interest as it raises the possibility that, not only does the direction of the exposure-induced preference bias differ in the absence and presence of recognition, but that this reflects two qualitatively different forms of the MEE; arising on the basis of explicit and implicit memory respectively. This conclusion may have significant implications for theory and practice in the domains of both psychology and marketing, and will thus be discussed in detail during the following chapter.

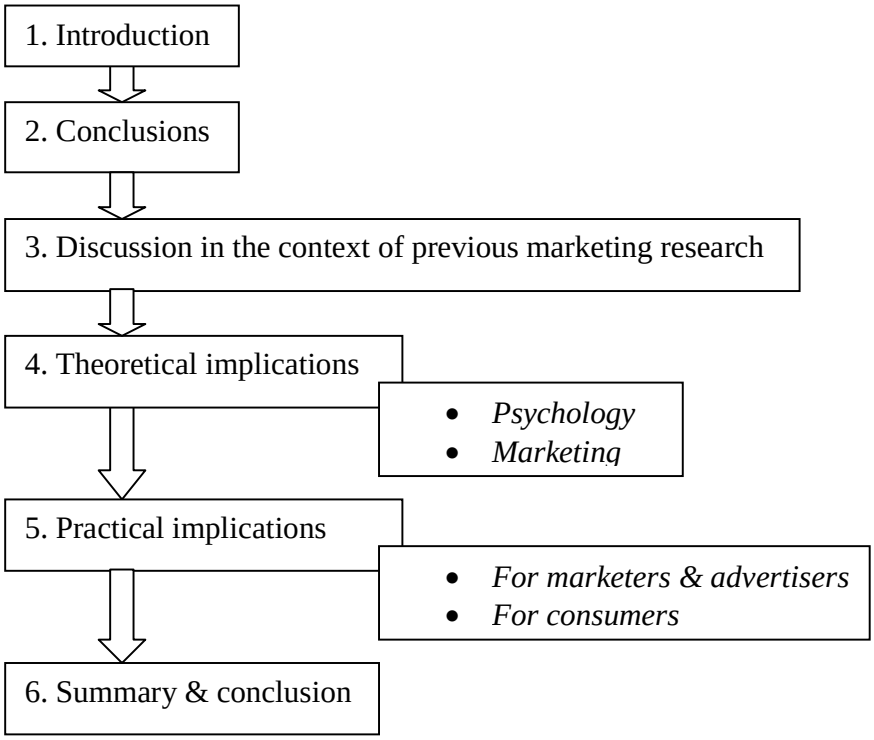
Chapter 8

Conclusions, discussion and implications

8.1. Introduction

As stated at the outset, the overall aim of this thesis is to provide a robust investigation of the existence, size, direction and nature of the MEE in a marketing context. To this end, a comprehensive theoretical foundation was provided by a critique of the extant literature in the disciplines of both psychology and marketing (Part I). On this basis, a series of propositions were developed and tested by way of experimentation (as outlined in part II); the results of which are presented in the previous chapter. In order to begin to bring the thesis to a conclusion, therefore, the purpose of this penultimate chapter is to summarise the conclusions that may be drawn and distil the implications of these for theory and practice. In this respect, theoretical implications are considered in relation to both the psychology and marketing literature, prior to a detailed discussion of the practical implications for marketers, advertisers and consumers. As a foundation for this, however, and as illustrated in figure 8.1, the chapter begins with a discussion of the overarching conclusions of the current study in relation to the empirical findings of previous marketing research.

Figure 8.1: Structure of chapter 8

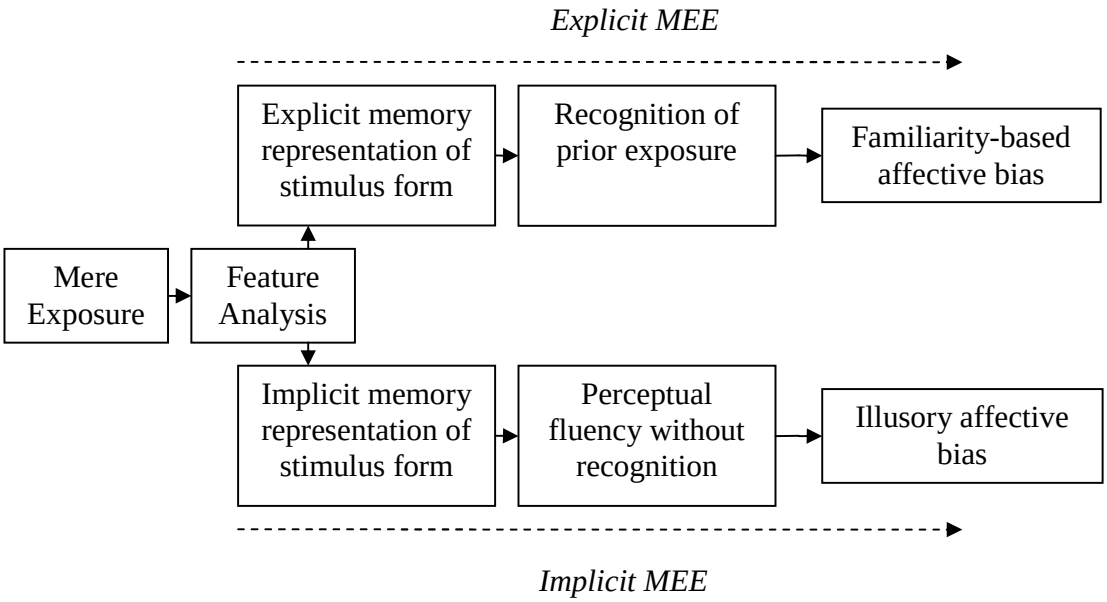


8.1. Conclusions

In contrast to Obermiller's (1985) original attempt to extend psychological mere exposure research in the marketing domain, and in line with the majority of marketing studies since, this thesis proffers evidence for the MEE in a marketing context. However, the overarching finding of the current study is that the effect appears to be qualitatively different in the presence and absence of recognition memory. Specifically, the results indicate that the classic, positive influence of mere exposure on affective judgments is facilitated by objective recognition, whilst the absence of this memory condition gives rise to a preference bias for novel stimuli (i.e. a reverse MEE).

Furthermore, the former is enhanced by the use of common, real-word brand names (and perhaps clear, confident, contextualized recollection of prior exposure). By contrast, the latter is enhanced by subliminal perception but remains unaffected by both the subjective sense of (false) memory and the (real versus pseudo-word) nature of the stimulus. Taken together, the observed differences in the direction of the effect and the extent to which it is mediated by stimulus type (and perhaps subjective recollection) imply that the MEE occurs on the basis of different mental processes in the presence and absence of recognition. As such, the findings of this study give rise to the conclusion that the marketing-based MEE may occur in one of two forms; and thus to the proposal of a dual-processing model (as illustrated figure 8.2).

Figure 8.2: Dual-processing model of the marketing-based mere exposure effect



On the face of it, the two forms of the MEE represented in the model above may be referred to as the *conscious* and *non-conscious* MEE respectively. However, in light of the earlier discussion of the non-conscious nature of this phenomenon (Chapter 2, page 21), this would not be entirely appropriate. To recap; it was acknowledged in chapter 2 that, whilst the MEE has previously been found to be magnified in the absence of recognition (or more specifically conscious perception) of prior stimulus exposure, it remains apparent to a lesser degree in the presence of such memory (and may even be enhanced by it; Lee, 2001b; Wang and Chang, 2004). However, Bornstein and Craver-Lemley (2004: 230) stress that the MEE should nonetheless be considered a non-conscious phenomenon on the basis that:

> "even in situations where participants are aware of having been exposed to stimuli, they rarely attribute their liking for a stimulus to repeated exposure, instead believing that some property of the stimulus is particularly attractive or interesting."

With this in mind, it is perhaps more accurate to label the two forms of effect as the *explicit* and *implicit* MEE respectively. These terms reflect the distinct mental processes by which each occurs whilst accommodating the notion that both might be considered to be 'non-conscious' to some degree. In this respect, whilst the *implicit* MEE occurs entirely below the threshold of consciousness, the *explicit MEE* may also be considered non-conscious by virtue of the fact that, while consumers are aware of having been exposed to the relevant marketing stimuli, they are not necessarily aware of the impact that exposure alone exerts in the formation of subsequent affective response (Bornstein and Craver-Lemley, 2004). With this in mind, the conclusions outlined above, and in

particular the proposed dual-processing model (figure 8.2, page 351), are discussed in the context of previous marketing-related research into MEE in the following section.

8.3. Discussion in the context of previous marketing research

As noted in chapter 4 (page 138-139), the possibility of dual forms of the MEE that are underpinned by separate memory processes is implied in the work of Shapiro and Krishnan (2001). Whilst the notion of a *dual-processing* model of mere exposure (as illustrated in figure 8.2, page 351) is not raised by Shapiro and Krishnan (2001), nor indeed by any other authors in the mere exposure literature, it may be argued that is not inconceivable on the basis of their results; particularly in light of the findings in the current study. Specifically, these indicate that the *explicit MEE* constitutes a familiarity-bias on the basis of explicit memory for having encountered the stimuli previously, whilst the *implicit MEE* reflects a subconscious novelty-bias that arises when memory for the stimulus exposure is entirely implicit.

In part, therefore, the current findings may be seen to be in line with those that (albeit often inadvertently) provide evidence of a classic, positive marketing-based MEE in the presence of recognition (e.g. Vanhuele, 1995; Chung and Szymanski, 1997; Baker, 1999; Olson and Thjomoe, 2003; Lee, 2002; Tom *et al.*, 2007: see chapter 4, page 130). Specifically, however, the empirical results in this thesis imply that those of earlier studies reflect the *explicit MEE*, rather than its implicit equivalent. However, the proposition of Vanhuele (1995) that such results are an indication that the MEE is not

moderated by recognition memory per se, but by that which is based on *recollection* in particular, is not supported in this study. Indeed, if anything, the current results suggest that the explicit MEE may in fact be *enhanced* by clear, contextualized memory of prior stimulus exposure. Whilst this finding might be seen to contradict that of Matthes *et al.* (2007; see page 158), it is line with a small body of emerging work in the psychology literature (e.g. Lee, 2001b; Wang and Chang, 2004), and lends support to Anand *et al.*'s (1988: 390) conclusion that "the [MEE] increases with the accuracy of recognition"; although it should be stressed that a further implication of the current study is that this assertion may be accurate only in relation to the *explicit* form of the MEE. Furthermore, and as a caveat to this qualification, it should perhaps be noted that, whilst the enhancement of the exposure-induced preference bias in Tom *et al.*, (2007) may not necessarily be the result of subliminal perception (during 100ms as opposed to 250ms exposures), the fact that this occurs following the restriction of perception and attention may be problematic for the conclusion of Anand *et al.* (1988) and, indeed, the current thesis. However, given the questions raised in relation to the ecological and internal validity of Tom *et al.*'s (2007) work (see chapter 4, page 140), and the absence of replication at this point, the degree to which it poses a challenge to the conclusions of this study are as yet unclear. In this respect, further research may be necessary to investigate the impact of small increments in the *opportunity* for attentive processing during stimulus presentations that are nonetheless just perceptible; i.e. within the mere exposure paradigm (Zajonc, 1968).

In addition to validating previous indications of a marketing-based MEE in the presence of recognition, the empirical results in this thesis provide further evidence for the somewhat remarkable finding of a *reverse* non-conscious MEE in adults (Lee, 1994); extending this from abstract, high-density matrices to more typical marketing stimuli (i.e. brand names). However, the positive implicit MEE for low-density matrices that was also found by Lee (1994) is not replicated in relation to brand names in the current study. With this in mind, a caveat might be added to the conclusions of this thesis to the effect that the reverse *implicit MEE* may be limited to the type of stimuli employed (i.e. brand names in this study and high-density matrices in Lee, 1994). Further research may thus be important to ascertain the degree to which this finding is robust across different types of marketing stimuli (e.g. brand logos, photographs, advertising imagery, cartoon drawings, etc.); as will be highlighted in the following chapter (page 426).

Finally, it is important to consider the fact that the findings regarding the *implicit MEE* in this study are not necessarily in line with possible evidence for this in previous marketing research. For example, Janiszewski's (1993) finding of an equivalent, positive MEE in both the absence and presence of recognition is only partially supported in the current study. Specifically, the preference-bias that was previously evident for exposed stimuli in the absence of recognition is contradicted by current findings of a *reverse* implicit MEE (i.e. an exposure-induced novelty bias). In a sense, this discrepancy may be seen to undermine the argument that the direction of the implicit MEE is stimulus specific, with both studies employing brand names as the target stimuli. However, it should be stressed that Janiszewski's (1993) work is not

specifically developed within the confines of the mere exposure paradigm; employing, as it does, techniques of incidental (or peripheral) exposure, and contextualizing the target stimulus within a meaningful scene (i.e. a complete advertisement). As discussed in chapter 4 (page 164), such conditions facilitate implicit associative priming and give rise to the possibility (and, it may be argued, even the likelihood) that the previously observed preference-bias is the product of classical conditioning rather than mere exposure alone.

Similarly, the observation of an implicit novelty-bias in this thesis would appear to be contrary to the findings of Shapiro (1999); in which a positive, non-conscious familiarity-bias towards previously exposed stimuli is evident. However, it should be reiterated that this earlier study specifically measures the effects of *incidental* (or *peripheral*) exposure on the inclusion of products in a consideration set. Whilst the robustness of Shapiro's work is not in question, therefore, a number of proposals might be made to explain the differences between the findings of this and the current study. Firstly, and in line with the observation made in relation to Janiszewski (1993) above, the discrepancy in results may highlight an important distinction between the effects of *mere* and *incidental/peripheral* exposure. This issue was discussed at some length in chapter 4 (page 162-166) and relates specifically to the possibility that the latter may give rise to either the MEE *or* classical conditioning. Alternatively, for example, it may be argued that the difference in the findings of the two studies may be due to either the nature of the response (i.e. affective 'liking' versus the relatively cognitive task of consideration set formation), the decision (i.e. discriminatory choice between two alternatives versus the construction of a set of alternatives) or the stimuli in question

(i.e. brand names versus product categories). Resolution of all of these possibilities may constitute an interesting and important direction for future marketing research in this field; as will be discussed in the following chapter (section 9.4.3, page 432). Prior to this, however, the remainder of this chapter is given over to a review of key aspects of psychological and marketing theory (discussed in part I) in light of the empirical findings presented in this thesis.

8.4. Theoretical implications

In drawing conclusions from the findings outlined in the previous chapter, the focus of this section is to discuss how the literature reviewed in part I may be re-interpreted and understood as a result of the subsequent empirical work. Specifically, the main conceptual implications of this thesis are related to the relevance, nature and importance of the MEE in the context of marketing theory; a detailed discussion of which will be provided in the second part of this section. However, given that the experimental approach adopted in this study is closely aligned to that which universally characterises psychological research in this field (see chapters 5 and 6), it is important to acknowledge that the findings may also have implications for purely scientific understanding and explanation of the MEE. As such, the section begins with a broad discussion of the conclusions that may be drawn in relation to the psychology literature reviewed in chapter 2.

8.4.1. Implications for psychological theory

In simple terms, the empirical work in this thesis adds weight to the burgeoning evidence for the occurrence of a systematic affective response bias on the basis of mere exposure alone; i.e. exposure that "just makes the given stimulus accessible to the individual's perception" (Zajonc, 1968:1). Regardless of the direction of this effect, it is nonetheless observed in both the presence and absence of recognition; lending further support to the conclusion that "the exposure-affect relationship is a robust, reliable phenomenon" (Bornstein, 1989: 278). Furthermore, the relatively moderate size of the exposure-induced preference bias in this study, and the fact that it doubles in size in the absence of accurate recognition, is generally in line with the meta-analytical findings of Bornstein (1989; see chapter 2, page 29). In addition to this, however, the current findings make an important distinction between the MEE and the false familiarity effect (Whittlesea, 1993; see chapter 2, page 57). In this respect, the *implicit* MEE is found to be unaffected by confident (mistaken) recollection but magnified by changes in the nature of exposure; increasing considerably under conditions of subliminal versus supraliminal perception. These findings thus provide support for the non-conscious MEE in the face of questions as to whether the fluency-based affective response by which this has been traditionally evidenced could in fact be due to the inherent characteristics of the stimulus (see chapter 2, page 57).

Perhaps a more important outcome of the empirical research in this study, however, is the contribution it makes to the debate over whether previous observations of an

enhanced MEE in the absence of recognition (see Bornstein, 1989) is specifically due to *subliminal perception* during exposure or the wider notion of *explicit memory* failure at test (see chapter 2, page 29). To recap; it was previously acknowledged that, whilst the latter is assumed in the influential misattribution theories of mere exposure (see Bornstein and D'Agostino, 1992, 1994; Bornstein and Craver-Lemley, 2004), the empirical work on which it is based is characterised by the ubiquitous use of subliminal exposure to eliminate the possibility of subsequent recognition (see Bornstein, 1989). As such, the possibility that the *implicit* MEE is dependent on subliminal perception could not be ruled out and, by implication, nor could the proposition that the relative size of this effect is explained by the fact that such exposure greatly reduces the likelihood of boredom and fatigue; two factors that have since been found to limit the MEE (Bornstein *et al.*, 1990). With regard to this issue, however, the current findings indicate that, whilst subliminal perception is a particularly effective means by which to eliminate the possibility of subsequent explicit memory, it is indeed the absence of such memory that underpins the *implicit* MEE. In this respect, the positive preference-bias observed in the presence of stimulus recognition was found to be reversed in the absence of this, even under conditions of supraliminal perception during exposure. In line with previous psychological findings, however, the size of this *implicit* preference-bias (r=0.4) is twice as large as its explicit counterpart (r=0.2), and doubles in size under conditions of subliminal (r=0.6) versus supraliminal exposure (r=0.3).

Inherent in this explanation, however, is the fact that one of the major findings of the current study is the opposing *direction* of exposure-induced affective bias in the

presence and absence of objective recognition memory. In this respect, the positive enhancement of affect under conditions of stimulus recognition is in line with previous psychological findings. To recap; it was acknowledged in chapter 2 (page 29) that not only is stimulus recognition possible under conditions of fleeting yet perceptible exposure, but the vast majority of psychological research has demonstrated exposure-induced changes in affective response under just such conditions. Within this literature, however, the *same* (positive) effect would appear to be even greater in the relatively small number of studies that have successfully eliminated the moderating influence of conscious memory (see Bornstein, 1989; Bornstein and Craver-Lemley, 2004); a finding that is not supported in the current study. Rather, the empirical work in this thesis indicates that, whilst the observed preference bias is indeed twice as large in the absence of recognition (r=0.4) than in the presence of this (r=0.2), the classic, positive MEE that is evident in the latter condition is *reversed* in the former.

This finding is surprising in the sense that it is one of the few times that a reverse non-conscious MEE has been found in adults (alongside Crandall *et al.*, 1973; Heyduk, 1975; Lee, 1994). In the context of these earlier studies, however, it may give rise to the conclusion that, with regard to marketing communication at least, the MEE can take one of two forms; each underpinned by the processes of *explicit* and *implicit* memory respectively. This is evidenced by the fact that they are moderated and mediated by different variables. In line with Bornstein (1989), for example, the size of the explicit MEE is found to be enhanced by the use of commonly-occurring, real-word stimuli in the current study (with some indication that the same may be true in relation to clear,

confident recollection). By contrast, and contrary to the suggestions of Vanhuele (1995) and Shapiro (1999) respectively, the (reverse) implicit MEE was not found to be influenced by either false recollection or prior familiarity with the (real-word) stimuli. With regard to the first of these factors in particular, it would appear that it is the lack of objective recognition in all forms that facilitates the implicit MEE; i.e. the complete absence of recognition, even if this constitutes nothing more than a vague sense of familiarity. When it reflects accurate objective memory, even the weakest sense of familiarity may give rise to the conscious, positive MEE, although there is some suggestion that this may be further enhanced by clear, confident recollection; a finding that is line with those of Lee (2001b) and Wang and Chang (2004).

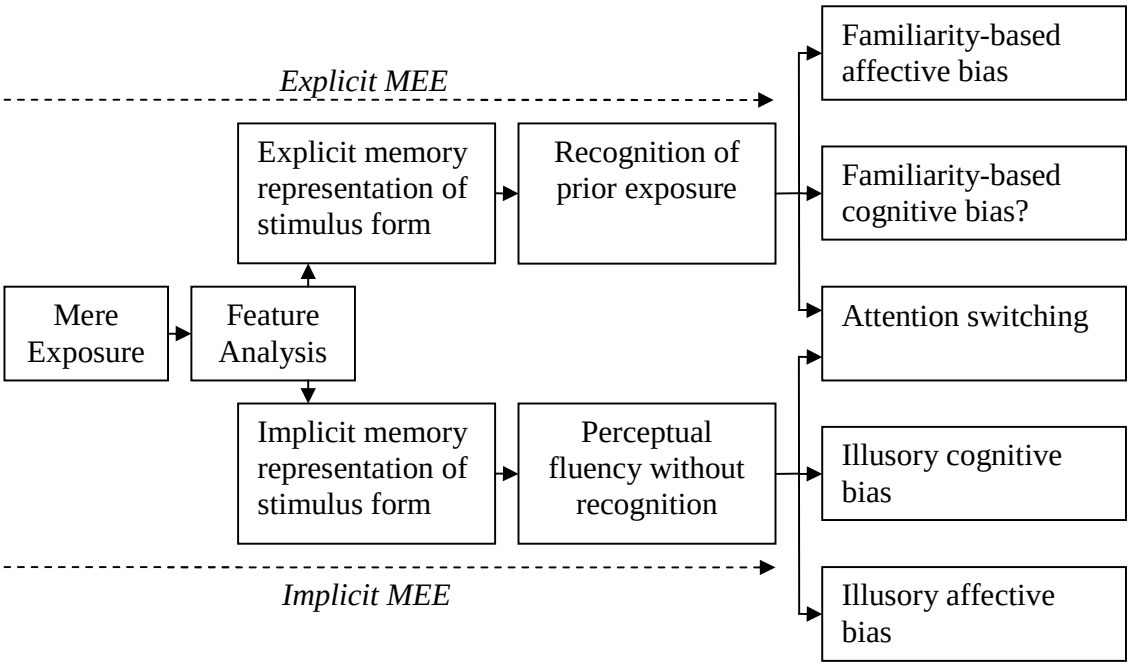
A potentially important implication of this conclusion, therefore, is that it provides a basis on which to reconcile the seemingly contradictory findings of an enhanced MEE under conditions of subliminal perception (Bornstein, 1989; Bornstein and D'Agostino, 1992) and, latterly, a positive correlation between exposure-induced affect and the subjective experience of recollection (Lee, 2001b; Wang and Chang, 2004). In this respect, it may be argued that, whilst the former reflects the current finding that the *implicit* MEE is larger that its explicit counterpart, the latter illustrates how the *explicit* MEE can in itself be enhanced; i.e. by confidence in recognition memory or the clarity and strength with which subjective recollection is experienced.

On a broader note, therefore, the conclusions of this thesis are potentially of great significance in the continuing quest for a generic theory of mere exposure. In chapter 2 (page 36) it was acknowledged that, after nearly four decades of research, a unified

theory of this phenomenon remains elusive and, in its absence, the field is characterised by a number of conflicting accounts. In light of the current findings it might be argued that a resolution to this debate may be found not in a single theory of mere exposure, but in a dual-processing model that acknowledges the two routes by which the effects of mere exposure may occur (see figure 8.2, page 351). In this respect, the explicit MEE might be explained by theories such as *arousal* (Berlyne, 1970), *uncertainty reduction* (Sawyer, 1981) and even *hedonic fluency* (Winkielman and Cacioppo, 2001). As explained in chapter 2 (section 2.3, page 36), all of these accounts are founded on the notion that mere exposure gives rise to a conscious sense of recognition for having encountered the stimulus previously; a state that may then result in positive affect on the basis of reduced physiological arousal (Berlyne, 1970), greater certainty (Sawyer, 1981) or the inherently positive feeling of accurate recognition (Winkielman and Cacioppo, 2001). By definition, however, the assumption of familiarity as a process factor undermines the value of these theories in explaining the *implicit* MEE (i.e. that which arises in the absence of conscious recognition memory). However, whilst this second form of the effect occurs in reverse in the current study, it may nonetheless be adequately explained by the theories of *non-specific activation* (Mandler *et al.*, 1987) and *perceptual fluency/attribution* (Bornstein and D'Agostino, 1992, 1994: see chapter 2, page 45). In this respect, the processes of feature analysis and implicit memory may be seen to give rise to a novelty-bias by way of misattribution; i.e. negative affective responses (such as feelings that the exposed stimuli are relatively boring, simplistic or common) are mistakenly adopted as "the most parsimonious and reasonable explanation of the experience [of processing fluency]" (Bornstein and D'Agostino, 1994: 106-107).

Whilst the direction of the implicit MEE is therefore different to that which has been found in the majority of previous research, it may nonetheless be explained as a 'cognitive illusion' in the absence of explicit memory for the source of processing fluency (Bornstein and Craver-Lemley, 2004).

Figure 8.3: Dual-processing model of the mere exposure effect



In summary, therefore, it is proposed that the marketing-based model (illustrated in figure 8.2, page 351) may be broadened to represent a generic dual-processing model of mere exposure that incorporates both an *explicit* and *implicit* form of this phenomenon (see figure 8.3). The former is enhanced by supraliminal perception, the encoding (and subsequent retrieval) of prior stimulus exposure, and thus by a degree of attention, elaboration and ease of processing (e.g. by the use of stimuli that are already

perceptually familiar or inherently more fluent). It may therefore be explained by the theories of *arousal* (Berlyne, 1970), *uncertainty reduction* (Sawyer, 1981) or *hedonic fluency* (Cacioppo and Winkielman, 2001). The latter is underpinned by the processes of implicit memory and is thus enhanced by conditions such as subliminal perception, preattention (i.e. an absence of conscious attention), weak explicit encoding and retrieval (i.e. forgetting) and the use of entirely novel (i.e. perceptually unfamiliar) stimuli. This form of the MEE is compatible with the theories of *non-specific activation* (Mandler *et al.*, 1987) and *perceptual fluency/attribution* (Bornstein and D'Agostino, 1992, 1994). With regard to figure 8.3, however, it should be acknowledged that the question of whether cognitive judgments (beyond those of familiarity) are influenced by the explicit MEE was not addressed during this study, and thus may be an interesting direction for future research. However, it is perhaps important to note that such outcomes may not be accommodated by the theories of *arousal* (Berlyne, 1970), *uncertainty reduction* (Sawyer, 1981) and *hedonic fluency* (Cacioppo and Winkielman, 2001). In each case, the focus is on the processes that give rise to *affective* response following mere exposure, and there would appear to be no reason to assume that any of these are necessarily associated with changes in cognitive judgments (e.g. of brightness or darkness; Mandler *et al.*, 1987).

Given the gravity of the conclusions outlined in this chapter, however, the necessity of further research to replicate the current findings and validate the proposed models (i.e figure 8.2, page 351; figure 8.3, page 363) must be acknowledged. In this respect, the limitations of the work contained within this thesis, and recommendations regarding the

objectives, scope and nature of further research, will be discussed in the following chapter. Prior to this, however, the remainder of this chapter is given over to a discussion of the implications of the current conclusions for marketing theory and practice.

8.4.2. Implications for conceptualising the MEE in marketing theory

In the first part of this thesis it was acknowledged that, in the context of a contemporary marketing environment that is characterised by the proliferation of brands, media and messages, and thus low levels of attention and consumer involvement (Ha and Litman, 1997; MacInnis *et al.*, 1991; Skinner and Stephens, 2003)**,** most marketing messages receive little or no active processing (Shapiro *et al.*, 1997). As a result, it was noted that traditional stepwise models of consumer decision-making and advertising effects would appear to be of little relevance in the absence of attention, elaboration and logical reasoning (see chapter 3, page 70). By contrast, and on the assumption that the MEE is underpinned by rapid, automatic, non-conscious processing, it was argued that this phenomenon provides a relevant paradigm within which to understand the influence of marketing communication under just such conditions (Bornstein and Craver-Lemley, 2004).

In the broadest of senses, therefore, it may be concluded that this basic proposition is supported by the current findings. In simple terms, mere exposure to novel brand stimuli alone appears to result in a systematic preference bias when these stimuli are subsequently encountered. Furthermore, such effects can occur (and are in fact more

pronounced) in the absence of explicit memory for previous stimulus exposure. Indeed, even when such memory is apparent, it may be expected that consumers will not be consciously aware of the influence that exposure alone exerts on the formation of subsequent response (Bornstein and Craver-Lemley, 2004); although it might be noted that, in the absence of specific empirical evidence, this remains an assumption and a potentially interesting avenue for further research. Given the expected prevalence of mere exposure to marketing communication in the contemporary consumption environment, therefore, it may be argued that an understanding of the MEE may thus be important to developing a genuine understanding of "how advertising affects consumers, how it works, in order to formulate more effective advertising strategies" (Vakratsas and Ambler, 1999: 26).

In the extant marketing literature, however, and largely on the basis of abstract psychological experimentation, there would appear to be an almost universal assumption that the relationship between mere exposure and affect is always positive. The current findings run contrary to this assumption and thus, whilst providing support for the notion that mere exposure to marketing stimuli may influence subsequent consumer attitudes and choice behaviour, they may have significant implications for the way in which the MEE should be conceptualized in marketing theory; as will be discussed in detail during this section.

To this end, it is perhaps useful to re-iterate that, in the context of marketing theory, the MEE is most relevant to the specific field of consumer information processing; a boundary-spanning discipline at the interface between consumer behaviour and

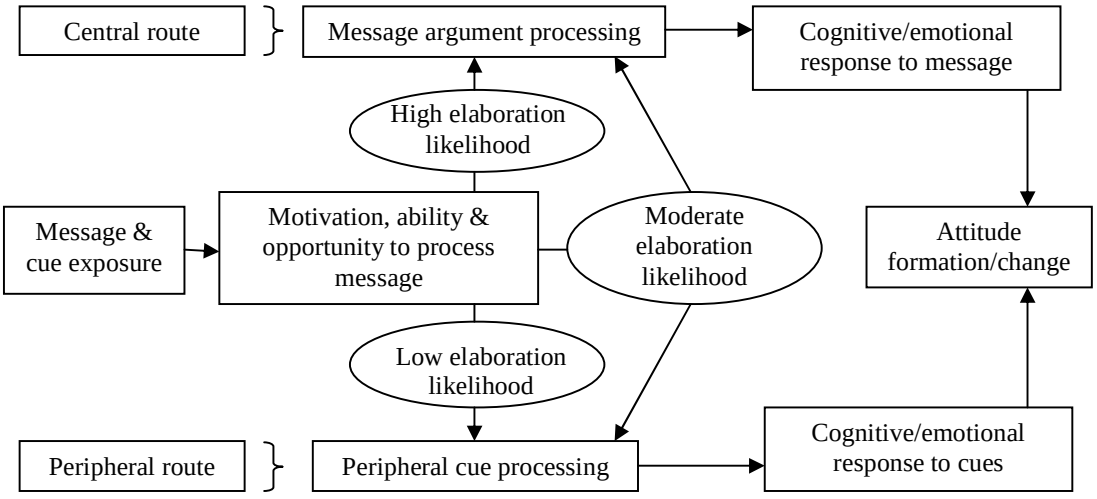
marketing communication (see chapter 3, page 71). Indeed, it was from this perspective that the perceived role and nature of the MEE was critically discussed in chapter 3. Specifically, this review incorporated three important streams of the extant literature; involvement theory, non-cognitive and non-conscious consumer processing. On this basis, it was argued that the MEE should be conceptualised by marketers as a product of non-conscious cognitive processing under conditions of very low attention and involvement, and a model was developed to illustrate the creation and influence of this phenomenon in a marketing context (see figure 3.13, page 116). During the course of this section, however, it will be argued that the current findings have significant implications for how the MEE might be conceptualised in the context of marketing theory; and in particular that which relates to involvement, elaboration and non-conscious consumer processing. To this end, the theoretical basis for the MEE from each of these theoretical perspectives is revisited in the following subsections; culminating in the proposal of a revised model that, it is argued, more accurately illustrates the creation and influence of this phenomenon in a marketing context.

8.4.2.1. Revisiting the MEE in the context of involvement theory

During chapter 3 (section 3.2, page 73), it was argued that the MEE provides a paradigm within which to explore, understand and influence communication effects at the very lowest levels of involvement; as defined in three 'integrative models' (Petty and Cacioppo, 1981; Greeewald and Leavitt, 1984; MacInnis and Jaworski, 1989). With regard to the first of these – the Elaboration Likelihood Model (Petty and Cacioppo, 1981; see figure 8.4, below) - it was noted that the potential influence of *entirely* non-

conscious processes in consumer information processing is not necessarily acknowledged. Rather the concepts of *low involvement* and the *peripheral route to attitude change* imply a degree of conscious, attentive processing and thus a likelihood of explicit memory for the stimulus exposure. As a result, it was acknowledged that it is perhaps unsurprising that the MEE is not directly referred to in Petty and Cacioppo's (1981) work. However, the results of the current study indicate that, whilst it is true to say that the ELM does not accommodate the *implicit* MEE, the *explicit* form of this effect would appear to sit comfortably within the low involvement, peripheral route to attitude change in this model. In this respect, it might be considered to be akin to a familiarity-heuristic by which low involvement consumers might move rapidly and passively towards preference formation.

Figure 8.4: Routes to attitude formation and consumer decision-making: The ELM



(Source: Shimp, 1997)

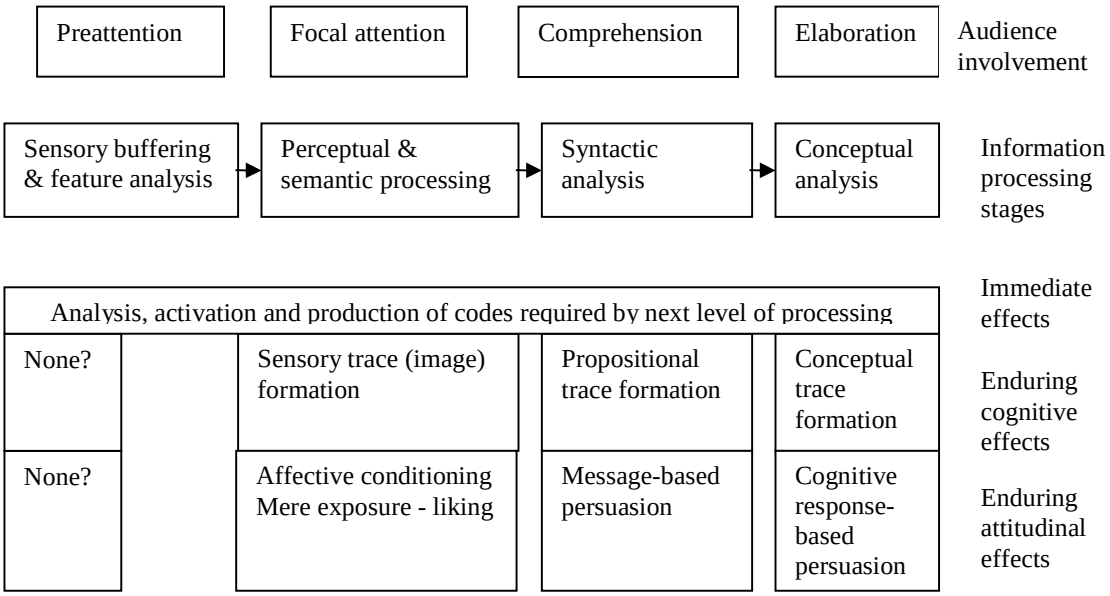
Further to the discussion of the ELM in chapter 4, however, it was acknowledged that the first (and perhaps only) attempt to explicitly incorporate the phenomenon of mere

exposure into an integrative model of (specifically *audience*) involvement, processing and attitude change is that of Greenwald and Leavitt (1984; see figure 8.5, below). During the discussion of this model, however, it was claimed that the authors' categorization of the MEE as the result of focal attentive processing alone, may not necessarily be accurate. Rather, it was argued that the non-conscious nature of the processes that are presumed to underpin the MEE (see Bornstein and Craver-Lemley, 2004) require that this phenomenon also be characterized as a function of the first (preattentive) level of processing. Indeed, it was noted that Greenwald and Leavitt (1984) did in fact acknowledge this possibility but cited a lack of empirical evidence for such a conclusion at the time of publication.

In light of the empirical work in this thesis, this broader conceptualisation of the MEE in the context of Greenwald and Leavitt's (1984) model would appear to be supported. Specifically, the findings indicate that the *implicit* and *explicit* forms of the MEE may exert an influence at the first and second levels of audience involvement respectively. Importantly, however, it should be recognised that the direction of the MEE might be different in each case; with the positive affect-bias apparent under conditions of *focal attention* (as proposed by Geeenwald and Leavitt, 1984) accompanied by a negative affect-bias at the level of *preattention*. As such, it may be concluded that the results of the current study suggest that the open questions with regard to the effects of preattentive processing in the model above may be replaced with reference to sensory trace formation (as a cognitive effect) and a tendency towards *negative* affective response (i.e. mere exposure – disliking). However, it should perhaps be acknowledged

that further research may be necessary to validate the current findings, and in particular to determine whether the implicit form of the marketing-based MEE *consistently* results in negative affective bias (as will be discussed in chapter 9, page 424).

Figure 8.5: Immediate & enduring effects associated with the 4 levels of involvement



Source: Greenwald and Leavitt (1984)

In addition to the work of Greenwald and Leavitt (1984), and despite incorporating little more than a passing reference to the phenomenon of mere exposure, it was previously acknowledged that the MEE might be accommodated within MacInnis and Jaworski's (1989) 'integrated model of information processing from advertisements' (see chapter 3, pages 83). In particular, it was argued that the influence of mere exposure could conceivably be conceptualized as a means by which advertising influences consumer attitudes at the first two levels of processing in this model (see figure 8.6, below). In a

broad sense, the findings of the current study would appear to support this proposition, whilst at the same time giving rise to an important qualification. Specifically, it should be stressed that, whilst mere exposure may indeed bias affective response to advertising stimuli at the first two levels of processing, the direction of this may in fact be *negative* at the very lowest of these (depending on the degree to which feature analysis results in encoding and subsequent stimulus recognition).

Figure 8.6: The six levels of consumer processing (MacInnis and Jaworski, 1989)

Antecedents	***Processing***			
Motivation to process	**Attention**	**Capacity**	**Level of processing**	**Representative operations**
Very low	Secondary task only	Very low	1	Feature analysis
Low	Divided	Low	2	Basic categorization
Low -moderate	Ad only	Low -moderate	3	Meaning analysis
Moderate	Ad only	Moderate	4	Information integration
High	Ad only	High	5	Role-taking
Highest	Ad only	Highest	6	Constructive processes

(Source: Extracted from MacInnis and Jaworski, 1989; Table 1)

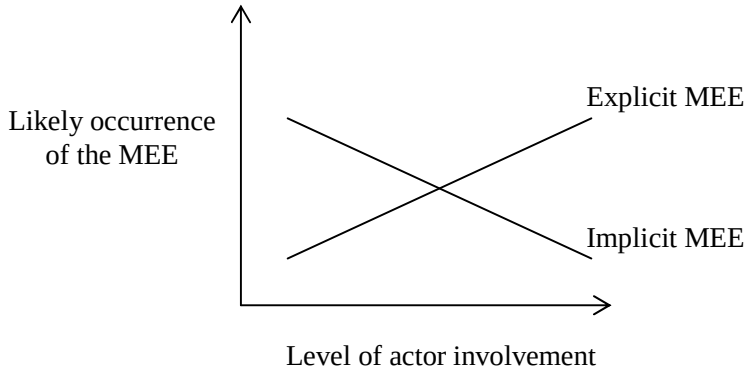
Finally, it was previously noted that the notion of preattentive audience involvement (Greenwald and Leavitt, 1984; MacInnis and Jaworski, 1989) appears to provide the foundation for the 'low involvement processing theory' of Heath (2001, 2004). Inherent in this, however, is the assumption that the automatic, implicit processing of advertising stimuli will systematically result in *positive* affective response. As such, it was proposed (on page 85) that the author's work essentially constitutes a domain-specific conceptualisation of the non-conscious MEE. With this in mind, it may be argued that, of all the involvement-based theories discussed in chapter 3 (section 3.2.1, page 76), the conclusions of this thesis are perhaps most problematic for that of Heath (2001, 2004). Specifically, the current findings challenge the assumption that implicit processing

systematically produces a classic, positive, non-conscious MEE in the context of marketing communication. Indeed, the results of this study indicate that whilst a positive preference-bias may indeed arise under conditions of mere exposure, it is dependent on a degree of conscious attention and memory. Furthermore, this effect is not only eliminated in the absence of objective stimulus recognition, but replaced by an implicit novelty-bias for previously unseen stimuli. As such, the attitudinal outcome of 'low attention advertising' may therefore be diametrically opposed to that proposed by Heath (2004); i.e. preattentive processing of marketing stimuli alone may in fact result in a relatively higher degree of liking for *alternative* stimuli.

However, while the current findings re-assert the relevance of the MEE as a paradigm within which to understand the effects of advertising at low levels of *audience* involvement, they do not necessarily support the notion that low *actor* involvement will be consistently conducive to this phenomenon (e.g. Chung and Szymanski, 1997; Baker, 1999; Fang *et al.*, 2007). Whilst this may be true in relation to the *implicit MEE*, particularly if it is assumed to occur on the basis of the passive, automatic misattribution of implicit memory for prior exposure at the point of decision-making (Mandler *et al.*, 1987; Bornstein and D'Agostino, 1992, 1994), it need not necessarily be the case with regard to the *explicit MEE*. Although in the majority of situations it is perhaps fair to assume that simply recognising the stimulus will not be sufficient to reduce the perceptions of risk that are associated with high involvement decisions, there are certain conditions in which this might not be the case. For example, if the explicit MEE can be explained by theories of *arousal* (Berlyne, 1970) and *uncertainty reduction* (Sawyer,

1981) it may be argued that it is, in fact, relevant to those situations in which highly involved consumers perceive a degree of risk that they cannot reduce with recourse to meaningful information. In such cases, consumers may be expected to attach greater meaning to peripheral cues in the formation of attitudes (Bitner and Obermiller, 1985); such as the simple fact that they remember having seen it before. Indeed, it was previously noted that Baker (1999) proffered evidence to suggest that the MEE might act as a 'tie-breaker' in highly involved choices between equally attractive brands (see chapter 4, page 131). Furthermore, given that highly involved consumers may be expected to exhibit greater motivation and/or ability to engage in active retrieval, there is an enhanced likelihood of clear, contextualised memory for prior exposure and thus positive preference bias via the explicit form of the MEE.

Figure 8.7: Illustrating the proposed influence of actor involvement on the likely occurrence of the explicit and implicit MEE, in the absence of *central cues*



NB: This diagram is a figurative illustration of the relationship in question rather than a precise (linear) model. Indeed, the extent and nature of this proposed relationship remains to be tested and may constitute a relevant and important direction for future research (as will be discussed in chapter 9, page 425).

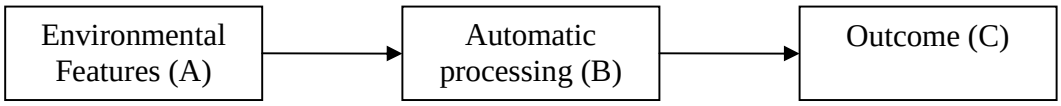
In light of this, one of the key implications for marketers may be that the decision-making situations in which each form of the effect is most relevant are quite different. Specifically, whilst the explicit MEE might reduce the sense of risk and uncertainty that is experienced at relatively high levels of actor involvement (particularly in the absence of *central* message cues; Petty and Cacioppo, 1981), the implicit MEE may serve to trigger a novelty-bias under conditions of extremely low actor involvement (as illustrated in figure 8.7, above). Furthermore, it may be proposed that, whilst high levels of actor involvement are unlikely to be conducive to both the implicit and explicit MEE in the majority of cases, the notion that it may be expected to enhance the latter (but not the former) in the absence of other meaningful information may further reflect qualitative differences between the two forms of the effect. In the absence of empirical evidence for this, however, it is important to acknowledge that it remains a proposition at this stage, and a potentially interesting avenue for further marketing research (as will be discussed in chapter 9, page 425).

The practical marketing implications of the discussion in this section, and indeed all of conclusions in this thesis, will be discussed in section 8.5 (page 386)**.** Prior to this, however, it is important to consider the impact of these conclusions on theoretical conceptualizations of the MEE in the context of a second important stream of the marketing literature; that of *non-conscious consumer processing*.

8.4.2.2. Revisiting the MEE in the context of non-conscious consumer processing theory

During chapter 2 (page 21) it was noted that, within the psychology literature, the MEE may be conceptualized as a non-conscious phenomenon on the basis that the implicit processes by which it occurs are hindered by the presence of explicit memory for previous exposures (see Bornstein and D'Agostino, 1992, 1994; Bornstein and Craver-Lemey, 2004). In the context of non-conscious consumer processing theory, and specifically the model of Chartrand (2005; see figure 8.8), it was therefore argued that the marketing-based MEE might be most accurately conceptualized as a product of automatic (intermediate) processing (B); alongside phenomena such as behavioural mimicry (Dijksterhuis *et al.*, 2005) and the marketing placebo effect (Shiv *et al.*, 2005).

Figure 8.8: The three elements of non-conscious consumer processing



Source: Chartrand (2005)

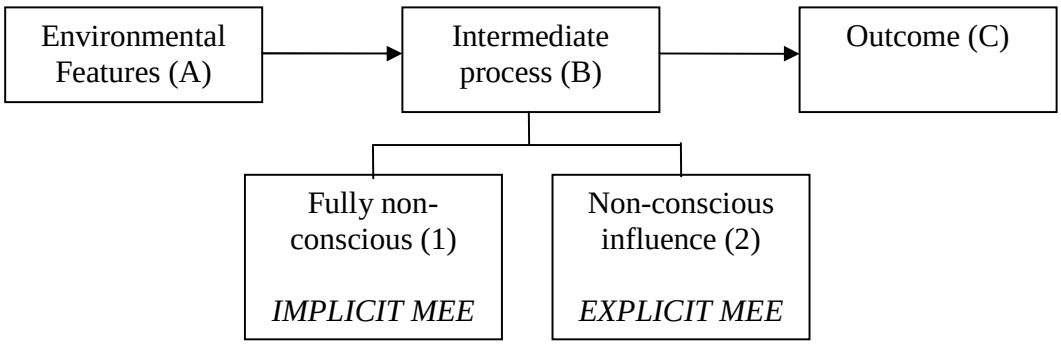
The main implication of this is to reject the notion that subliminal perception of marketing stimuli is a necessary condition for the MEE (see chapter 3, page 114). However, it was also noted that, whilst this conclusion is in line with received wisdom in the psychology literature (see Lee, 1994; Bornstein and Craver-Lemley, 2004), subliminal exposure has usually been adopted by psychologists as a means of

demonstrating the MEE in the absence of recognition memory (see chapter 2, page 29). As such, it was acknowledged that it has thus far been impossible to discount the proposition that the size of the marketing-based MEE is primarily enhanced by subliminal perception (Bornstein, 1989); and is therefore closely associated with the controversial concept of *subliminal advertising* in non-conscious consumer processing theory (i.e. with part A of figure 8.8). As noted in chapter 3 (page 114), resolution of this issue may be seen to be particularly important to the acceptance and application of the MEE as a means by which to understand, explain and influence the effects of marketing communication in the absence of conscious awareness. In this respect, whilst the investigation of those phenomena that are seen to occur naturally on the basis of non-conscious intermediate processing is considered to be a valuable and important stream of research in the contemporary consumer processing literature (Chartrand, 2005), the concept of *subliminal advertising* remains subject to both skepticism and ethical concerns (Broyles, 2006; see chapter 3, page 104).

The findings in this thesis may thus be seen to shed new and important light on the question of whether the marketing-based MEE should be conceptualized as a form of subliminal advertising (A) or the product of implicit intermediate processing (B). Firstly in this respect, it is important to stress that the current findings indicate that neither subliminal perception nor entirely implicit processing are *necessary* for the occurrence of the classic, *explicit MEE*; i.e. the enhancement of affective response following supraliminal exposure and in the presence of objective stimulus recognition. As such, it should be acknowledged that the controversy regarding the subliminal versus non-

conscious nature of the MEE is only relevant to the *implicit* form of the MEE; a phenomenon that is characterized in this study by a novelty-bias for brand names that were not previously presented. In this respect, the current findings indicate that, whilst subliminal perception enhances the size of the experimental effect, it is not a *necessary* condition. With this in mind, it may be concluded that the *implicit* MEE is dependent upon the absence of conscious recognition of previous exposure rather than stimulus perception. As such, this form of the effect should not be regarded as being akin to the concept of *subliminal advertising*; although the use of subliminal exposure appears to be a particularly effective means by which to eliminate the moderating influence of recognition memory under experimental conditions. Rather, the *implicit* MEE should be contextualized in the rapidly growing stream of literature regarding the attitudinal and behavioural effects of non-conscious intermediate processing (see Chartrand, 2005; Dijksterhuis *et al.*, 2005). More specifically perhaps, and with reference to the discussion in chapter 3 (page 107-111; see also figure 8.9 below), the implicit MEE might be considered to be a *fully non-conscious intermediate processing effect* (1), whilst its explicit counterpart may be more accurately conceptualized as a *non-conscious influence effect* (2); on the basis that consumers may be aware of the previous exposure but not of the extent to which it impacts upon their subsequent attitudes, preferences and choice behaviour (see Bornstein and Craver-Lemley, 2004).

Figure 8.9: The non-conscious nature of the MEE



In light of the discussion to this point in the section, therefore, it is perhaps useful to draw it to a close by revisiting the conclusions of the literature review in chapter 3; and in particular the models that were proposed to encapsulate the basis on which the MEE might be expected to occur in a marketing context.

8.4.2.3. Summarising the theoretical basis for the MEE in a marketing context

On the basis of the review in chapter 3, a simple model was proposed to summarise the creation and influence of the MEE in a marketing context (see figure 8.10, below). In essence, this model was based on the assumption that an extremely low level of audience involvement provides the primary context in which the marketing-based MEE might be expected to occur (Greenwald and Leavitt, 1984). This is reflected in little or no conscious attention to marketing stimuli (Greenwald and Leavitt, 1984; MacInnis and Jaworski, 1989; Heath, 2004) and may occur naturally whenever consumers lack the motivation, ability and/or opportunity to elaborate on marketing communication (MacInnis and Jaworski, 1989). However, such communication may be designed and

executed in ways that intentionally limit the opportunity for elaboration and thus the level of audience involvement (e.g. Chaiken and Eagly 1983; Edell and Staelin, 1983; Moore, Hausknecht, and Thamodaran 1986). As such, the MEE should also be regarded as a phenomenon that might be manipulated by marketers to enhance affective response to products, brands and advertisements in the absence of significant focal attention. In light of the empirical findings in this thesis, however, this model - and the proposed conditions under which it might be applied with the greatest positive effect by marketers (see figure 8.11) - would appear to require important qualification and revision; as will be explained below.

Figure 8.10: The creation and influence of the MEE in a marketing context (originally proposed model; see page 116)

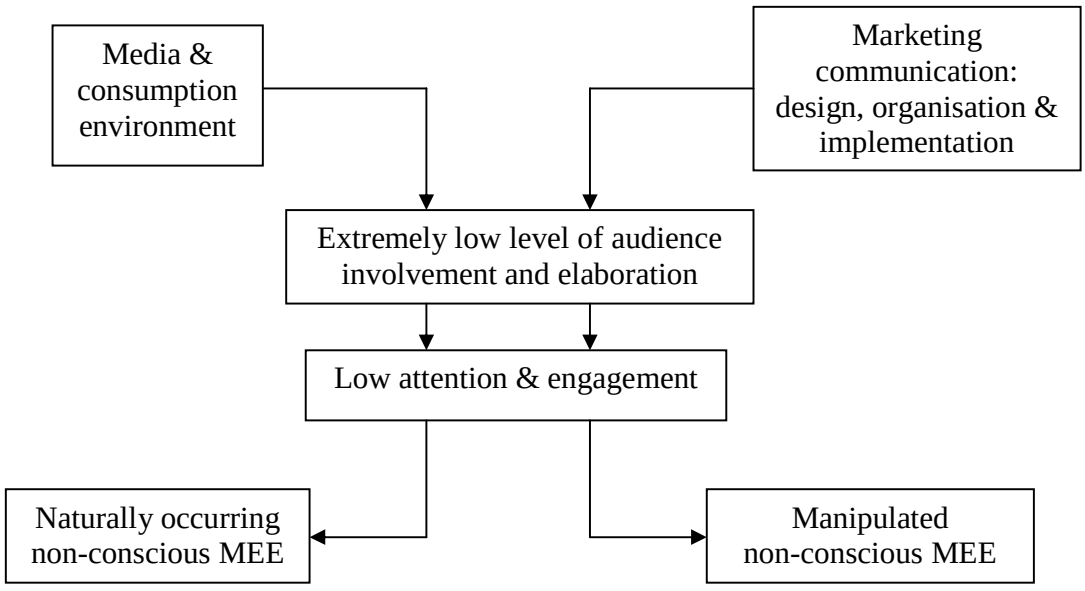
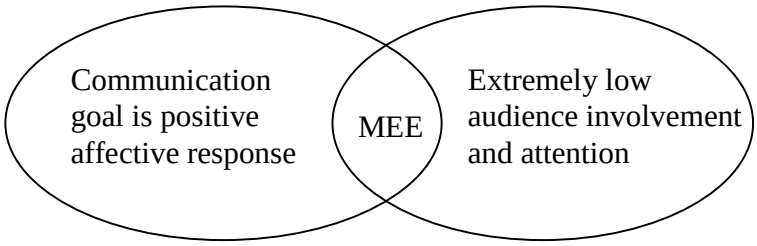


Figure 8.11: The basic conditions for maximising the influence of mere exposure in a marketing context (originally proposed model; see page 118)



Whilst mere exposure has indeed been found to systematically bias affective response to marketing stimuli at low levels of attention and involvement, the nature and direction of this effect may be mediated by the degree to which perceptual encoding and subsequent stimulus recognition occurs. As outlined previously, positive preference-bias for previously encountered stimuli is dependent on objective recognition in this study; leading to the conclusion that the *explicit* MEE may enhance affective response by way of a familiarity-heuristic under conditions of low involvement processing. By contrast, mere exposure that does not result in objective stimulus recognition at the point of choice may in fact give rise to an implicit novelty-bias; i.e. a systematic preference-bias for alternative stimuli that have not been encountered previously. As such, whilst the model presented in figure 8.10 (above) is not necessarily inaccurate, the nature and direction of the outcomes to which it refers requires qualification. In this respect, the full range of affective response that might be expected under conditions of mere exposure may be more accurately summarised by the revised model in figure 8.12. Furthermore, it is also important to note that the mediating influence of objective recognition memory on the direction of the marketing-based MEE constitutes an

important addition to the basic conditions for maximising the positive influence of mere exposure in this domain (as illustrated in figure 8.13).

Figure 8.12: The creation and influence of the MEE in a marketing context (revised model)

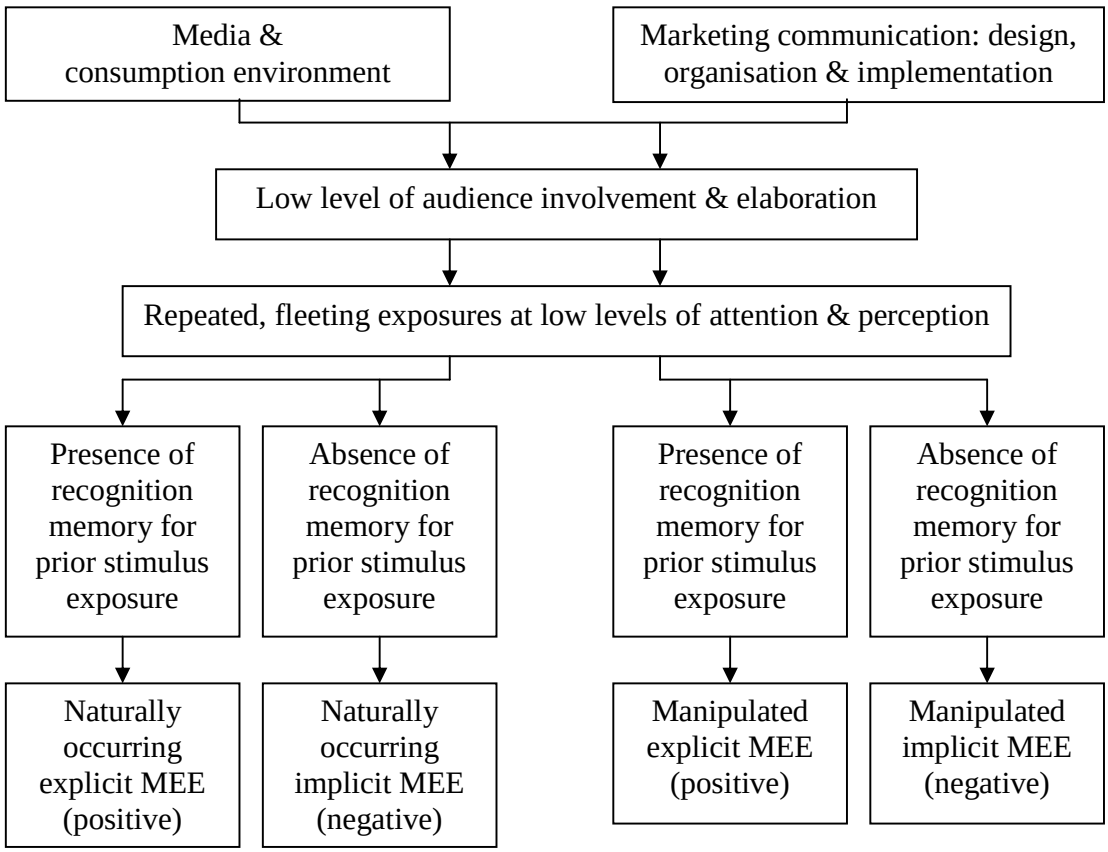
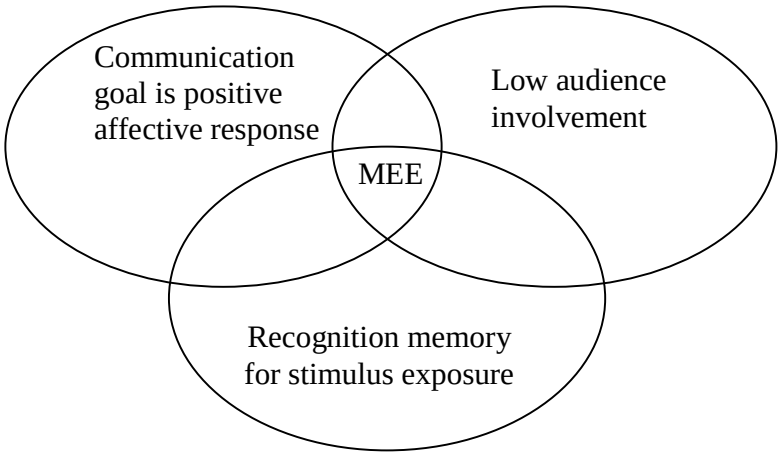


Figure 8.13: The basic conditions for maximising the *positive* influence of mere exposure in a marketing context (revised model)



Finally, it should be recalled that three additional factors were identified in chapter 3 (page 118) as potential mediators of the extent to which the MEE might be expected to occur in a marketing context:

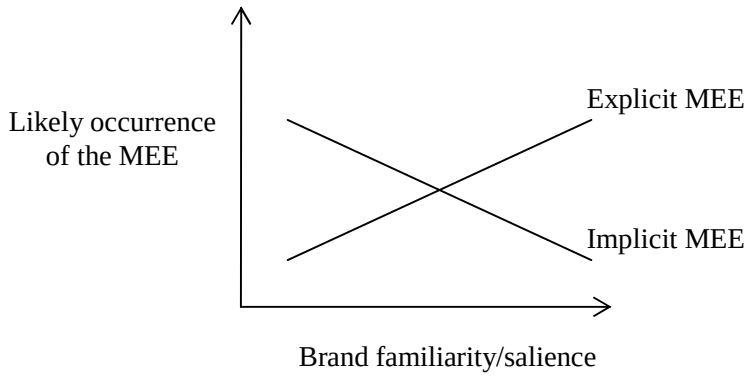
- Propensity for brand-switching
- Low versus high levels of *actor* involvement
- Absence of experience with the target brand, and perhaps even with competitor brands

Whilst the current study does not necessarily address the first of these factors, the findings may to some extent challenge previous assumptions regarding the potential influence of the other two. In this respect, the possibility that high levels of actor involvement might in fact be conducive to the creation of the positive, explicit MEE in some circumstances was discussed in section 8.4.2.1 (page 367). Further to this,

however, the current findings may also cast doubt on the notion that prior brand familiarity is likely to hinder the substantive impact of the MEE.

To recap; it was noted in chapter 3 (page 120) that the degree to which the marketing-based MEE may alter previously ingrained attitudes towards well-known brands is yet to be adequately tested in the marketing literature. In light of the relatively modest size of the experimental effect, however, it was suggested that it is perhaps prudent to assume that mere exposure will be more likely to substantively increase consumer preference in the absence of well-established routines, habits, experience or beliefs with regard to target and competitor brands (see Baker, 1999). However, the finding that recognition memory is a necessary condition for the positive enhancement of affective response by way of mere exposure may pose a challenge to this assumption. This relates specifically to the fact that, under conditions of mere exposure, stimuli that are already familiar and salient to consumers are likely to be subject to a greater number of brief switches in attention, easier perceptual processing and subsequent recognition (see Moray, 1959; Nielson and Sarason, 1981; Kurilla and Westerman, 2008). As such, it may be proposed that the *explicit* MEE is in fact of greatest relevance to marketers as a tool for the continuous, passive reinforcement of established preferences for well-known brands, and thus a means by which to *reduce* the propensity for brand switching.

Figure 8.14: Illustrating the proposed influence of brand familiarity/salience on the likely occurrence of the explicit and implicit MEE



NB: Like figure 8.7, this diagram is a figurative illustration of the relationship in question rather than a precise (linear) model. Once again, the extent and nature of this proposed relationship remains to be tested and may constitute a relevant and important direction for future research (as will be discussed in chapter 9, page 426).

From a broader theoretical perspective, therefore, it might be proposed that the extent to which marketing practitioners might expect to benefit from the *explicit MEE* - and, by the same token, the degree to which they should be concerned about the negative impact of the *implicit MEE* - may be mediated by the current familiarity and popularity of the brand. In this respect, brand stimuli that are already familiar, relevant and salient to consumers may be subject to greater recognition memory following mere exposure; a condition that not only negates the influence of the (reverse) *implicit* MEE but enhances the frequency and size of the positive, *explicit* form of this phenomenon (as illustrated in figure 8.14, above). Contrary to previous indications, therefore, the *explicit* MEE might be most effectively applied as a means by which to sustain and reinforce favourable attitudes to established brands in large consumer markets, rather than generating initial preference for new, unfamiliar brands in niche segments. In this

respect, the potential advantages that the MEE might be expected to confer on popular, well-known brands may be considered alongside the *double jeopardy* phenomenon (McPhee, 1963); whereby small brands are doubly disadvantaged by the fact that their relatively small number of customers are also prone to be less loyal (or inert) than those of larger brands (see Ehrenberg *et al.*1990; Ehrenberg and Goodhart, 2002).

In summary, therefore, this thesis highlights the potential relevance and importance of the MEE in understanding, explaining and influencing the effects of marketing communication under conditions of low attention and audience involvement. In this respect, however, the current findings indicate that the direction and nature of this effect may depend on the extent to which consumers recognise marketing stimuli as having been previously encountered. Specifically, the explicit MEE appears to arise on the basis of conscious memory for prior exposure and has been found to create a positive preference-bias for marketing stimuli, whilst the implicit MEE appears to constitute a negative preference-bias on the basis of implicit memory alone. With this in mind, it may be proposed that the likelihood of each type of MEE occurring in the real-world consumption environment might be mediated by the level of actor involvement and the existing familiarity with the brand. Whilst the implicit MEE may, by definition, be expected to be facilitated by passive, automatic processing, and therefore extremely low levels of actor involvement at the point of decision-making, the opposite may be true of the explicit MEE. In this respect, cognitive engagement at the point of decision-making may be reasonably expected to increase the likelihood of stimulus retrieval and thus the positive influence of this form of the effect (in the absence of other meaningful

information). Furthermore, given that popular, established brands in large consumer markets are likely to be considered familiar and salient on a broad scale, it may be argued that the stimuli with which they are associated are more likely to attract brief switches attention, be easier to process during mere exposure, and thus give rise to subsequent recognition judgments and the positive impact of the explicit MEE (see Moray, 1959; Nielson and Sarason, 1981; Kurilla and Westerman, 2008). By contrast, largely unfamiliar brands in small, niche markets are likely to be subject to less frequent attention switching, less perceptual fluency during exposure, and thus lower levels of explicit recognition. As such, brand preference in these markets may be more susceptible to the negative influence of the implicit MEE. On this basis, the level of actor involvement and prior brand familiarity/popularity may constitute important considerations in the effective application of the MEE by marketing practitioners; an area that is discussed in the following section.

8.5. Implications for marketing practice

From a practitioner perspective, arguably the most relevant marketing application of the MEE is in improving the communication effectiveness of brief, repeated exposures to simple brand stimuli (e.g. names, logos and other imagery). In this respect, marketing research into the MEE - and the findings of this study in particular - may have implications for the selection of stimuli, the design, organisation and placement of advertising, and the integration of marketing imagery in multiple channels, across multiple media and between external and point-of-purchase environments. During the

course of this section, the practical implications of the current findings in each of these areas will be discussed. As an overview, however, it is important to acknowledge that these are related to a single prominent theme; namely, that the positive influence of the *explicit* MEE (and the negative impact of the *implicit* MEE) may be determined by the degree to which marketers create accurate (and perhaps confident and contextualised) recognition memory for previous exposure to the relevant stimuli.

Importantly in this respect, and with regard to the issue of subliminal advertising, the results indicate that whilst the reverse implicit MEE is indeed magnified under conditions of subliminal perception, the effect remains (albeit to a lesser extent) under conditions of supraliminal exposure (see chapter 7, page 342). This finding suggests that, whilst subliminal presentation may be a particularly effective way to eliminate recognition in an experimental setting, it is not a necessary condition for the implicit MEE. More significantly, perhaps, the negative impact of this form of the effect provides further reason for marketers and advertisers to reject the notion of subliminal advertising as an effective means of promoting positive attitudes towards products and brands. In this respect, the conclusions of this study go further than previous claims that the positive effect of subliminal advertising is negligible (e.g. Theus, 1994; Trappey, 1996) by demonstrating that it can in fact result in a *reduced* tendency to prefer the stimulus in question.

As such, marketers might be advised that, even under conditions of mere exposure, they should strive to ensure conscious attention, perception and elaboration to the extent that,

at the point of decision-making, the stimulus is recognised as having been encountered previously. The means by which this might be achieved are many and varied, and a full review of the vast literature regarding the enhancement of explicit memory is beyond the scope of this thesis. However, in order to more fully explain the implication that marketers can, and indeed should, seek to enhance recognition memory - even under conditions of fleeting and impoverished attention - it is perhaps useful to briefly review some of the most relevant aspects of this literature. These are therefore discussed in the subsection below, prior to a summary of the implications of this thesis for specific aspects of campaign planning.

8.5.1. Enhancing recognition memory under conditions of mere exposure

The means by which the encoding and retrieval of explicit memory might be enhanced has been the subject of a very large body of multidisciplinary literature. Whilst a full review of this work is beyond the scope of this thesis, one implication of the current findings is to highlight its relevance to marketers wishing to apply mere exposure principles to elicit *positive* affective response. By way of example, therefore, it is perhaps useful to discuss a number of key aspects of the memory literature in the context of this thesis; from overarching theories of memory to specific factors that may be expected to influence the encoding and retrieval of memory, even under conditions of mere exposure.

Firstly in this respect, it is important to acknowledge that there are a number of theories that seek to explain and predict how explicit memory occurs and may thus be enhanced (see Tulving and Craik, 2000 for a collection of relevant conceptual papers). Within the marketing literature reviewed in chapters 3 and 4, it would appear that by far the most commonly adopted theory of memory is that which is defined as 'levels of processing' (Craik and Lockhart, 1972). This is built around the proposition that memory for new external information will be more detailed and durable when it is subject to the "deep" processes of elaboration than when it is processed in a passive, superficial and shallow manner; an assumption that is pervasive in theories of consumer involvement and elaboration (see chapter 3, section 3.2.1, page 76). From this perspective, therefore, it would appear that mere exposure, by its very nature, prevents the kind of deep level processing that is necessary for ensuring and enhancing recognition memory. The implication of this for the application of mere exposure principles is that whilst some degree of explicit memory may occur, it is not possible to actively foster it without moving beyond the realms of the MEE; i.e. without extending the duration and nature of exposure to facilitate higher levels of attention, 'deeper' stimulus processing and greater elaboration. However, it should be acknowledged that the *levels of processing* perspective is far from being the only one that is relevant to marketing communication. In particular, two further theoretical constructs may be considered to be particularly germane in the context of the marketing-based MEE, as they accommodate the notion that explicit memory can be enhanced without the need for extended exposure duration and deep-level processing; these are the principles of *encoding specificity* (Tulving and Thomson, 1973) and *transfer appropriate processing* (Roediger and Blaxton, 1987).

The *encoding specificity principle* (ESP) has its origins in the proposition that, "specific encoding operations performed on what is perceived determine what is stored, and what is stored determines what retrieval cues are effective in providing access to what is stored" (Tulving and Thomson, 1973: 36). In line with this, Hill *et al.* (1997) observe that memory for advertising has been found to be enhanced when the cues presented in recognition tests are identical, or at least very similar, to those that were encoded during previous advertising exposures. In the context of this thesis, therefore, the implication for marketers is that recognition memory may be enhanced under conditions of mere exposure by replicating the perceptual features of the brand stimuli across all aspects of the marketing campaign, and in particular at the point of decision-making (e.g. via packaging and point-of-sale promotion).

However, whilst Hill *et al.* (1997) acknowledge that the replication of cues provides one explanation of their findings (i.e. enhanced memory for advertising), the fact that these accommodate a degree of variation in the features of the stimuli at encoding and retrieval prompts them to claim that it is not the nature of the cue that is important but the type of *processing* that is employed. Indeed, this notion is central to the principle of *Transfer Appropriate Processing* (TAP: Roediger and Blaxton, 1987); a construct that extends the *level of processing* perspective by proposing that it is the congruency, rather than depth, of processing during encoding and retrieval that mediates the robustness of recognition memory. In the context of mere exposure, this theory implies that, in light of the fact that brief, fleeting, passive exposures are unlikely to give rise to extended *semantic*

processing, it is important to provide the opportunity for recognition on the basis of *perceptual* fluency for the stimulus features alone. In essence, therefore, where ESP indicates the importance of stimulus congruency, the principle of TAP more clearly emphasizes the need for exact replication of the stimulus form throughout the marketing campaign; up to and including that which is encountered at the point of decision-making. On a broader note, however, it stresses the general principle of maximising the opportunity for *perceptual* processing each time the brand stimulus is encountered. In this respect, it highlights the relevance of four additional factors that may be expected to mediate the enhancement of recognition memory under conditions of mere exposure alone; repetition, interference, decay and stimulus characteristics.

With regard to the first of these, *repetition* is a central tenet of Zajonc's (1968) initial conceptualisation of the MEE. However, subsequent experimental research indicates that there may be an upper limit to the number of repetitions that positively enhance the size of this effect (see Bornstein, 1989). In light of this, it may be argued that whilst maximising the number of repeated exposures may enhance subsequent recognition memory for the brand stimulus, it may not necessarily enhance affective response in line with this. However, it should be stressed that evidence for 'wear-out' of the MEE at high levels of repetition is thus far limited to laboratory-based psychological studies using simple, abstract stimuli (see Bornstein, 1989). As such, it is possible that it is due to boredom and fatigue under experimental conditions that are somewhat removed from the typical marketing environment (see Bornstein *et al.*, 1990). As will be discussed in the following chapter, further research may thus be necessary to determine the

limitations of stimulus repetition as a means by which to enhance the explicit MEE in a marketing context.

Whilst repetition is primarily associated with memory encoding, however, two other factors should be considered that essentially constitute the processes of forgetting. The first of these is *interference*; "the process by which our ability to recollect some information is hindered by our exposure to some other information" (Kumar, 2000: 155). Within the marketing literature, the moderating influence of interference on memory for advertising stimuli has been found in relation to additional advertisements for competing brands (e.g. Burke and Srull, 1988; Keller 1987; Keller, 1991) and advertisements that utilize similar contextual imagery (e.g. colours, pictures, background designs, ad layout; see Kumar 2000). With regard to the first of these findings, it may be argued that the rapid growth in interference from competitive advertising in fact provides conditions that are conducive to the occurrence of the MEE in a marketing context. As such, whilst steps to reduce this form of interference may facilitate greater attention, elaboration and memory, they may also move marketers beyond the realms of the mere exposure paradigm. However, the study by Kumar (2000) may carry particular resonance within the framework of the MEE as it stresses the need to avoid the use of contexts and backgrounds that could conflict with those used in other marketing communications; highlighting the potential for reduced brand name memory under such conditions. In light of the additional need to limit the extent to which stimulus features (e.g. letters of the brand name) are cluttered by other information – and thus enhance the ease and speed with which they can be perceptually processed – these findings thus add

further weight to the importance of presenting the brand stimulus in isolation wherever possible. Within the context of this thesis, therefore, the relevance of *interference* research is that marketers might seek to enhance memory within the constraints of the mere exposure paradigm, not by reducing the occurrence of interference but by limiting the impact it has on the encoding and retrieval of recognition memory. A key implication of this is the need to avoid background and contextual overlap with competing marketing communication by presenting the brand stimulus in isolation where possible. Furthermore, it should be noted that the effects of interference have been found to lessen as familiarity with the brand stimulus increases (Alba and Hutchinson, 1987). In line with this, there is evidence to suggest that memory for the advertising of established, familiar brands is relatively invulnerable to interference effects (Kent and Allen, 1994; Unnava and Sirdeshmukh, 1994; Kent and Kellaris, 2001). In the context of this thesis, therefore, these latter findings may be seen to add further weight to the conclusion that the explicit MEE is more likely to occur, and thus be more relevant, in relation to established, well-known brands in large consumer markets

In addition to interference, however, recognition memory may be significantly reduced by natural *decay* in the strength (and thus the retrievability) of encoded memory over time (Spear, 1978). From the *levels of processing* perspective, mere exposure may be assumed to give rise to shallow processing and thus relatively weak memory traces that degrade quickly. As such, it would seem logical to conclude that reducing the delay between the final exposure and actual brand choice would maximize the possibility of

recognition memory at the point of purchase. The implication of this is that repeated exposures should stretch continuously from the external environment (e.g. via mass media and ambient advertising) into the purchase environment (via, for example, in-store, on-pack and online promotion); minimising the period of delay between the final exposure and the point of decision-making.

Finally, and in addition to repetition, the processes of forgetting (i.e. interference and decay) and perceptual matching, the specific characteristics of the stimulus may mediate the extent to which it is subsequently recognised following mere exposure. In this respect, brand stimuli that are already familiar and salient are more likely to be the subject of brief switches in attention (and thus more repeated focal exposures), enhanced processing fluency and subsequent recognition (see Moray, 1959; Nielson and Sarason, 1981; Kurilla and Westerman, 2008). On this basis, and with regard to lexical stimuli such as brand names, it may therefore be argued that high frequency words might be subject to similar processing advantages over low frequency words. At this point, however, it should perhaps be acknowledged that there is also some evidence to suggest that, whilst high frequency words are better *recalled*, they are less well recognized (Gregg 1976); a phenomenon that has been termed the *frequency paradox between recognition and recall* (Mandler, Goodman and Wilkes-Gibbs, 1982). However, the current findings do not support this paradox, with the mean rate of recognition for real-word brand names significantly higher than that for pseudo-word stimuli ($M=4.55$, $t=2.108$, $p<0.05$). As such, these results may further strengthen the conclusion that the explicit MEE is likely to be more relevant to established, well-known brands; or at least those that

make use of commonly occurring, familiar stimuli. Further to this, and in line with the *interference* research discussed previously, Alba *et al.* (1992: 414) suggest that, "a poorly processed peripheral cue may be highly memorable because of its inherent simplicity or a lack of interference from similar competing information."

In summary, therefore, whilst the enhancement of recognition memory under conditions of mere exposure appears to be somewhat paradoxical from the widely adopted *levels of processing* perspective (Craik and Lockhart, 1972), it is accommodated by the principles of *encoding specificity* (Tulving and Thompson, 1973) and *transfer appropriate processing* (Roediger and Blaxton, 1987). With this in mind, the specific implications of the current study for marketing campaign planning are summarized below.

8.5.2. Summary of implications for marketing campaign planning

In light of the discussion above, the conclusions of this thesis may be seen to have significant implications for the planning and execution of marketing communication campaigns; specifically in relation to the selection and presentation of brand stimuli for positive MEEs, media planning and integration, and the measurement of low attention advertising effects in a cluttered, complex and dynamic environment. The purpose of this section, therefore, is to outline the practical implications of the current study in each of these areas.

8.5.2.1. Brand stimulus selection, design and presentation

As previously stressed, the findings of this study imply that the key to maximising the positive (and minimising the negative) influence of mere exposure to marketing communications is to establish accurate recognition memory at the point of decision-making. The means by which this might be achieved were discussed in section 8.5.1 (page 388), and highlight the potential implications for the selection and presentation of brand stimuli in marketing communications. For example, recognition memory may be enhanced under conditions of mere exposure by the use of stimuli with perceptual features that are familiar to the target audience (rather than those that are novel and unique). Such familiarity may be expected to enhance attention switching, perceptual processing and the experience of recognition memory at the point of decision-making (see Moray, 1959; Nielson and Sarason, 1981; Kurilla and Westerman, 2008). However, familiarity is not the only factor that might enhance processing fluency and thus recognition memory under conditions of mere exposure. For example, visually clear, isolated and coherent stimuli may also be relatively easy to process (Whittlesea, 1993), and thus may be considered more likely to give rise to encoding, subsequent recognition and the positive *explicit* MEE.

Further to the selection and design of brand stimuli, however, the findings of this study also have implications for their presentation during the execution of marketing campaigns. Firstly, recognition memory might reasonably be expected to be enhanced by maximising the number of repeated mere exposures to the brand stimulus; although it should be acknowledged that applied marketing research may be necessary to

establish the point at which ‘wear-out’ might occur in relation to the positive influence of repetition in natural media environments. Secondly, and in line with the principles of both *encoding specificity* (Tulving and Thompson, 1973) and *transfer appropriate processing* (Roediger and Blaxton, 1987), the perceptual features of these stimuli should be replicated as closely as possible across all aspects of the marketing campaign. Thirdly, and with specific regard to the TAP principle and the elimination of *interference* effects (see section 8.5.1, page 388), each exposure should, where possible, feature the brand stimulus in isolation, i.e. uncluttered by contextual, background and associated imagery.

8.5.2.2. Media planning and integration

With regard to media strategy it is perhaps important to stress that the current findings re-assert the relevance of the MEE under conditions of low audience involvement. Indeed, by definition, the nature of mere exposure is such that it severely restricts the opportunity for elaborative processing and, in many cases, may be the product of a lack of motivation to attend to, and engage with, the marketing stimulus. An obvious implication of this for media planning is that mere exposure in the broader social environment is most likely to be facilitated by the use of a range of media that are associated with the rapid, repeated presentation of simple brand stimuli; for example, TV, outdoor, ambient and online advertising. In this respect, a campaign that harnesses the principles of mere exposure is thus likely to benefit from *media-neutral* planning (see Jenkinson, 2006).

However, perhaps the most important implication of the current findings for media planning is that, whilst the use of multiple media is essential for maximum coverage and stimulus repetition, the campaign as a whole must be closely integrated to ensure that the perceptual features of the stimulus, and the context in which it is presented, are closely replicated each time it is encountered. As such, it may be implied that the most effective application of mere exposure principles in marketing campaigns will be achieved in the context of *Integrated Marketing Communication* (IMC); a concept that stresses the need for consistency and cohesion in message content, design and style across multiple media channels (see Kitchen and Schultz, 2000);. Similarly, it may thus be proposed that an understanding of the principles of mere exposure – and the findings of this study in particular - may have significant practical implications with regard to the planning, execution and measurement of IMC campaigns under conditions of extremely low audience involvement. Furthermore, it is important to stress that such integration should extend from the general media environment to the purchase environment (e.g. a physical store or the relevant web pages of an online retailer), to minimise the delay between exposure and choice, and thus limit the extent of decay in explicit memory. In this respect, the effective application of mere exposure principles is thus likely to benefit from *recency* planning (see Ephron, 1997); an activity that is founded on the notion that "an ad exposure has more sales potency when it occurs close to the purchase occasion" (Reichel and Wood, 1997: 66).

8.5.2.3. Measurement

Finally, the findings of this study have implications for the measurement of communication effects in the context of marketing campaign planning. Firstly in this respect, the fact that both the explicit and implicit form of the MEE may occur naturally as a result of clutter and complexity in the consumption environment, and that the latter may in fact have a negative impact on affective response, may imply that marketers should seek to identify and measure the influence of the MEE (in both its forms), regardless of whether there is an active attempt to manipulate it. However, it is acknowledged that measurement is most likely to be undertaken to establish the effectiveness of an intended mere exposure strategy. To this end, one of the main implications of the current findings is to highlight the importance of measuring recognition and recall for prior exposure to the relevant brand stimuli, as this provides the necessary context for the (positive) explicit MEE. Further to this, however, marketers should then seek to establish the relationship between exposure, memory and affective response to identify the extent to which the explicit (and indeed, implicit) MEE exerts an influence on the formation of consumer attitudes. Finally, these measures might then be correlated with those regarding brand choice and purchase to examine the extent to which attitudes that are formed on the basis of mere exposure subsequently influence purchase behaviour. This is an issue that is not addressed in the current study but is one of a number of potential directions for further marketing research in this field; all of which will be discussed in chapter 9 (page 423). Prior to this, however, it is important to acknowledge that whilst the primary implications of the current study are for marketing practice, it also gives rise to some issues that may be of

direct relevance to consumers and the organisations that are tasked with representing their interests. These are therefore discussed in the following section.

8.6. Implications for consumers

From a consumer perspective, this study highlights the fact that attitudes to brand stimuli may (to some extent) be a function of mere exposure. For the most part, however, it might be argued that the MEE serves as a useful heuristic under conditions of extremely low actor involvement; facilitating more rapid and less effortful decisions where these are required. By definition, such decisions are likely to be characterised by a low level of risk and personal relevance and so the perceived impact of an 'incorrect' decision is likely to be relatively low. Furthermore, it may be reassuring for consumers to note that this study provides no support for the use of subliminal presentation techniques in marketing communications. In fact, the findings imply that the entirely non-conscious processing that underpins the implicit MEE is likely to result in a negative, rather than positive, affect-bias toward the brand stimulus in question.

However, it may be important for consumers to acknowledge that recognisable occurrences of mere exposure to their preferred brands may contribute to brand inertia. Whilst this may not be perceived to be problematic, it may nonetheless be important for consumers to be aware that, whilst it may be experienced as genuine and continuous brand preference – and interpreted by marketers as brand 'loyalty' – the tendency to routinely prefer one brand over another may in fact be due to an irrational, non-conscious reduction in the propensity for brand switching. As such, consumers may

miss out on the benefits of this simply as a result of exposure-induced inertia that they are not necessarily aware of. Furthermore, it was previously noted that the familiarity-heuristic that characterises the explicit MEE may also be utilised in relatively high-involvement decisions when there is an absence of other meaningful information (see chapter 8, 372-373). A sub-optimal decision in these circumstances may lead to more significant financial, physical, psychological and social consequences. Under such conditions, therefore, consumers may benefit from a conscious awareness of the irrational influence of familiarity that is based on nothing more than mere exposure. As Chartrand (2005: 2009) explains; "awareness is important to aid consumers in controlling and improving their decisions. Awareness must precede control."

However, perhaps the most significant implication of this thesis for consumers is not that marketers might be discouraged from adopting subliminal means of persuasion, but rather that they might be more motivated than ever to ensure attention, memory and thus the positive impact of the explicit MEE. In this respect, the current findings may have negative consequences regarding the ubiquity and intrusiveness of marketing communication. For example, the recent trend for online advertising 'pop-ups' to interrupt the activities of internet users by appearing in the centre of focally attended material (e.g. a news article) might represent a particularly effective means by which to engender the explicit MEE. In this respect, whilst audiences may immediately search for the 'button' by which they can end this uninvited intrusion – all the while distracted from focussing and elaborating on the message claims – the brief periods for which simple stimuli (such as brand names) remain in focal attention, the surprising manner of

their appearance and the repeated nature of these intrusions are likely to be sufficient conditions for the explicit MEE in a marketing context. From a public policy perspective, therefore, fears that the MEE constitutes a revival of the art of 'hidden persuasion' are not only unfounded but may actually divert attention away from the real threat to consumers' rights of privacy and respect from increasingly aggressive attempts to 'grab' attention, if only for the briefest of moments. Marketing campaigns that seek to harness the power of the explicit MEE are likely to exacerbate this problem.

Given all of this, however, it should be stressed that the MEE is not an invention of marketers and advertisers. Rather, it is a naturally occurring phenomenon that, together with a raft of other influences, may be expected to contribute to the continuous and largely unconscious shaping of preferences and attitudes in all aspects of life. As such, whilst greater awareness of the mere exposure phenomenon may be important in empowering consumers to make more effective decisions, and regulation may be implemented to enhance the degree to which consumers might reasonably control how and when they are exposed to marketing communication, the influence of mere exposure should not be considered to be necessarily dangerous or malign. Indeed, it may even be considered beneficial to the extent that it facilitates the formation of rapid, low involvement preferences and thus allows consumers to deal with the vast array of other information they are required to process every day.

8.7. Summary and Conclusion

In summary, therefore, the empirical results in this thesis indicate that the MEE can occur when consumers are repeatedly and fleetingly exposed to marketing stimuli under conditions of extremely low audience involvement. More importantly, however, they also imply that this effect may take one of two forms; termed *explicit* and *implicit* to reflect the distinct processes of memory by which they occur. The *explicit* MEE occurs when audiences exhibit objective recognition memory for having been previously exposed to marketing stimuli, and can lead to a *positive* affect-bias when these stimuli are subsequently encountered. The *implicit* MEE occurs when consumers *do not* exhibit conscious, objective familiarity with marketing stimuli to which they have been repeatedly and fleetingly exposed (e.g. brand names), and can lead to a *negative* affect-bias when these stimuli are subsequently encountered. The former is enhanced by factors that facilitate stimulus encoding and retrieval, even under conditions of low audience involvement (e.g. focal attention, ease of stimulus processing and short delays between exposure and decision-making), whilst the latter is facilitated by subliminal perception, preattentive analysis and other factors that prevent the encoding and retrieval of explicit memory for the stimulus exposure.

Taken together, these conclusions underpin the overarching outcome of the empirical work in this thesis; a dual-processing model of mere exposure effects in the context of marketing communication (as illustrated in figure 8.2, page 351). On this basis, it is argued that the originally proposed model of the creation and influence of the MEE in a

marketing context (see figure 8.10, page 379) requires revision to incorporate the potential for both positive and negative affect-bias; whether this occurs as a natural result of environmental conditions or is manipulated via the design, organisation and placement of marketing communication (see figure 8.12, page 381).

With regard to psychological theory, the broad implication of the proposed dual-processing model is that it may be seen to accommodate what would appear to be conflicting theories of mere exposure. In this respect, those theories that are founded on the assumption that affect arises on the basis of stimulus recognition (e.g. Berlyne, 1970; Sawyer, 1981; Winkielman and Cacioppo, 2001) may be considered to be potentially valid in the context of the *explicit* MEE. By contrast, the theories of non-specific activation (Mandler *et al.*, 1987) and perceptual fluency/attribution (Bornstein and D'Agostino, 1992, 1994) would appear to provide a possible explanation of the *implicit* MEE. Furthermore, the proposed model may also serve to reconcile seemingly conflicting evidence that the MEE might be enhanced by both subliminal perception (Bornstein, 1989; Bornstein and D'Agostino, 1992) and the experience of clear, confident recollection (Lee, 2001b; Wang and Chang, 2004). In this respect, it may be argued that the former is explained by the current finding that the (reverse) implicit MEE is larger than its explicit counterpart and magnified by subliminal perception, whilst the latter reflects the possibility that the (positive) explicit MEE may be enhanced by the conscious experience of recollection.

From a marketing perspective, the key aspect of the proposed dual-processing model is that the two forms of mere exposure it expounds are qualitatively different. As such, both the size and direction of affect-bias may be different in each case. Specifically, on the basis of this study, it would appear that the positive influence of mere exposure in the presence of recognition memory may be reversed in the absence of this condition. Furthermore, the degree to which this negative effect occurs is magnified by the extent to which the influence of recognition memory is restricted. In a practical sense, therefore, the overarching implication for marketers and advertisers is that mere exposure should not be considered to be akin to subliminal advertising; a conclusion that may be reassuring to both practitioners and consumers alike. Indeed, in order to harness the positive (and negate the potentially negative) effects of mere exposure, it may be necessary to maximize the extent to which brand stimuli are recognised as having been previously encountered. In turn, this has implications for the selection, design, presentation and integration of marketing stimuli as a means of ensuring attention, ease of processing and recognition memory for extremely fleeting exposures. Given the inherent advantages that are associated with familiar and salient stimuli in this respect, it may also imply that the positive effects of mere exposure are most relevant to the maintenance of favourable attitudes towards well-known brands in large consumer markets.

From the consumer's perspective, however, one negative consequence of this may be that the commercial application of mere exposure principles could result in an increasingly intrusive and inexorable barrage of marketing communication. Should this

be the case, the primary challenge for regulators and public policy-makers may be to protect consumer privacy rather than prevent subliminal manipulation. However, in considering the potential implications for marketers and consumers alike it is necessary to identify and acknowledge the limitations of the current study and the necessity for further research into the marketing-based MEE. Both of these areas are therefore discussed in the final chapter, following a summary of the main contributions of the thesis.

Chapter 9

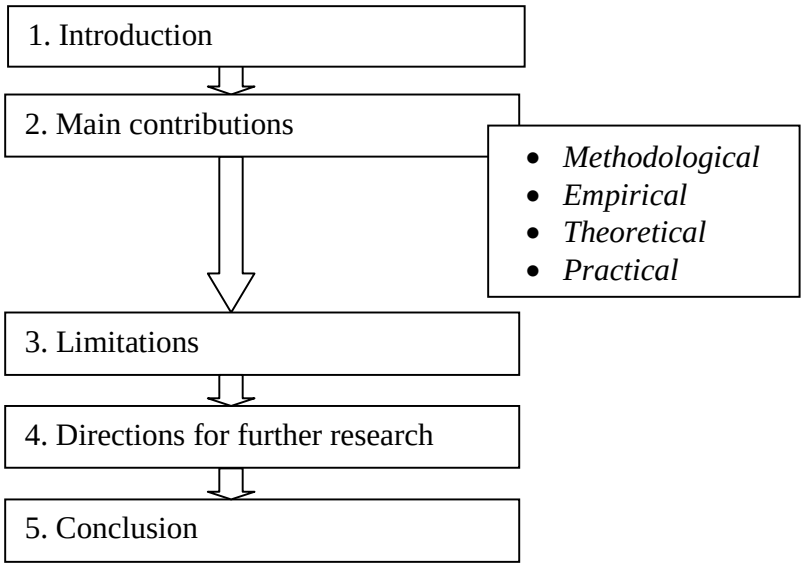
Contributions, limitations and

directions for further research

9.1. Introduction

During the previous chapter it was noted that the overarching outcome of the empirical work in this thesis is a dual-processing model (see figure 8.2, page 351) that is underpinned by a number of specific findings regarding the existence, size, direction and nature of the marketing-based MEE (see chapter 7, page 345). The implications of this for theoretical understanding of the MEE, in the realms of both psychology and marketing, were discussed at length, prior to the distillation of the potential practical implications for marketers and consumers. With all of this in mind, the purpose of this final chapter is three-fold; a) to provide a summary of the main contributions of the thesis, b) to acknowledge the limitations of the current study and, c) to identify directions for further research into the marketing-specific effects of mere exposure (see figure 9.1). The chapter begins, therefore, with an outline of the theoretical, practical and methodological contributions of the thesis.

Figure 9.1: Structure of Chapter 9



9.2. Main contributions of the thesis

In the interests of clarity, the primary contributions may be divided into three categories; empirical, theoretical and managerial/practical. However, it is should be noted that the thesis may also be considered to make significant methodological contributions to mere exposure research, and in particular the measurement of the MEE. As such, the section begins with a review of these contributions, prior to summarising those that may be considered to be empirical, theoretical and managerial/practical respectively.

9.2.1. Methodological contributions

From a general perspective, an overarching methodological contribution of this thesis is the development of an approach that harnesses the extremely high degree of control and complexity of previous psychological experimentation to identify and explore the marketing-based MEE under conditions of low involvement. More importantly, perhaps, this is done in such a way as to minimise the need for specialist software and maximise the use of simultaneous data collection. As such, it constitutes a robust yet practical approach by which to identify and measure the potential effects of mere exposure in relation to marketing stimuli and brand-related judgments.

However, arguably the most important methodological contributions are associated with the measurement of the MEE. Firstly in this respect, the thesis challenges the validity of

simply measuring affective response when recognition rates in the sample are at the level of chance as a means by which to identify the effects of mere exposure. The key problem with this approach is that it does not reveal the relationship between recognition and affect for each participant and with regard to each of the target stimuli. As such, it is not possible to draw conclusions as to the mediating or moderating influence of recognition on affective response (as explained in chapter 6, page 238-241). In response, an alternative approach was developed that specifically measures rates of preference in the presence and absence of recognition for each participant (see chapter 7, page 312). In this way, two distinct forms of the MEE were identified and explored during the course of the thesis; an outcome that would not have been possible if the overall rate of preference had simply been compared against the overall rate of recognition. Secondly, this thesis highlights an important factor that is, as yet, largely unrecognised in the mere exposure literature; namely, the possibility that the observed effect is the product of stimulus characteristics that render it relatively easier to process, rather than exposure-induced fluency per se (see chapter 2, page 57). This is derived from research into the *false familiarity effect* (Whittlesea, 1993), and potentially provides an alternative explanation for experimental evidence of the MEE. In response, the current thesis develops two potential methods by which to distinguish between the FFE and MEE. The first consists of specifically linking the observed effect to changes in the exposure phase; an end that was achieved by demonstrating that subliminal perception during exposure gave rise to a significantly larger implicit MEE than supraliminal perception (a finding that is in line with studies of the 'non-conscious MEE' in the extant psychology literature; see chapter 2, page 29). On reflection,

however, a more straightforward approach might be to simply undertake an extended pretesting phase (with a larger sample) in which the preference rate for each stimulus pair is measured in the absence of prior exposure. By whichever means it is achieved, however, this thesis highlights the importance of incorporating a method by which to distinguish the effects of exposure from those of other sources of processing fluency, and offers potential solutions in this respect.

9.2.2. Empirical contributions

In addition to providing a robust validation of the existence and size of the MEE in a marketing context, perhaps the most important empirical contribution of the thesis is that it demonstrates:

a) the mediating influence of recognition memory on the *direction* of the MEE; and
b) the differing nature of the processes that underpin this phenomenon in the presence and absence of recognition memory.

As noted in the previous chapter, both of these findings are somewhat surprising and represent significant contributions to knowledge and understanding of the MEE in the realms of both psychology and marketing. For example, inherent in the former is the discovery of a reverse MEE in the absence of stimulus recognition; one of only a few occasions that this result has been observed in four decades of mere exposure research, but the second time it has occurred in the very small subset of this research that is published in the marketing domain (alongside Lee, 1994). Even more surprising,

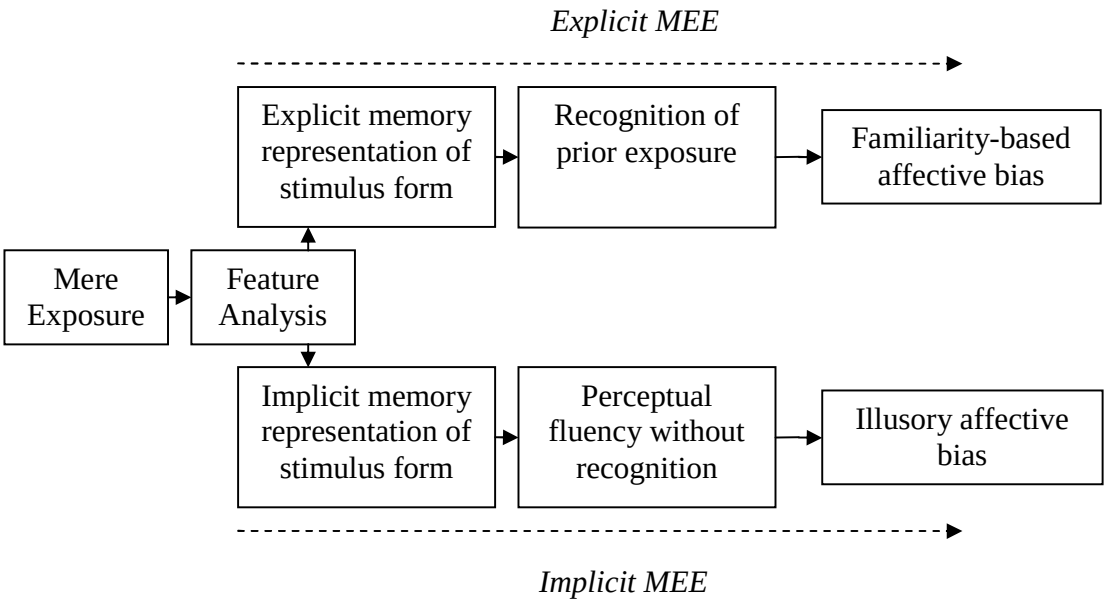
however, is the discovery that the *direction* of the MEE is mediated by recognition memory and, on the basis that it is influenced differently by stimulus type (and perhaps subjective recollection) in the presence and absence of this, appears to arise on the basis of two different processes of memory (i.e. implicit and explicit). As discussed in chapter 8 (section 8.4.2, page 365) this may have significant implications for how the MEE is conceptualised in both psychology and marketing theory; as summarised in the following section.

9.2.3. Theoretical contributions

On the basis that both the direction and nature of exposure-induced preference is found to be mediated by recognition memory, the main theoretical contribution of this thesis is the proposal of a dual-processing model of mere exposure in a marketing context (see figure 9.2, page 413). This extends current conceptual understanding of the MEE to incorporate the possibility that there are two forms of the effect, arising on the basis of implicit and explicit memory processes respectively. With regard to typical marketing stimuli, therefore, it would appear that exposure-induced preference bias may only be positive when it is accompanied by recognition memory (i.e. the *explicit* MEE). Furthermore, this would appear to be enhanced by prior perceptual familiarity (i.e. the real-word nature) of the stimulus. In addition, and more fundamentally perhaps, there is some indication (and logical reason to assume) that this form of the MEE is further augmented by clear, contextual, explicit recollection of previous stimulus exposure. By contrast, mere exposure to marketing communication that does not give rise to subsequent recognition memory at the point of decision-making may result in a

preference-bias for alternative stimuli (i.e. a reverse *implicit* MEE). This effect does not appear to be mediated by brand name type or the (false) subjective experience of memory.

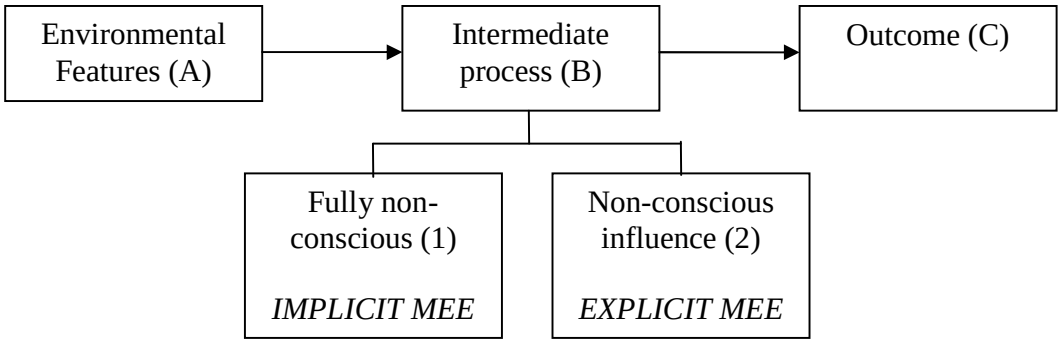
Figure 9.2: Dual-processing model of the marketing-based mere exposure effect



On the one hand, therefore, it may be argued that the major contribution of this thesis has been to distil a marketing-based model of the MEE (see figure 9.2); one in which the nature of the phenomenon in this particular domain is seen to differ from that which is evident in more abstract psychological studies. However, in the continued absence of a generic theory of mere exposure (see chapter 2, page 36), it may be reasonably proposed that the model above may have important implications for theoretical explanation of the MEE in a broader sense. Specifically, it could provide a means by which to reconcile a number of competing accounts of the MEE in the psychology

literature, and the seemingly contradictory findings that the size of the effect is enhanced by both subliminal perception (re. implicit MEE) and confidence in memory judgments (re. explicit MEE); as discussed in chapter 8 (page 361). In this respect, therefore, the thesis might be considered to provide an important contribution to the continuing search for a generic theory of mere exposure in the psychology literature; a search that is now entering its fifth decade.

Figure 9.3: The non-conscious nature of the MEE



Further to the proposed dual-processing model, however, and in relation to marketing theory in particular, this thesis makes the case that the MEE constitutes a potentially important phenomenon in the specific domain of *non-conscious consumer processing*. Importantly, however, it presents both theoretical and empirical evidence to clearly distinguish this phenomenon from that of subliminal advertising; demonstrating in fact that subliminal mere exposure is likely to result in *negative* affective response to a given marketing stimulus. Additionally, the thesis responds to Chartrand's (2005) call for researchers to identify the specific processes that occur outside of awareness in phenomena that are simply deemed to be 'non-conscious.' In this respect, it contributes

to a deeper understanding of the MEE by specifying that the *implicit* form of this effect is the product of entirely non-conscious processing, whilst its *explicit* counterpart should be considered to be non-conscious on the basis that consumers are unaware of the link between exposure and preference (despite experiencing both conscious perception and memory of the exposed stimuli; see figure 9.3). As illustrated in chapter 8 (section 8.5, page 386), the conceptual conclusions of this thesis have potentially important implications for marketing practitioners, whether or not they are actively involved in the application of the MEE as a means of persuasive communication. In this respect, the main managerial contributions of the thesis are summarised below.

9.2.4. Managerial/practical contributions

From a managerial perspective, the work contained in this thesis is most relevant to the field of marketing communication. In this respect, perhaps the most general implication is that *mere exposure* may influence attitudes towards marketing stimuli that are perceived fleetingly, repeatedly and at low levels of audience attention and involvement. Given that the conditions for such exposure occur naturally in a wide range of consumer markets, it may be important to recognise (and perhaps identify) the extent to which the MEE occurs; regardless of whether it is an intentional part of the communication strategy. However, the most important managerial contributions relate to the application of the MEE as a means by which to enhance the effectiveness of marketing communication. In this respect, and in direct contrast to the principles of subliminal advertising, the thesis highlights the importance of ensuring conscious

attention and *memory* for marketing stimuli that are encountered under conditions of mere exposure. This may be critical for the creation of the positive, explicit form of the MEE. Furthermore, mere exposure to brand stimuli that does not give rise to subsequent stimulus recognition might be expected to have a negative influence on consumer attitudes.

A brief discussion of some of the means by which attention and memory may be enhanced under conditions of mere exposure was provided in the previous chapter (section, 8.5.1, page 388); during which the potential importance of familiarity-induced fluency was noted. With this in mind, it should be acknowledged that a further managerial implication of this thesis is to highlight the relevance of the MEE to well-established, popular brands in large consumer markets. To explain; it was previously acknowledged that this phenomenon may be most relevant in situations where consumers have little experience of the product category, no established routines or habits and no preconceived attitudes towards the brands between which they must choose (see chapter 3, page 120). Whilst the current study does not dispute this with regard to the negative influence of the implicit MEE, it highlights the fact that these conditions are not necessary for the explicit MEE, nor perhaps even conducive to it. In this respect, it is argued that the degree of attention and memory that is required to ensure the MEE has a positive impact on brand perceptions may be facilitated by the familiarity-induced processing fluency of well-known brands. Furthermore, the high frequency with which consumers might be expected to encounter communications for 'mass market' consumer brands, and the extent of the revenues involved (often on a

multinational scale), mean that even the moderate influence of mere exposure may conceivably result in substantive changes in sales and revenue. As such, an important managerial contribution of the current thesis is to highlight the fact that the most effective application of the MEE in marketing may be to continuously and passively reinforce existing positive attitudes to well-known brands and thus *prevent* (rather than stimulate) brand switching.

In drawing this thesis to a close, however, it should be acknowledged that it constitutes an *independent* investigation of the potential influence of mere exposure to marketing communications. As such, its implications are not restricted to managers in the fields of marketing and advertising, but also to those tasked with the protection of consumer interests. In this respect, the main contribution of the thesis is to highlight the fact that the marketing-based application of the MEE does not necessarily constitute a form of subliminal advertising. Indeed, a deeper understanding of the principles of mere exposure amongst marketers, advertisers and consumers may serve to eliminate any remaining misconceptions of subliminal presentation as an effective means of persuasion in this domain. Rather, this thesis raises the possibility that the biggest threat to consumers from the application of the MEE in marketing communication may come from associated attempts to ensure attention and recognition, even under conditions of fleeting exposure. In this respect, the implications of increasingly frequent, intrusive and aggressive attempts to capture the attention of consumers, even for the briefest of moments, could be considered at best undesirable, and perhaps even dangerous (for example, where the attention of drivers is continuously distracted by such

communication). As such, the main contribution of this thesis from a public policy perspective is perhaps to flag the potential for increasingly ubiquitous and intrusive attempts to manipulate the attention of consumers as a means of harnessing the *explicit* MEE.

Finally, and with regard to the empowerment of consumers, both Chartrand (2005) and Cialdini (2007) argue that the key factor in avoiding the unwanted effects of non-conscious processing is awareness of the source, nature and outcomes of these responses. This thesis makes an important contribution in this respect by identifying the specific nature of the non-conscious processing that occurs in relation to two different forms of the MEE. Whilst it may, by definition, be impractical for consumers to identify the influence of the implicit MEE in the formation of attitudes, the same may not be true with regard to the explicit form of this effect. In this respect, the possibility that affective response might simply be a function of mere exposure alone may be acknowledged by consumers who cannot readily explain their brand preferences; affording them the opportunity to negate its influence on choice behaviour if required.

In drawing this thesis to a close, however, it is of course important to consider its conclusions and contributions in the light of a number of potential limitations; both in terms of the *design* and *scope* of the experimental research around which it is built. These factors are therefore discussed in remainder of this chapter, along with their implications for future marketing research into the effects of mere exposure.

9.3. Limitations

As noted at the outset (section 1.4, page 7), one of the primary aims of this thesis has been to address the limitations of previous marketing research and thus provide a robust experimental investigation of the MEE in a marketing context. To this end, a number of important methodological advancements are incorporated in this study; including a relatively large sample, use of the optimum number of items/trials, relatively precise exposure control, the measurement of perception, and a within-subject comparison of affective response in the presence and absence of recognition. Details of these, and indeed all, aspects of the research design were provided in part II of the thesis. At the same time, however, a number of potential methodological limitations were identified and discussed at length during chapter 6. To recap, these may be summarised as follows:

a) Partial, rather than, full randomisation of stimulus presentation in the exposure and task phases of the experiment (see section 6.8, page 282)
b) The limited reliability of quantitative indicators relating to likely perception, recognition and recollection rates in the main experiment; a consequence of small sample sizes in each of the 5 phases of pretesting (see section 6.7, page 270)
c) The possibility of contamination in the 'subliminal' and 'supraliminal' groups; a consequence of measuring perceptual experience of the exposure phase in general rather than for each item in particular (see section 6.3.1.1, page 246)
d) The required preference judgment (i.e. to select a preferred brand name for a proposed new product) may not necessarily be considered to be a 'typical'

consumer evaluation in the natural environment (see section 6.2.1, page 228)

e) Whilst forced choice tests provide a robust indication of the pattern of discriminatory preference (and exposure-induced changes to this), they do not necessarily indicate the *extent* of attitudinal shifts; i.e. the question of whether participants marginally or greatly prefer one stimulus over another is not addressed (see section 6.2.2, page 233)

Detailed explanation of the necessity of these potential limitations and, perhaps more importantly, the steps taken to minimise their impact in this study was provided in chapter 6 (as indicated by the section/page references for each of the above points). Additionally, however, it should be noted that manipulation checks have subsequently illustrated that perception and recognition rates in the main experiment were generally in line with those indicated during pretesting (see page 303, and appendix III), whilst the relative size of the preference biases observed in the subliminal and supraliminal groups are consistent with those observed in Bornstein's (1989) seminal meta-analysis; indicating that the impact of any group contamination in this respect is negligible (see appendix III for more detailed discussion).

At this point, however, it is perhaps important to acknowledge the potential for one further limitation regarding the measurement of the MEE in this study; and in particular, the refinement of reported preference judgements into four dependent variables. These essentially reflect, for each participant, the mean rate of preference for the target and non-target stimuli when these judgments were made in the presence and absence of

recognition memory respectively (see chapter 6, page 239). As such, they are calculated on a denominator that varies from participant to participant. In this respect, some may have a relatively balanced profile in terms of their recognition rates across the 12 choices; indeed a total absence of recognition memory would be expected to result in a chance rate of 6 stimuli correctly identified and 6 incorrectly so. Others, however, may exhibit an uneven ratio of correct and incorrect recognition judgments (either by chance or otherwise); e.g. they may correctly identify 9 of the target brand names as recognised, whilst incorrectly 'recognising' 3 of the non-targets. In principle, therefore, it is acknowledged that this situation could give rise to differences in reliability of the effects observed between the two types of profile. However, in this study the same overall pattern of effects is evident in the results of within-group analyses of 'balanced' and 'unbalanced' participants, and no significant between-group differences are observed in the dependent variables (as illustrated in figure 9.4).

Figure 9.4: Comparison of dependent variable results for cases in which recognition memory is 'balanced' (i.e. close to chance) and 'unbalanced' (i.e. significantly higher or lower than chance)

Group Statistics

	Balance of pref choices made under conditions...	N	Mean	Std. Deviation	Std. Error Mean
Mean target preference rate in the absence of recognition	Balanced (min 5 and max 7 in each memory condition)	81	.368	.2314	.0257
	Unbalanced (<4 in one condition and >8 in the other)	72	.407	.3024	.0356
Mean non-target preference rate in the absence of recognition	Balanced (min 5 and max 7 in each memory condition)	81	.6321	.23138	.02571
	Unbalanced (<4 in one condition and >8 in the other)	72	.5943	.30252	.03565
Mean target preference rate in the presence of recognition	Balanced (min 5 and max 7 in each memory condition)	81	.5544	.21008	.02334
	Unbalanced (<4 in one condition and >8 in the other)	73	.5521	.24006	.02810
Mean non-target preference rate in the presence of recognition	Balanced (min 5 and max 7 in each memory condition)	81	.4456	.21008	.02334
	Unbalanced (<4 in one condition and >8 in the other)	73	.4495	.23988	.02808

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Mean target preference rate in the absence of recognition	Equal variances assumed	5.572	.020	-.899	151	.370	-.0389	.0433	-.1244	.0466
	Equal variances not assumed			-.885	132.319	.378	-.0389	.0439	-.1258	.0480
Mean non-target preference rate in the absence of recognition	Equal variances assumed	5.671	.018	.873	151	.384	.03779	.04328	-.04772	.12330
	Equal variances not assumed			.860	132.289	.391	.03779	.04396	-.04915	.12474
Mean target preference rate in the presence of recognition	Equal variances assumed	1.267	.262	.066	152	.948	.00239	.03628	-.06928	.07406
	Equal variances not assumed			.065	143.966	.948	.00239	.03653	-.06981	.07459
Mean non-target preference rate in the presence of recognition	Equal variances assumed	1.222	.271	-.107	152	.915	-.00390	.03626	-.07554	.06774
	Equal variances not assumed			-.107	144.012	.915	-.00390	.03651	-.07606	.06827

Whilst it is thus acknowledged that certain aspects of the experimental design may be subject to potential limitations, it is argued that these are largely unavoidable in the broad context of the study and do not appear to have significantly influenced the results.

Nevertheless, the fact that they *could* have done so perhaps requires that they are acknowledged as *technical limitations* in this thesis; not least because of their potential implications for future mere exposure research. With this in mind, a detailed summary of these issues is provided in appendix III; the intention of which is to provide a useful resource for experimental researchers in the field, and further explanation and clarification for all readers where required. However, the limitations of this thesis are not confined to procedural aspects of experimentation and analysis. Indeed, perhaps the most significant of these are not related to what has been studied (and how), but rather to what has *not* been empirically addressed. The parameters within which this study should be considered are therefore discussed in the following section, alongside their implications for further marketing research into the MEE.

9.4. Empirical parameters and directions for further research

In addition to the technical limitations summarised above (and discussed at length in chapter 6 and appendix III), it is important to clearly identify the parameters of the empirical work in this thesis, and their implications for further research. In this respect, the limits of the current study may be most effectively explained in the context of the three major research directions to which they give rise; a) replication and validation, b) extension via experimentation, and c) extension via applied research. In this penultimate section, therefore, each of these areas is discussed with a view to providing a detailed understanding of the boundaries of the current thesis, and a clear trajectory for the continuation of mere exposure research in the marketing domain.

9.4.1. Replication and validation

Given the somewhat surprising nature of the findings, and the relative scarcity of marketing research that is conducted specifically within the mere exposure paradigm, it is perhaps first important to stress the need for replication of the current findings; and, more broadly, validation of the proposed dual processing model (see figure 8.2, page 351). In particular, further marketing research may be necessary to validate the notion that the two forms of the MEE to which it refers *(implicit* and *explicit*) are indeed qualitatively different. Furthermore, this stream of research might also seek to address the question of whether the observed directional differences (and in particular the reverse *implicit* MEE) may be expected to occur consistently in the marketing domain. To this end, it may be useful to highlight two particular ways in which future marketing research might be developed to test and validate the conclusions of this thesis.

Firstly, it was acknowledged in chapter 2 (page 29) that, whilst the MEE is assumed to be enhanced by the absence of recognition, experimental evidence for this is drawn from studies that use subliminal exposure to eliminate the possibility of explicit memory. In light of the widespread scepticism that has come to characterise attitudes towards subliminal advertising, it was therefore proposed that a pressing challenge for marketing research is to validate the assumption that it is conscious memory and not perception that moderates the MEE (see chapter 3, page 114-115). As such, a primary objective of the current study was to examine the influence of recognition memory on the effects of *mere exposure* (i.e. that which is just perceptible; Zajonc, 1968). To this

end, numerous exposure durations were pretested with the intention of identifying the point at which *most* participants reported supraliminal perception of the target stimuli. The fact that a minority did not was considered an important indicator that the majority were in fact experiencing stimuli that were 'just' perceptible (see chapter 6, page 245). Whilst the potential opportunity for comparison between the naturally occurring conditions of *subliminal* and *supraliminal* perception was acknowledged, therefore, so too was the fact that this did not at the outset constitute a primary objective of the study. However, given the emergence of this factor as an effective means by which to distinguish between the influence of mere exposure and other fluency effects (e.g. *false familiarity*; Whittlesea, 1993) in the results of forced-choice preference tests (see chapter 7, page 340), such a comparison could be utilised as a central element of further research and a means by which to validate the proposed dual-processing model (see figure 8.2, page 351).

Secondly, a potentially interesting implication of the current findings is that, whilst they validate the notion that low actor involvement is conducive to the implicit MEE (Chung and Szymanski, 1997; Baker, 1999; Fang *et al.*, 2007), they indicate that the opposite might in fact be the case with regard to the explicit MEE; although perhaps only in the absence of other meaningful information on which consumer attitudes and decisions can be based (see chapter 8, page 372-373). As such, this factor may constitute another useful means by which to validate the notion that the two forms of the MEE identified in this thesis are qualitatively different. In this respect, it may be proposed that, in the absence of other meaningful information, the explicit MEE will occur more frequently

under conditions of high versus low actor involvement whilst the opposite will be evident in relation to the implicit form of this phenomenon. Furthermore, should it be assumed that involvement increases with proximity to the purchase decision (Cai *et al.*, 2004), further research might seek to test the proposition that so too will the occurrence of the explicit MEE (at the expense of its implicit counterpart).

Finally, it is perhaps also important to draw attention to the technical issues identified in section 9.3; and thus the potential improvements that might be made in future experimental study of the marketing-based MEE. With this in mind, a full and detailed review of these issues is provided in appendix III for researchers wishing to replicate the current findings, validate the model to which they give rise and/or extend experimental research into the marketing-based MEE. This latter endeavour constitutes a second important direction for further research in this field, and is therefore discussed at length in the following section.

9.4.2. Experimental extension

Beyond the specific replication and validation of the work contained within this thesis, it is important to stress that the robust application of current experimental methodologies (such as that which is adopted in this thesis) provides a useful and important means by which to continue the incremental extension of mere exposure research in the marketing domain. Specifically, the study reported in this thesis could be usefully extended in relation to each aspect of the research design; from sampling and

stimuli to procedure and measurement. The key issues in each of these areas are therefore discussed in turn during this section.

9.4.2.1. Target population and sampling

Whilst it was previously argued that student samples are justifiable, and indeed ubiquitous, in experimental mere exposure research (see section 5.4.1.2, page 182), the fact that the vast majority of participants are therefore aged between 18 and 21 may ultimately be seen as a constraint in the current study. Whilst it has been acknowledged that the implicit processes that underpin most theoretical explanations of the MEE are largely deemed to be generic across individuals (see chapter 2, page 27), the extent to which explicit memory endures – and thus mediates the nature and direction of the MEE – is not (see Balota, Dolan and Duchek, 2000; Craik and Jennings, 1992). Given this, the finding that the MEE may occur on the basis of either implicit or explicit memory processes may enhance the need for demographic comparisons. In particular, the fact that age has been found to moderate explicit memory (Balota, Dolan and Duchek, 2000; Craik and Jennings, 1992), gives rise to the proposition that the frequency with which the *explicit* MEE occurs will be relatively lower (and that of the implicit MEE higher) amongst older participants, and highlights the importance of further comparative studies in this respect. Similarly, whilst gender differences have not been documented in relation to the MEE specifically (see Bornstein, 1989; Bornstein and Craver-Lemley, 2004), recent evidence indicates that these may exist in relation to visual recognition memory. In this respect, female participants have been found to exhibit an advantage

over their male counterparts in tests of visual recognition for objects (McGivern *et al.*, 1997, 1998) and pictures (Anooshian and Seibert, 1996). As a result, it may be proposed that enhanced memory ability in women (just as in younger participants) will lead to a greater prevalence of the explicit MEE (at the expense of the implicit MEE) amongst this group.

Additionally, whilst the limited number of international participants in the current sample negated the need (or opportunity) for comparative analysis on the basis of language experience, it should be acknowledged that this may be an important consideration in future samples. Given the earlier discussion of memory enhancement under conditions of mere exposure (chapter 8**,** page 388-395), it may be proposed that variations in perceptual fluency as a result of language differences could mediate attention and stimulus processing, and thus the extent to which each form of the MEE occurs. Whilst no significant differences were apparent with regard to whether English was spoken as a first language or not, it should not necessarily be concluded that language does not mediate the extent to which each form the MEE occurs. In this respect, those who have relatively extensive experience of the *letter forms* that constitute lexical stimuli may be expected to experience greater fluency during exposure and thus a higher recognition rate at test (e.g. British participants might exhibit an advantage over Chinese participants when lexical stimuli are developed using the Latin-based alphabet). In this respect, the low number of participants who did not fall into this group (n=17) prevented meaningful statistical analysis in this study, but it may constitute an interesting direction for further marketing research. Specifically, it might

be of relevance from an international marketing perspective as it highlights the potential mediating influence of culture in the type (and therefore direction) of the MEE that a single stimulus might be expected to create. Regardless of its importance from a methodological perspective (e.g. when conducting research with diverse participants), therefore, it perhaps provides a means by which to begin the cross-cultural study of an effect that has, until now, been assumed to be largely immune to individual differences (see chapter 2, page 27).

9.4.2.2. Stimuli

Whilst this study extends findings regarding abstract stimuli to those that are typically associated with marketing, it does so only in respect to real-word and pseudo-word brand names. As such, the experimentation described in this thesis could be usefully extended to other forms of marketing stimuli; such as logos, images, cartoons, faces and indeed any common facet of marketing communication that consumers may be expected to encounter frequently, fleetingly and at the point of decision-making. In addition, it should be noted that the current study is particularly concerned with brand names that are neutrally-liked. Another interesting and important direction for further research, therefore, may be to examine the impact of mere exposure on marketing stimuli that are currently associated with varying degrees of positive or negative feelings (as noted in chapter 5, page 202). Furthermore, the potential for greater perceptual fluency and memory in relation to familiar stimuli (see chapter 8, page 383) may give rise to an important question as to the extent of the explicit and implicit MEE for real-world

brands that are both familiar and unfamiliar. In particular, future research may focus upon testing the proposition that the explicit MEE will be more prevalent amongst the former rather than the latter, whilst the opposite is true with respect to the implicit MEE (see chapter 8, page 384).

9.4.2.3. Procedure and measurement

Beyond the nature of the stimulus in question, future marketing research may focus on other boundary conditions of the model proposed in this thesis. For example, the results of the current study are produced on the basis of a relatively brief, though intensive, period of delay between exposure and test. Although the intensity of the filler tasks is designed to replicate the effects of memory decay over a longer period of (relatively passive) time, it may be argued that these findings relate directly to the short-term effects of mere exposure. In light of this, an important direction for further research may be to extend this period of delay to hours, days and weeks to examine the applicability of the MEE to different types of consumption behaviours and environments in which these conditions are naturally apparent.

In addition, a number of other procedural issues may be seen to limit the scope of the current research, and indicate important directions for future mere exposure research in the marketing domain. Firstly, it should be noted that a relatively small number of repeated exposures (3) was used in this study. However, previous experimental research indicates that ‘wear-out’ in the MEE may begin to occur after a certain number of

exposures (with plateau and ultimate decline potentially beginning at around 10 repetitions; Bornstein and Craver-Lemley, 2004). It should be acknowledged that this may be the result of boredom and fatigue in the experimental setting (see chapter 2, page 27-28), and does not necessarily occur in the real-world marketing environment. However, it may be important to test the degree to which the MEE not only occurs in a natural consumption environment but also the extent to which it persists at high levels of repetition. Whilst the validity of such applied research may be dependent on the development of a means to distinguish the MEE from classical (affective) conditioning (as will be discussed below), relatively robust indications of wear-out might be provided by laboratory-based research if the potential influence of boredom and fatigue can be eliminated.

Secondly, and with regard to measurement, it may be important to acknowledge that the use of forced-choice tests necessarily confines the current study to an investigation of whether a preference bias exists rather than the *extent* to which it occurs; an issue that may be further investigated via the use of scales in future experimental research (see appendix III for further discussion and guidance). Finally, whilst the current study focuses on affective response (for reasons explained in section 6.2.1, page 228), it should be acknowledged that the MEE is not necessarily limited to this type of outcome. As noted in chapter 2 (page 19), mere exposure alone may be expected to influence cognitive evaluations of marketing stimuli (e.g. the quality of products and brands) and, perhaps more importantly, consumer choice behaviour; an outcome that is *presumed* to follow the creation of preference in this study. In this respect, therefore, future research

might focus on examining a broader range of outcomes, and in particular the extent to which this effect impacts upon actual consumer choice.

Inherent in this final point, however, is perhaps the most important limitation of the current study (and indeed marketing-based mere exposure research in general); namely, that it is conducted under highly controlled, and therefore highly contrived, experimental conditions. As such, the question as to whether the observed effects do indeed occur in the natural marketing environment, and to what extent, remains to be fully addressed. The importance of further research in this respect thus constitutes the main focus of the following section.

9.4.3. Applied marketing research into the MEE

With regard to the current experimental study it is important to note that, whilst it cannot claim to directly reflect the actual behaviour of consumers in a natural marketing environment, it is designed to provide a strong initial bridge between the psychology laboratory and the realms of marketing; the likes of which, it is argued (in chapter 4), has not yet been sufficiently established. In this respect, it constitutes a controlled, robust and detailed examination of the MEE in a marketing context. Furthermore, the thesis as a whole serves to provide a degree of clarity in the conceptualisation of this phenomenon in marketing theory, and the scope of its potential influence. In the continued absence of robust empirical data regarding the extent and nature of the MEE in the natural marketing environment, and arguably an effective methodology for

obtaining this, the current work thus constitutes an important first-principles study; utilising the techniques of psychological experimentation to extend abstract findings to those relating to typical marketing stimuli. Nevertheless, it may be argued that the most important task for future marketing research will be to build on this foundation in order to identify the extent to which this phenomenon occurs in real-world marketing environments, and the ultimate impact it has on actual consumption behaviour.

In this respect, and with reference to the literature review in chapter 4, it may be proposed that the most important methodological challenge for applied marketing research into the MEE is to identify an effective means by which to distinguish the MEE from the effects of *associative priming* (e.g. classical conditioning) in consumer processing of complex marketing stimuli. This is critical to the examination, quantification and explanation of the influence that the MEE in particular may exert on consumer processing of real-world marketing communication (e.g. multi-faceted advertisements) in cluttered media environments. In the absence of this, it may be argued that marketing-based mere exposure research cannot be extended in a way that maximises ecological validity; a development that is likely to be of great importance to the widespread acceptance, understanding and application of this phenomenon in marketing and public policy.

The current findings provide a foundation for this endeavour by providing confirmation that the MEE may be expected to influence consumer evaluations of marketing stimuli and, more importantly, an indication of the distinguishing characteristics of this

phenomenon (e.g. size, direction and the mediating influence of recognition). On this basis, future research may be developed to identify the extent to which this particular effect is apparent in the natural environment. An important (and practical) first step in this respect may be to identify the frequency with which the *conditions* for the MEE arise in various consumption environments (i.e. repeated, brief stimulus perception followed by either memory failure, accurate recognition and/or a strong sense of subjective recollection). On this basis, it may be possible to estimate the extent to which the MEE could, hypothetically, influence real-world consumer choice behaviour. Further to this, however, it may be important to test the degree to which the expected preference bias that is associated with the MEE *actually* occurs when these conditions are present. In this respect, it should be noted that mere exposure is only one of a number of possible influences that may impact simultaneously on consumer attitudes and behaviour under such conditions. For example, it has been acknowledged throughout this thesis that *associative priming* and *false familiarity* effects may result in a complimentary or competing affect-bias during the decision-making process, whilst previous brand knowledge, experience and attitudes may mediate the extent to which both these and the MEE impact upon ultimate choice behaviour.

Should marketing researchers develop a means by which to reliably identify the specific influence of mere exposure in the natural consumption environment, they would be in a position to test the ecological validity of all aspects of the experimental MEE; including its size, direction and nature. For example, it was previously noted (on page 431) that whilst the MEE has been found to be subject to 'wear-out' at high levels of exposure in

a laboratory setting, it is unclear as to whether this is a product of the experimental conditions (that may quickly lead to boredom and fatigue) or a characteristic of the phenomenon itself. Whilst the importance of mere exposure research in the natural marketing environment cannot be overstated, however, nor can the difficulty and complexity of this endeavour; particularly in the continued absence of a robust means by which to distinguish the MEE from other types of fluency effect in complex, real-word environments. As such, it may necessarily constitute a longer-term aim for marketing-based mere exposure research.

In light of the discussion in this section, therefore, it would appear that there is still considerable ground to be made in the journey towards a theoretical and applied understanding of the influence that marketing-related mere exposure exerts on consumer behaviour. However, it is hoped that this thesis provides a robust foundation on which to develop an effective programme of research in this respect.

9.5. Conclusion

In conclusion, therefore, this thesis has sought to provide a detailed theoretical and empirical examination of the mere exposure effect in a marketing context. Specifically, it has been guided by the following aims (as stated in chapter 1, page 7):

1. To provide a detailed review of current knowledge and understanding of the MEE in the discipline of psychology
2. To clarify how the MEE should be conceptualised in marketing theory

3. To critically review current evidence for the MEE in the marketing literature
4. To provide a robust empirical examination of the existence, size and nature of the MEE in a marketing context
5. To extend theoretical understanding of the MEE in a marketing context
6. To identify the potential implications of the MEE for marketing practitioners and consumers

To this end, a comprehensive review of current psychological understanding of the MEE (aim 1) was followed by critical discussion of the extent to which it has been robustly applied in the development of marketing theory (aim 2) and empirically tested in this specific domain (aim 3). Whilst it was acknowledged that an emerging body of marketing research has sought to investigate the mere exposure effect of marketing communication, it was argued that direct, domain-specific empirical evidence for this phenomenon is relatively scarce, somewhat equivocal and subject to a number of theoretical and methodological limitations. In response, this thesis incorporates a detailed and robust examination of the existence, size, direction and nature of the MEE in the context of marketing communication (aim 4). Arguably the most interesting, surprising and important finding from this study is that the marketing-based MEE appears to occur in opposing directions, and on the basis of different mental processes, in the absence and presence of recognition memory. As a result, the main conclusions and implications of the thesis revolve around the proposal of a dual-processing model of the MEE (as illustrated in figure 8.2, page 351). This model, it is argued, extends theoretical understanding of the mere exposure effect in the realms of both marketing

and psychology (aim 5), highlights the potential relevance of this phenomenon for large, established brands and gives rise to specific implications for campaign planning and, perhaps, consumer protection (aim 6).

However, it should be acknowledged that, whilst this thesis provides a strong theoretical and empirical foundation on which to develop an understanding of the influence of the MEE in a marketing context, its contribution is limited to restructuring and strengthening the emerging experimental foundations on which a comprehensive and applied understanding of the marketing-specific effects of mere exposure might ultimately be realized. Given the ever-increasing pace and complexity of the contemporary media, marketing and consumption environments, the importance of mere exposure research to an understanding of communication effects at hyper-low levels of attention and involvement should not be underestimated. As Cialdini (2007: 280) observes; “the blitz of modern daily life demands that we have faithful shortcuts, sound rules of thumb to handle it all. These are not luxuries any longer; they are out-and-out necessities that figure to become increasingly vital as the pulse of daily life quickens.” The MEE should be considered to be one such shortcut, and thus of increasing importance to marketers, advertisers and consumers alike. With this in mind, the work contained within this thesis is offered as a platform on which to build an accurate, detailed, comprehensive and applied understanding of the mere exposure effect in marketing communication.

Glossary

Active processing	Processing with a high degree of *involvement* and *elaboration* (see below for definition of these terms)
Affect	Generic concept encapsulating emotions, feelings and/or moods associated with a stimulus, idea or action
Affective	Related to emotions, feelings or moods; may relate to associations in semantic memory, response to a stimulus, etc.
Associative priming	A change in response to, evaluation of, or attitude towards a stimulus as a result of its repeated association with another (commonly referred to as *classical conditioning* in the field of learning theory). As this is generally assumed to occur outside of conscious awareness it is sometimes referred to as ***implicit associative priming.***
Associative processing	Mental processing relating to the association of ideas, experiences, events or stimuli in semantic memory
Attention	Conscious mental focus, serious consideration, and/or concentration in relation to a particular stimulus (also referred to as ***attentive processing*** at points in the thesis)
Attentive exposure	Stimulus exposure that is subject to conscious mental focus, serious consideration and/or concentration
Attitude	An opinion or general feeling about something; the outcome of evaluation of beliefs and characterised by the three dimensions of cognition (i.e. thoughts), affect (i.e. feelings) and connation (i.e. intention to act)
Attribution/ Misattribution	The accurate/inaccurate ascribing of a perceived outcome to a specific cause
Automatic processes	Intermediate mental processes between stimulus perception and outcome that remain outstide of the individual's conscious awareness
Cognition	Generic concept encapsulating thoughts, beliefs, perceptions and opinions associated with a stimulus, idea or action
Cognitive	Related to thoughts, beliefs, perceptions and opinions; may relate to associations in semantic memory, response to a stimulus, etc.

Conceptual processing	Semantic mental processing related to the meaning of the stimulus in question. To the extent that semantic activation may occur automatically and preconsciously this may be more specifically termed ***implicit conceptual processing***
Conscious	Relating to or concerned with a part of the mind that is capable of thinking, choosing, or perceiving and is aware of thoughts, feelings and surroundings. May be used to describe a range of mental processes such as attention, elaboration, memory encoding and recall. For example, the term ***conscious attention*** refers to attention that is accompanied by conscious awareness of both the act itself and the stimulus towards which it is directed
Emotion	A strong feeling about somebody or something
Encoding	Commit something to memory or establish a memory 'trace' for a stimulus, idea, experience, etc.
Evaluative processing	Processing that involves an evaluation of stimulus meaning, alternative responses, implications and possible outcomes
Explicit memory	Memory that is characterised by conscious awareness; may be related to related to events, experiences and stimulus exposure (episodic), personal history and experiences (autobiographical) and ideas, concepts and meanings (semantic)
Fluency	Ease of mental processing, relating to either stimulus features (***perceptual fluency***) or stimulus meaning (***conceptual fluency***)
Focal (or foveal) attention	Attention that occurs at or near the centre of the visual field
Hemispheric processing	Relating to the distribution of mental processing across the cerebral hemispheres
High/low elaboration	The degree to which consumers engage in detailed information search, purposeful processing and proactive dissemination in a decision context
High/low involvement	The extent to which consumers seek, pay attention to and cognitively process detailed, issue relevant information during communication exposure (***audience involvement***) or decision-making (***actor involvement***)

Implicit memory	Memory that is characterised by a lack of conscious awareness; most often associated with habitual procedures and processes (e.g. breathing, driving, playing a musical instrument) but may also be associated with prior experiences and stimulus exposure
Incidental exposure	Stimulus presented in way that renders them incidental that which is the subject of focal attention (e.g. a decoy task that commands focal attention)
Non-conscious	Relating to environmental perception, mental processing and attitudinal/behavioural outcomes of which human beings are not consciously aware. May be used to describe a range of mental processes such as perception, memory and attitude formation (e.g. prejudice) and is specifically used to describe such things as advertising effects, misattribution, fluency, priming and consumer behaviour in this thesis
Perception	The process and outcome of using the senses to acquire information about the surrounding environment or situation
Perceptual matching	Identification of the fact that the stimulus form (i.e. the phsysical features and their arrangement) have been encountered previously
Perceptual processing	Mental processing of the stimulus form or physical features. Where this occurs subconsciously it may be more specifically termed ***implicit perceptual processing***
Peripheral exposure	Stimulus presented at the periphery of the visual field
Peripheral processing (ELM)	Relatively passive processing of simple stimuli and the adoption of heuristics as a means of facilitating attitude change
Preattention	Brief, subconscious attention (towards a stimulus) usually associated with environmental screening prior to conscious engagement with selected environmental stimuli
Priming	A change in thoughts, feelings or behaviour (e.g. performance) towards as a result of a prior or related experience. This may be referred to as *direct* when the experience relates to prior exposure to the same stimulus, or *indirect* when the experience relates to prior or simultaneous experience with a related stimulus. It is generally considered to be occur outside of concious awareness and may therefore be more specifically termed ***implicit priming***

Pseudo-word	A pronounceable non-word that is not part of the English lexicon, may be reasonably expected to be considered highly obscure by the vast majority of the audience and is unlikely to convey a common meaning
Recognition memory	Accurate identification of a stimulus as having been previously encountered when the same stimulus is presented as a cue at test (sometimes referred to as '***objective recognition memory***')
Recollection	Clear, contextualised memory for prior exposure to a stimulus
Reinforcement	In learning theory the term refers primarily to influencing behavior by reward and punishment. In the broader field of consumer processing (and thus this thesis), however, it may be defined more literally as giving strength, force, or conviction to a response to a stimulus (e.g. a thought, opinion, idea or feeling) by providing additional stimuli, information or evidence to support it
Semantic	Relating to the conceptual meaning of words, symbols, experiences and other stimuli. In the context of this thesis it is used to describe mental processing that endeavours to formulate meaning around the stimuli in question (e.g. semantic processing or semantic analysis). It is also used to describe the processes of memory that are associated with the creation of meaning (e.g. semantic memory, semantic activation and semantic networks)
Stimulus exposure	Presentation of the stimulus within the perceptual field of participants (either above or below the liminal threshold)
Stimulus perception	Identification of the stimulus as being present in the perceptual field by participants (either subliminally or supraliminally)
Subconscious	See non-conscious; whilst the term subconscious may refer to mental processing that is partially conscious, it is specifically used in this thesis to describe that which occurs entirely outside of conscious awareness (as such it is used interchangeably with the term non-conscious)
Subliminal	Existing or operating below the threshold of consciousness. Used in this thesis to describe stimulus perception that occurs below the threshold of consciousness (***subliminal perception***), stimulus exposure that is intended to prevent conscious identification by participants (***subliminal exposure***),

	advertising that is intended to be processed below the threshold of conscious perception (***subliminal advertising***), persuasion that is intended to occur on the basis of stimuli that are perceived subconsciously (***subliminal persuasion***), and priming by way of stimuli that are presented below the liminal thresholds of participants and are therefore perceived subconsciously (***subliminal priming***)
Supraliminal	Existing or operating above the threshold of consciousness. Primarily used in this thesis to describe stimulus perception that occurs above the threshold of consciousness (***supraliminal perception***)

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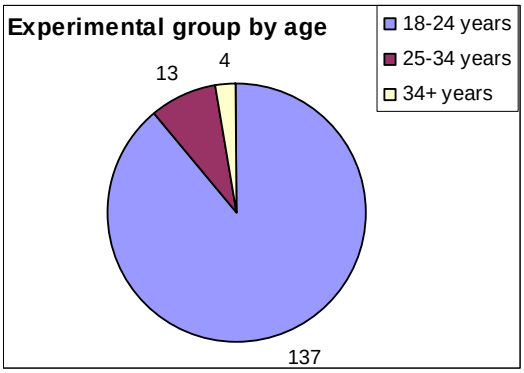
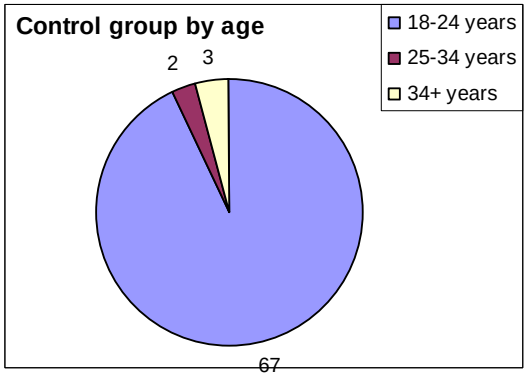
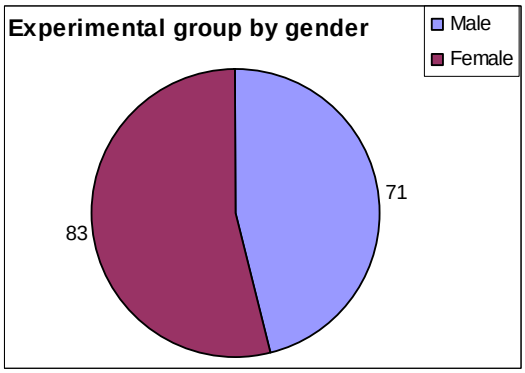
Appendices

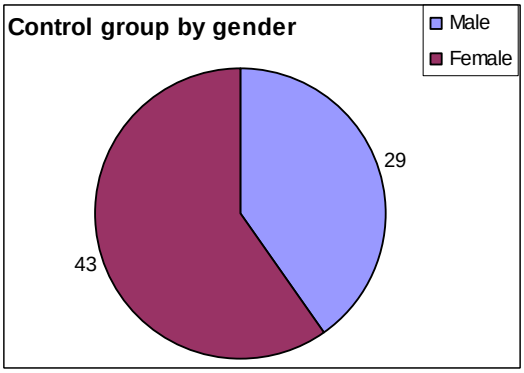
Appendix I

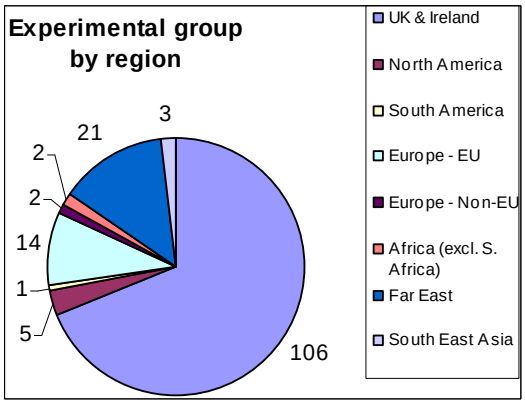
Sample Profile Data

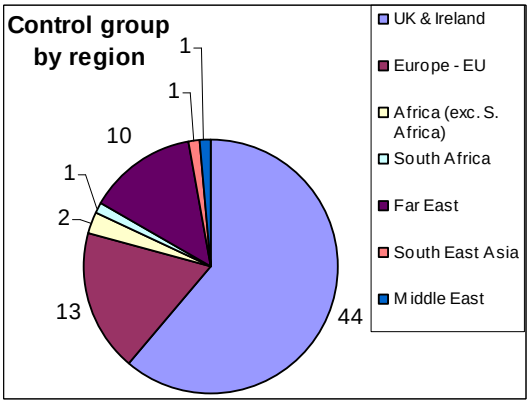

Experimental group by age
18-24 years
25-34 years
34+ years
13
4
137

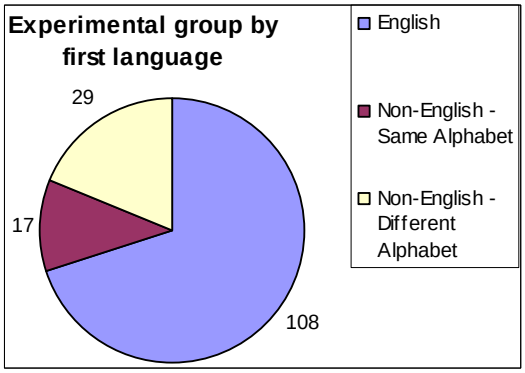

Control group by age
18-24 years
25-34 years
34+ years
2
3
67

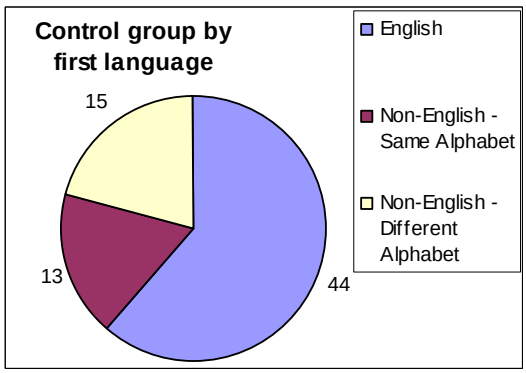

Experimental group by gender
Male
Female
71
83


Control group by gender
Male
Female
29
43


Experimental group by region
UK & Ireland
North America
South America
Europe - EU
Europe - Non-EU
Africa (excl. S. Africa)
Far East
South East Asia
3
21
2
2
14
1
5
106


Control group by region
UK & Ireland
Europe - EU
Africa (exc. S. Africa)
South Africa
Far East
South East Asia
Middle East
1
1
10
1
2
13
44


Experimental group by first language
English
Non-English - Same Alphabet
Non-English - Different Alphabet
29
17
108


Control group by first language
English
Non-English - Same Alphabet
Non-English - Different Alphabet
15
13
44

Appendix II

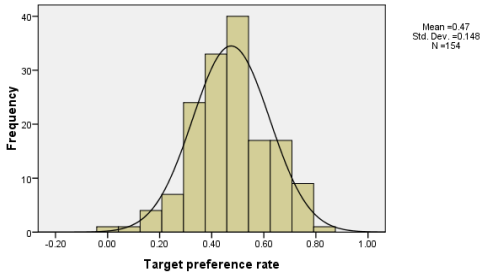
Distribution Frequencies

for Hypothesis Testing

The purpose of this appendix is to present the distribution frequency charts associated with statistical testing of the hypotheses in chapter 7 (section 7.4.). To this end, the data is organised according the subsection section and figure (in chapter 7) to which it relates.

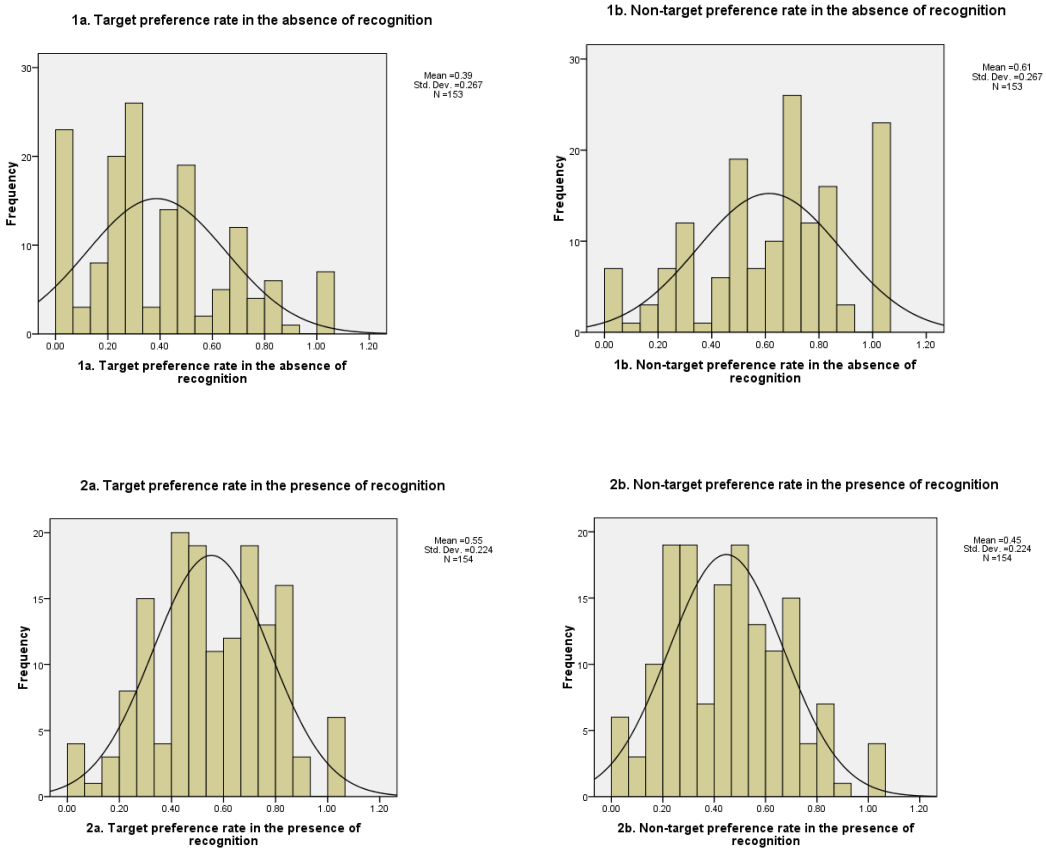
7.4.1. Testing the occurrence, size and direction of the MEE (P1)

Figure 7.8: Mean target preference rate compared to chance baseline (50%)



7.4.2. Testing the moderating influence of objective recognition on the MEE (P2)

Figure 7.10: Mean preference rates in the absence and presence of recognition compared to chance baseline (50%)



7.4.3. Testing the moderating influence of subjective recollection on the MEE (P3)

Figure 7.12: Comparing mean preference rates to chance baseline (50%) in the absence and presence of recognition under conditions of 'recollection'

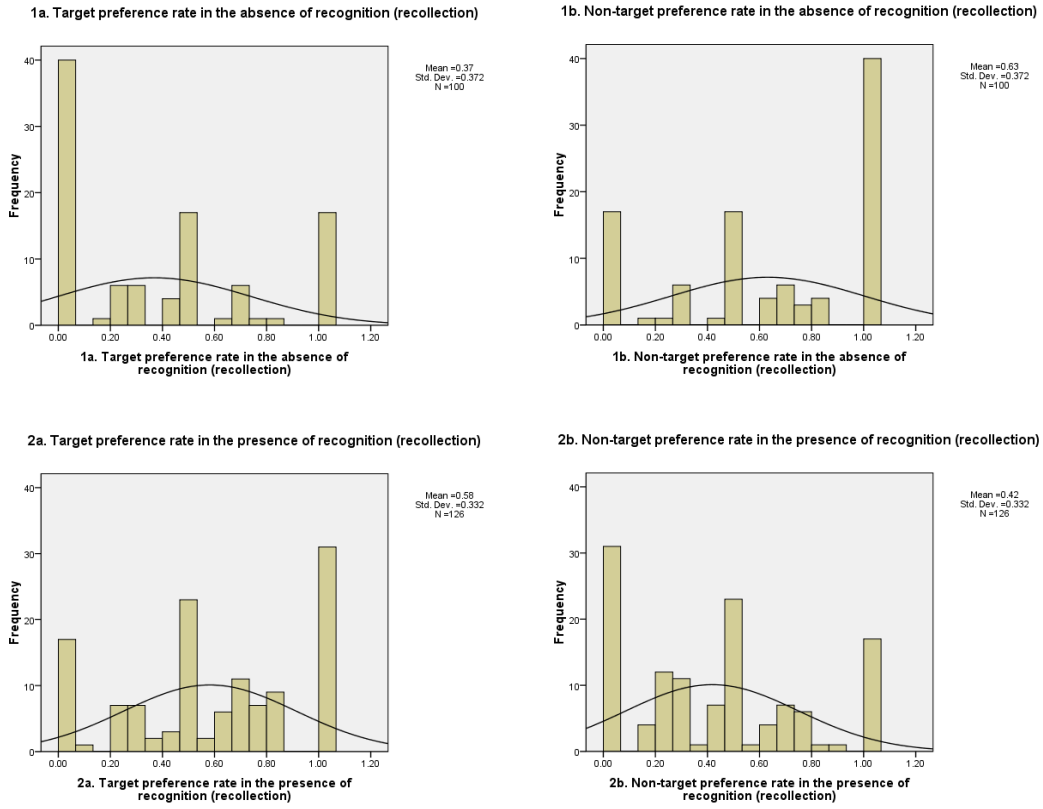
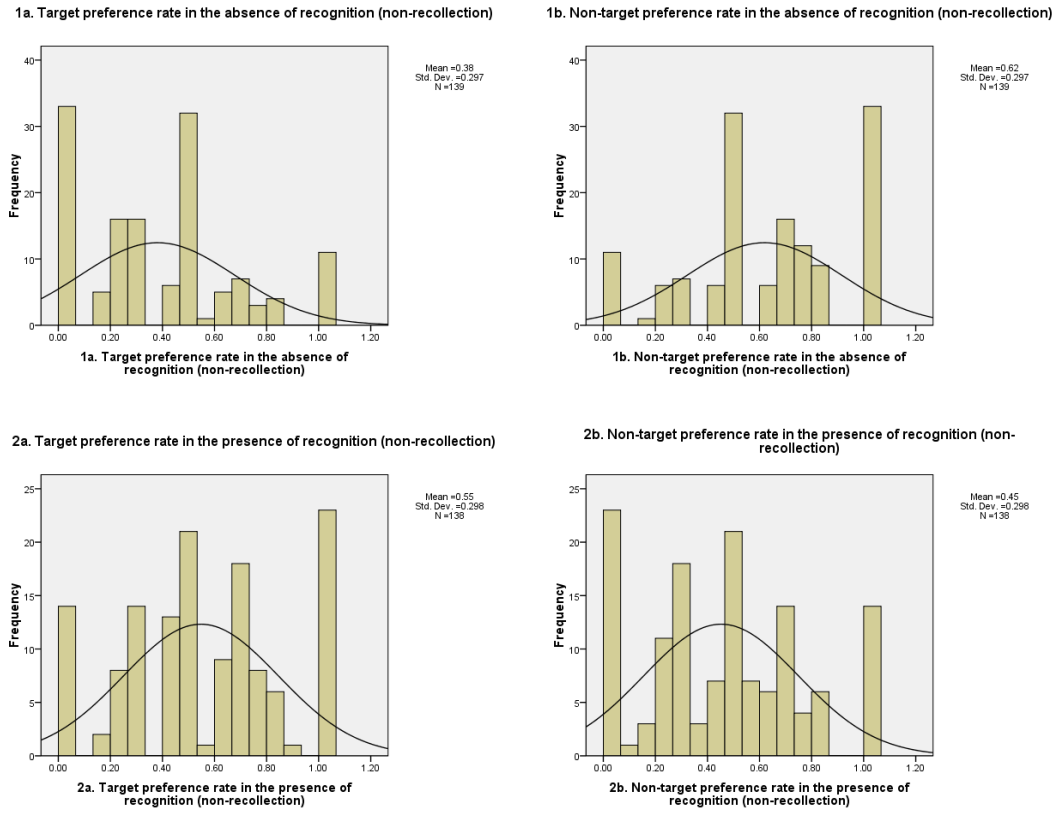


Figure 7.13: Comparing mean preference rates to chance baseline (50%) in the absence and presence of recognition under conditions of 'non-recollection'



7.4.4. Examining the mediating influence of brand name type on the MEE (P4)

Figure 7.17: Comparing mean target preference rates to the chance baseline (50%) for real-word and pseudo-word brand names

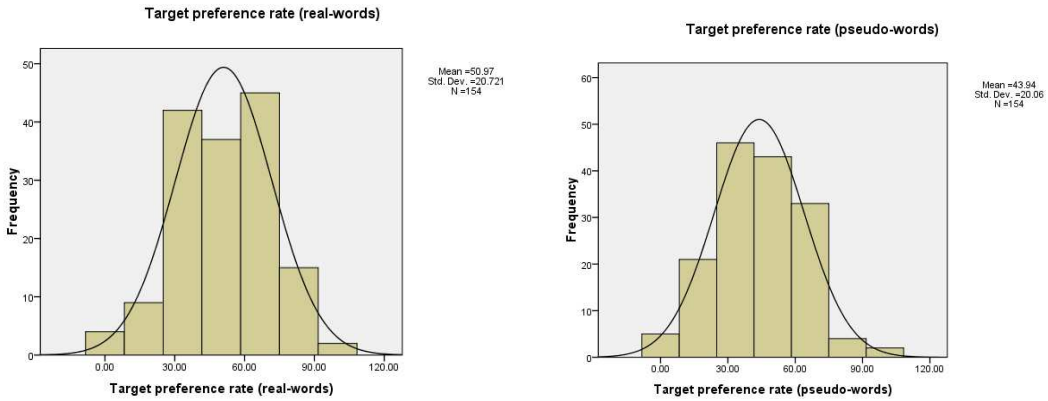


Figure 7.18: Comparing mean preference rates for real-word brand names to the chance baseline (50%) in the absence and presence of recognition

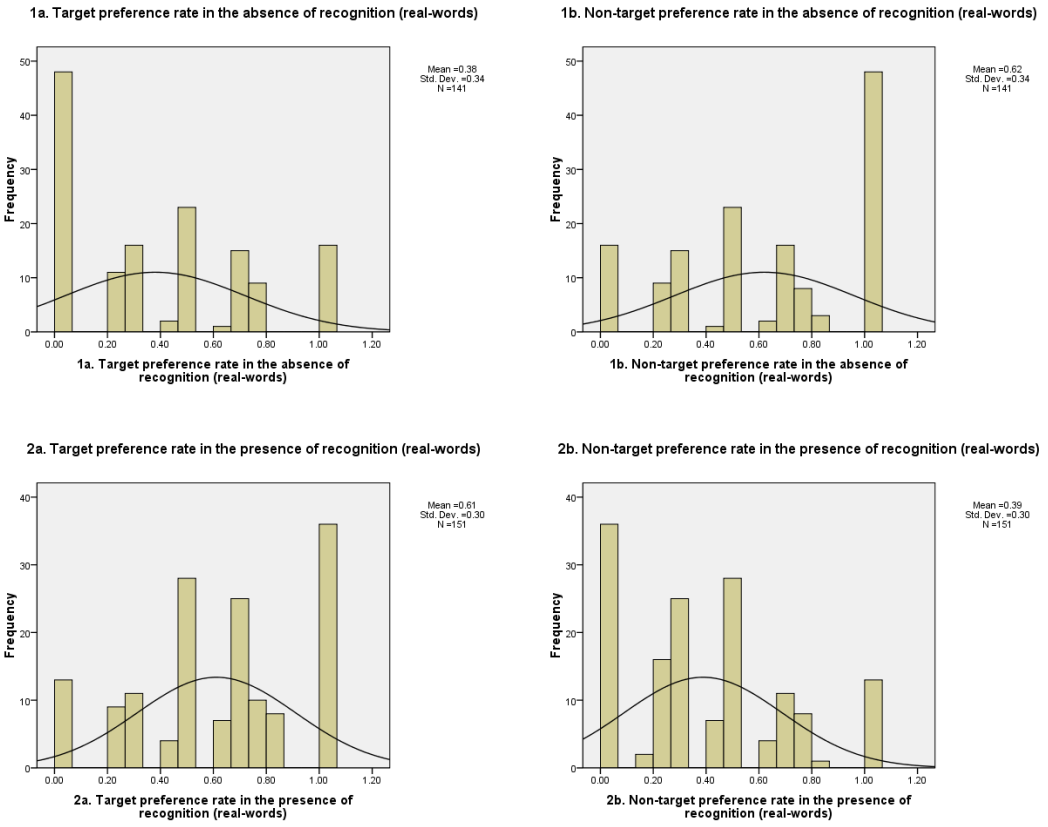
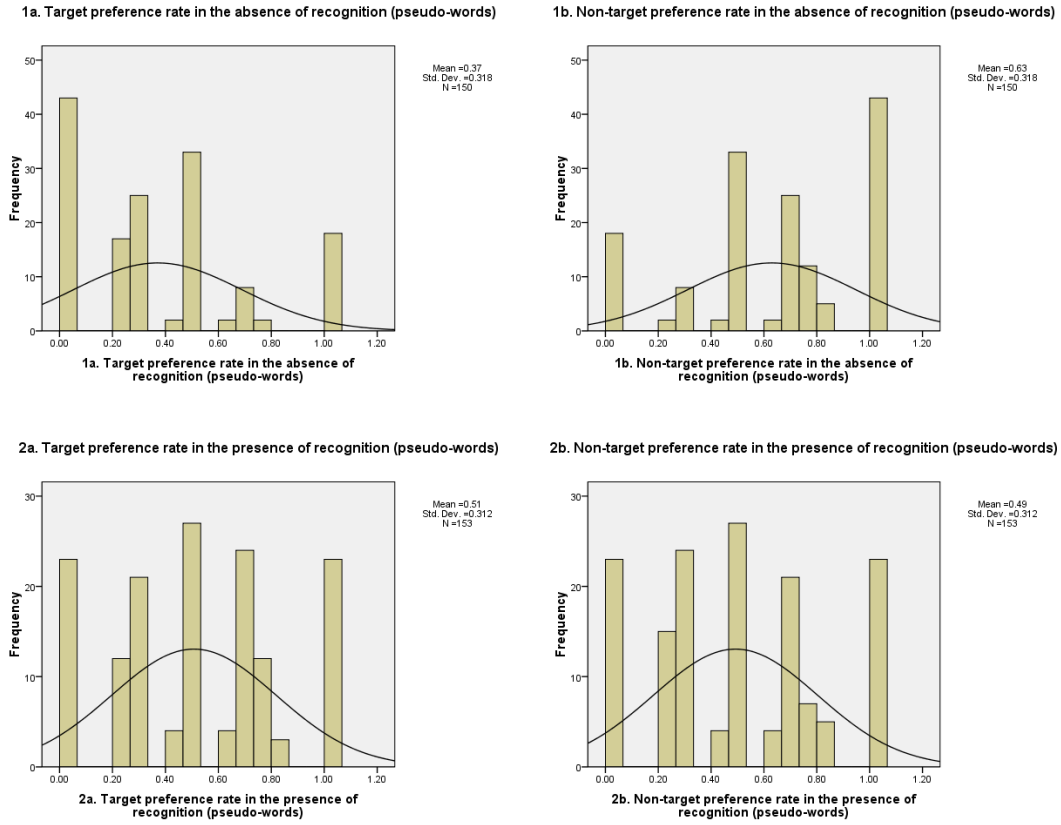
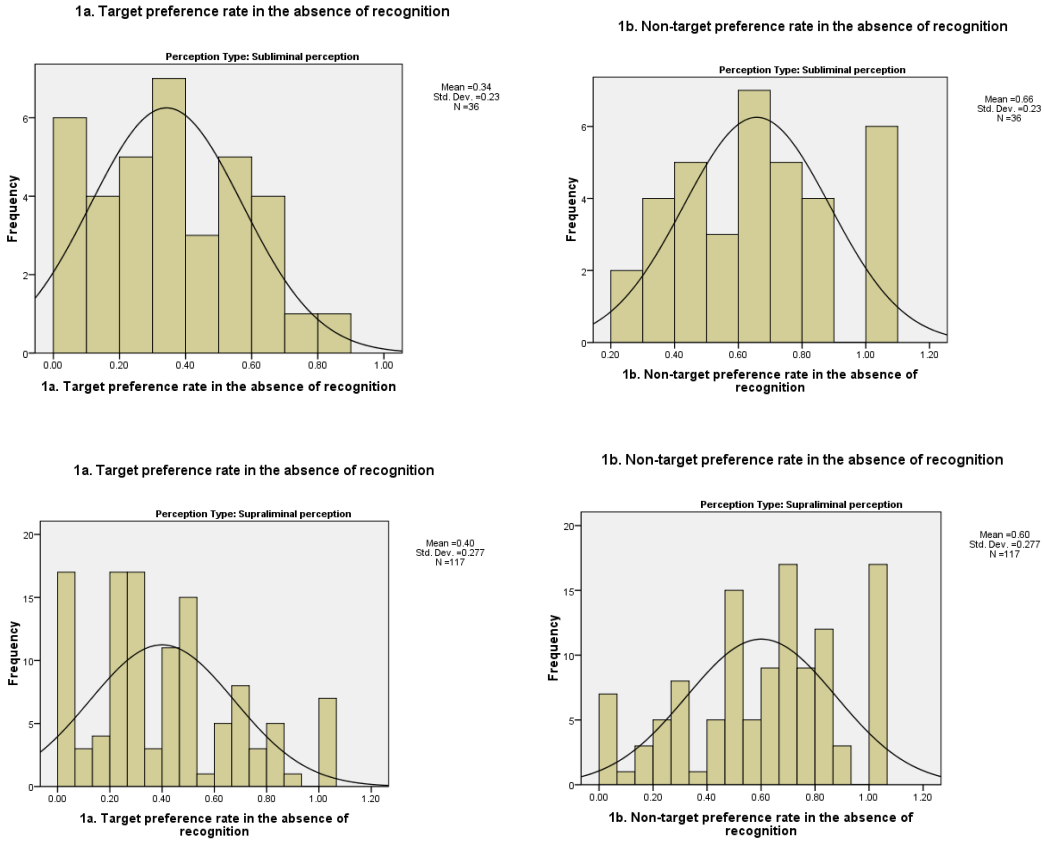


Figure 7.19: Comparing mean preference rates for pseudo-word brand names to the chance baseline (50%) in the absence and presence of recognition



7.5.1. Non-target preference in the absence of accurate stimulus recognition: A product of false familiarity rather than mere exposure?

Figure 7.24: Comparing preference bias in the absence of recognition under conditions of subliminal and supraliminal perception



Appendix III

Further Discussion of Technical Limitations

Introduction

This appendix provides a summary of technical limitations that may be associated with the experimental design in this thesis. In essence, these relate to the following factors:

1. Randomisation of stimulus presentation during exposure and test
2. Pretesting the manipulation of independent variables
3. Measuring the independent variables: Perception
4. The comparison of subliminal and supraliminal exposure effects
5. Measuring the dependent variable: Brand name preference
6. Refining the dependent variable: Affective response in the presence and absence of recognition memory
7. Brand name pretesting and selection

As explained in detail during chapters 6 and 9, extensive steps were taken to minimise the impact of these factors on the results of this study; and there is no evidence to suggest that this occurred to any significant degree. Nevertheless, it is perhaps important that the *potential* for these factors to exert a confounding influence be acknowledged in the development of future experimental research of this nature. With this in mind, the primary purpose of this appendix is to provide a detailed account of these factors, with a view to informing the effective development of future experimentation.

1. Randomisation of stimulus presentation during exposure and test

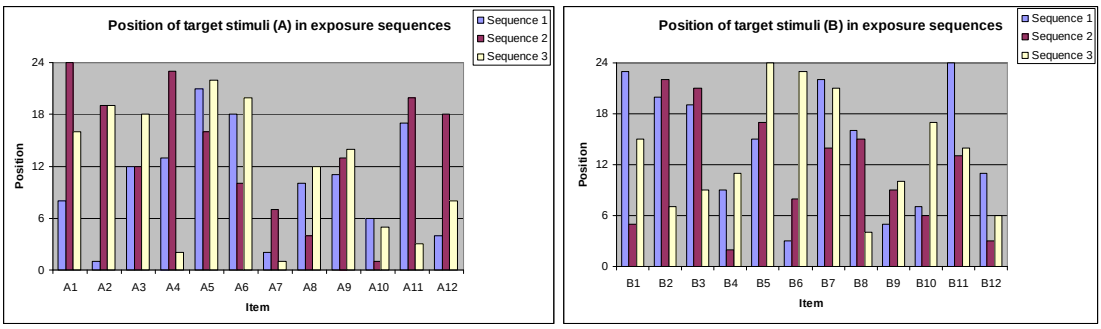
In order to fully minimize the possibility of presentation order effects, it is acknowledged that complete randomization of the order in which stimuli are presented to each participant in the exposure and test phase is required. As explained in chapter 6 (page 283), however, this was impractical in the current study due to the lack of availability of large-group licences for the specialist software required (e.g. Eprime, Matlab). As such, an approach was adopted whereby 20 different versions of the experiment were developed in each condition (i.e. experimental and control). Whilst each version contained the same three randomly determined exposure sequences, the order in which the choice pairs were presented in the test phase was fully randomized. With this in mind, the essential aspects of presentation ordering to note are that:

a. all participants were initially exposed to the same three, randomly generated exposure sequences
b. each of the randomly generated sequences of choice-pairs was used 8 (out of 160) times in the experimental condition and 4 (out of 80) times in the control condition.

With regard to the first of these points, it is acknowledged that the order in which brand names were presented could potentially influence the extent to which they were perceived, remembered and preferred (e.g. primacy and recency effects; see Bower,

2005) and thus that full randomization of the exposure phase is a preferable approach. However, given that each of the three exposure sequences were randomly generated during experimental design, and that the juxtaposition of stimulus presentation between the exposure and test phases was shared by groups of just 8 respondents in each condition, it was considered highly unlikely that the adopted approach would give rise to significant ordering effects. Furthermore, it was noted in Chapter 6 (page 284) that none of the 24 brand names was systematically presented towards the beginning or end of all three sequences, with presentation position tending to vary considerably for most items (as illustrated in figure 1, below).

Figure 1: Position of target brand names in each of the three exposure sequences



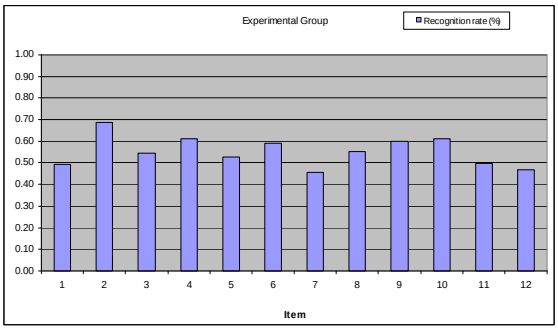
However, it is acknowledged that the enhancement of target recognition rates via primacy and/or recency effects may also occur as a result of the early/late presentation of a stimulus in the exposure phase as a whole. With this in mind, an analysis of recognition accuracy was conducted to ascertain the extent to which it might be the case. To this end, the 12 target stimuli were divided into four categories:

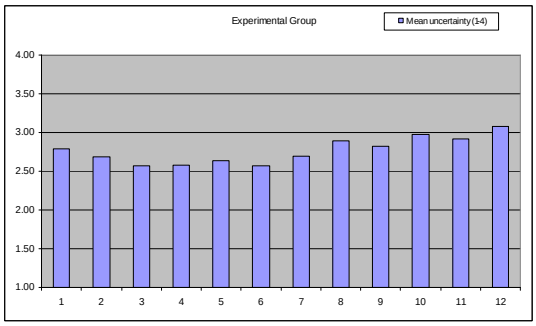
1. Those that appeared during the first five exposures of sequence one; and may therefore be subject to primacy effects on recognition (items 7,10 and 12)
2. Those that appeared during the last five exposures of sequence two; and may therefore be subject to recency effects on recognition (items 3, 5 and 6)
3. Those that appeared during the first five exposures of sequence one *and* the last five exposures of sequence three; and may therefore be subject to both primacy and recency effects on recognition (items 1 and 2)
4. Those that appeared in neither the first five exposures of sequence one nor the last five exposures of sequence three; and would not therefore be subject to primacy *or* recency effects on recognition (items 4, 8, 9 and 11)

The target recognition rates and mean recollection confidence scores for all stimuli are presented in figure 2, with the details and implications of the analysis in each category discussed below

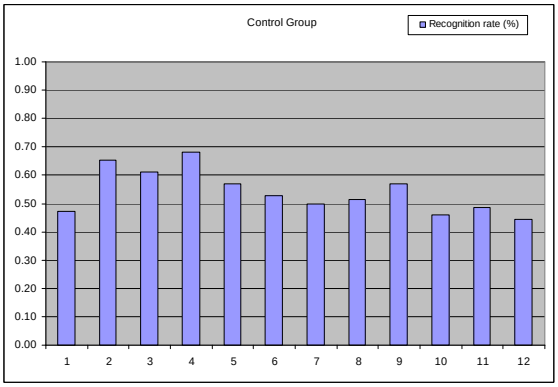
Figure 2: Target recognition rates & mean recollection confidence by stimulus item

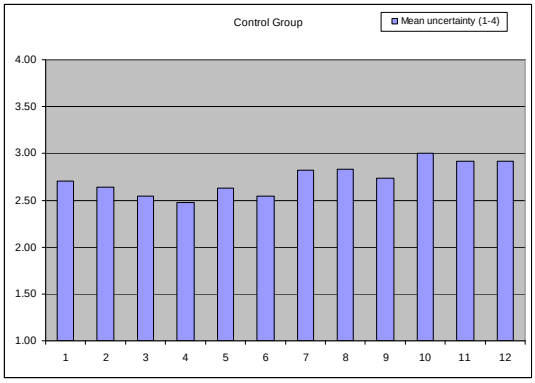
a) Experimental Group





b) Control Group





With regard to the data above, there are a number of compelling reasons to reject the notion that target recognition is to some extent a function of recency and/or primacy effects in the current study. Firstly, of those items that may be subject to the effects of primacy (7, 10 and 12), only one (10) exhibits an above-chance rate of target recognition in the experimental group, whilst all are at or below chance levels in the

control group. Furthermore, all are associated with relatively low levels of subjective recollection, with participants appearing less confident in their memory for items 10 and 12 than all of the other items. On this basis, it seems fair to conclude that primacy effects are not apparent in the current study.

By contrast, there is perhaps some indication of recency effects on the recognition rates of those items that appeared in the last five exposures of sequence 3. In this respect, marginally above-chance recognition rates for item 5 are apparent in both the experimental and control groups, whilst the same is true for items 3 and 6 in one of the groups (but not the other). However, the evidence in support of recency effects in this category of items is significantly weakened by findings in the two remaining categories.

Firstly, and with the exception of item 11 (which is at or below chance in both groups), a very similar pattern of recognition rates is evident amongst those items that do not appear early in sequence 1 *or* late in sequence 3 (and therefore cannot be subject to the effects or primacy or recency). In this respect, items 4 and 9 exhibit above-chance rates of target recognition in both groups (and are, in fact, subject to two of the four highest rates of recognition across all 12 items), whilst the same is true of item 8 in the experimental group. Furthermore, item 4 provides a potentially important case in point within the context of this discussion. Given that the target stimulus to which this relates does not appear either early or late in the exposure phase, and therefore cannot (by definition) be subject to recency or primacy effects, it is perhaps interesting to note that

it is the most frequently recognised and that which participants are the most certain they have seen.

Finally, the target recognition rates for the two items that appear at both the beginning and end of the exposure phase do not provide clear evidence in support of either primacy or recency effects (as they might be expected to). In this respect, whilst target recognition for item 2 is significantly above chance, this is not the case for item 1. Moreover, neither have a particularly high prevalence of subjective recollection, with participants reporting mid-range levels of memory confidence relative to the other items. Taking all of the above analysis into consideration, therefore, there is little (if any) indication that primacy or recency of presentation exerts a significant effect on recognition memory in this study.

In addition to order of presentation in the exposure phase, however, the issue of randomization is of course also pertinent to the order in which participants were presented with choice pairs in the test phase. In this respect, whilst full randomization would have been preferable to eliminate the possibility of systematic bias as a result of choice-pair order, it is argued that the use of 20 randomly generated orders confers a practical means by which to greatly reduce the effect of any such bias on the results of the study. Specifically, the fact that just 8 participants completed each of the 20 versions of the experiment should not be sufficient to significantly bias the results. As such, whilst the benefits of a fully randomized approach are not disputed (and are

recommended for future research), it is proposed that the approach adopted in this study constitutes a pragmatic and effective solution for studies in which this is not possible.

2. Pretesting the manipulation of independent variables

In addition to the above discussion regarding stimulus selection, it is important to acknowledge that the successful manipulation of independent variables in this study (i.e. perception, recognition and recollection) was largely dependent on the effectiveness of pretesting. In this respect, whilst piloting and pretesting of the experimental procedure was undertaken with 50 participants in all, it was conducted in five phases to facilitate incremental refinements as necessary (see chapter 6, section 6.7, page 283). Whilst mean rates of perception and recognition were identified in each phase, therefore, their reliability is of course undermined by the limited size of the sample in each phase (n=10). As such, these results were simply considered to provide a general *indication* of the extent to which the required conditions (i.e. supraliminal perception and both recognition and non-recognition) could be expected to occur in the main experiment; an assumption that was then discussed with pretest participants in each of the five phases. However, the usefulness of this indicator was not deemed to extend to a further breakdown of recognition judgments on the basis of different degrees of confidence. In this respect, the degree to which participants experienced and reported a subjective experience of recollection was simply raised in group discussions at each stage of pretesting; resulting in a qualitative indication that this was likely to occur to varying degrees in the main experiment. In the event that the required rates of perception,

recognition and recollection did not materialise as expected, a contingency plan was developed to increase the size of the sample in the main experiment to the point at which the number of cases in each condition was sufficient for statistical analysis. In the unlikely event that a negligible number of cases occurred in any of the required conditions, it was accepted that changes to the experimental design and a return to pretesting would be required, prior to a second execution of the main experiment. As it was, the quantitative and qualitative pre-test findings regarding perception, recognition and recollection rates proved to be a remarkably accurate indication of those that ultimately occurred in the main experiment. However, it should nonetheless be acknowledged that, whilst the extent of piloting and pretesting in this study was necessarily limited by time, resource and sampling constraints, the reliability of quantitative indicators could be further enhanced by a larger pretest sample in future research.

3. Measuring the independent variables: Perception

For the reasons detailed in chapter 6 (section 6.3.1.1, page 246), the measurement of perception in this study was made in relation to the exposure phase in its entirety, as opposed to each target stimulus. As such, whilst the majority of the affective responses that are deemed to have occurred under subliminal perception are likely to be valid in this respect, it should be acknowledged that a small number may in fact have taken place under conditions of supraliminal perception. Similarly, a small minority of those preference judgments that are deemed to have occurred following supraliminal exposure

may in fact have been made on the basis of subliminal perception. In light of consistent evidence that the MEE is significantly larger under conditions of subliminal perception (see Bornstein, 1989), the consequence of this may be to underestimate the difference in the size of the implicit MEE in each perceptual condition. In this respect, the size of the (larger) subliminal implicit MEE may be underestimated, whilst that of the (smaller) supraliminal implicit MEE might be magnified slightly as a result of this small amount of contamination; leading to type II error with respect to the following hypothesis (discussed and tested in chapter 7, page 341):

> *H6. In the absence of stimulus recognition, the size of the non-target preference bias will be significantly larger under conditions of subliminal versus supraliminal perception during exposure*

Given that the implicit MEE in the subliminal group was still found to be significantly larger than that exhibited in the supraliminal group (supporting H6a), this factor does not appear to have significantly influenced the results or conclusions of this study. However, it may be speculated that, should the size of the 'supraliminal' implicit MEE have been artificially magnified in this way, it may not in fact have occurred to a degree that is statistically significant in this study. Whilst this would not necessarily invalidate the proposed dual-processing model of mere exposure (in light of the fact that evidence for the implicit MEE is still observed under conditions of subliminal perception) it raises the possibility that the distractor stimuli and filler tasks were not sufficient to eliminate the influence of memory, even when this was not sufficient to facilitate

accurate identification in a discriminatory choice situation (i.e. a genuine but weak memory was over-ridden by a false sense of recognition for the alternative stimulus). In this case, further research may be necessary to assess whether the effects of memory can be sufficiently eliminated by means other than subliminal perception (e.g. extended periods of delay between exposure and test) to produce the implicit MEE. Should this not be the case it may be more accurate to define the two forms of the effect observed in this study as *subliminal* and *supraliminal.* Alternatively, the degree to which the significance of the current results is indeed influenced by this factor may be assessed by replication with the addition of a by-item measure of perception. This might be achieved for example, by the requirement for participants to press a button during the blank slide between each exposure to indicate whether or not they had perceived a lexical stimulus in-between the pre- and post-mask. It should be noted, however, that such an approach would require a longer, more intensive, highly involved exposure phase with reduced ecological validity, fewer stimulus items and a higher risk of boredom and fatigue. As such, it is perhaps more suited to the domain of experimental psychology than applied marketing research.

4. The comparison of subliminal and supraliminal exposure effects

In addition to the above discussion, one further limitation should also be acknowledged with regard to the comparison of effects under conditions of subliminal and supraliminal perception. As previously noted, the observation of a significant difference in the size of the implicit MEE between those participants who perceived the target supraliminally

and those who did not constitutes a key piece of evidence; linking the observed preference bias directly to mere exposure and thus ruling out alternative explanations (such as the *false familiarity effect*, Whittlesea, 1993, and task order effects, Pham and Rotteveel, 2005). However, it should be noted that, whilst the potential for this comparison was acknowledged during the formulation of the experiment (see chapter 5), its importance was not initially recognised and it was not originally stated as a primary objective of the empirical work in this thesis. Indeed, this analysis was facilitated (somewhat fortuitously it may be argued) by the fact that a sufficient number of participants exhibited a particularly low level of perceptual ability during the exposure phase (n=36).

In response, however, it may be argued that this to some extent constitutes a 'planned outcome' of the research design, given the size of the selected sample and indications during pretesting that approximately one-fifth of the participants would experience the exposure phase subliminally. Nonetheless, it is perhaps important to acknowledge that, whilst theoretically sufficient for statistical analysis **(**see Diamantopoulos and Schlegelmilch, 2000) and in line with the vast majority of marketing-based mere exposure research (see chapter 4, page 160), the size of the sample in the subliminal group is relatively small. Given the potentially important role that this analysis may play in distinguishing the MEE from other priming effects, greater efforts to ensure the occurrence of both subliminal and supraliminal perception may be advisable in future mere exposure research. In this respect, should a similar approach be taken to the manipulation of perception (i.e. setting the exposure duration to a level at which the

stimuli are just perceptible to most, but not all, participants), it is recommended that an even larger sample be adopted to increase the expected size of the subliminal group, and thus the reliability of results.

5. Measuring the dependent variable: Brand name preference

As discussed in chapter 5 (page 190), it was considered important to ensure that the specific nature of the preference judgment that participants were required to make was both relevant (in a marketing context) and meaningful in the context of the experiment. As a result, the two stimuli in each choice pair were positioned as potential brand names for a new product in a particular category, and participants were asked which of the two they liked the most. Whilst this question does require a discriminatory affective judgment (i.e. the formulation of preference based on liking), it should be acknowledged that it may not entirely reflect a typical consumer decision. Whilst participants may indeed have responded as they might in a consumption situation, it is possible that they assumed the position of marketer in making this judgment; i.e. that they made the selection on the basis of which name they would select for the new brand, if they were responsible for this decision. However, it is important to stress that each preference judgment was made rapidly and under significant time pressure (i.e. a few seconds). As such, careful deliberation of the type a marketing manager might be expected to engage in was not possible and participants were reliant on their immediate affective response to complete the task. Given the rapid and relatively passive nature of this response it may be expected to occur in the same way, and with the same result,

regardless of the way in which the question is interpreted, and thus form the basis on which either low involvement decisions are made or further (high involvement) deliberation occurs. For this reason, it is not considered to be a significant limitation in the current study.

However, whilst the basis on which preference was expressed is not necessarily considered to be problematic, a more significant issue may be identified with regard to the means by which preference was expressed. In this respect, whilst forced choice tests provide a good test of both memory and discriminatory preference (reflecting comparative brand evaluations, judgments and choice in a real-world situation), they may nonetheless be associated with certain limitations. With regard to recognition, for example, it may be reasonably claimed that it is impossible to know whether the inaccurate selection of the non-target stimulus on a forced choice test of memory reflects 'no memory' or 'false memory'. To address this, a confidence scale was added to each recognition judgment in the current study, on the assumption that greater confidence in the inaccurate judgment would indicate the latter. This combination of forced-choice and confidence scale measures therefore contributes to the identification of both objective recognition memory and the subjective experience of this. With regard to preference, however, an inherent limitation of forced-choice tests is that they do not necessarily reveal the *extent* to which one stimulus is preferred over another; merely that it is. Whilst this may be sufficient to demonstrate the MEE, and as a basis on which to make brand choices in low involvement situations, it may be that the difference is so minimal as to not be consistently significant.

Whilst the potential problem of using conscious self-report scales to measure the nonconscious effects of mere exposure research (Grimes and Kitchen, 2007) was acknowledged in chapter 6 (page 233), it may nonetheless be useful for future research to incorporate a means by which to measure not only the direction of relative preference, but the extent to which absolute *liking* is influenced. This may be achieved, for example, by the addition of a scale by which participants indicate their liking for each of the stimuli in a previous paired-choice task. The inherent limitation of such an approach, however, is that it may require a cognitive evaluation of the affective response and will be difficult to administer under conditions of low involvement. In this respect, the use of time pressure was used to limit the extent of involvement and elaboration in the preference judgment. By necessity, however, the additional administration of a liking scale for each stimulus would require additional exposure to – and consideration of – the target stimuli and thus greater levels of actor involvement. For this reason, a choice may be required as to which type of affective response will be used in a single experiment. In this study, preference was selected for reasons outlined in chapter 6 (section 6.2.1, page 228). Future research may seek to address the limitation discussed in this paragraph by replicating the experiment using liking-scale ratings instead.

6. Refining the dependent variable: Affective response in the presence and absence of recognition memory

In addition to those identified so far, a further technical limitation may be associated with the refinement of preference judgements per se into the final set of four dependent variables that were measured during data analysis. These essentially reflect, for each participant, the mean rate of preference for the target and non-target stimuli when these judgments were made in the presence and absence of recognition memory respectively (see chapter 6, page 241). As such, they are calculated on a denominator that varies from participant to participant. In this respect, some may have a relatively balanced profile in terms of their recognition rates across the 12 choices; indeed a total absence of recognition memory would be expected to result in a chance rate of 6 stimuli correctly identified and 6 incorrectly so. Others, however, may exhibit an uneven ratio of correct and incorrect recognition judgments (either by chance or otherwise); e.g. they may correctly identify 9 of the target brand names as recognised and incorrectly identify just 3 of the non-targets as recognised. In principle, therefore, it is acknowledged that this situation could give rise to differences in reliability of the effects observed between the two types of profile. However, in this study the same overall pattern of effects is evident in the results of within-group analyses of 'balanced' and 'unbalanced' participants, and no significant between-group differences are observed in the dependent variables (as illustrated in figure 1)

Figure 2: Comparison of dependent variable results for cases in which recognition memory is 'balanced' (i.e. close to chance) and 'unbalanced' (i.e. significantly higher or lower than chance)

Group Statistics

	Balance of pref choices made under conditions...	N	Mean	Std. Deviation	Std. Error Mean
Mean target preference rate in the absence of recognition	Balanced (min 5 and max 7 in each memory condition)	81	.368	.2314	.0257
	Unbalanced (<4 in one condition and >8 in the other)	72	.407	.3024	.0356
Mean non-target preference rate in the absence of recognition	Balanced (min 5 and max 7 in each memory condition)	81	.6321	.23138	.02571
	Unbalanced (<4 in one condition and >8 in the other)	72	.5943	.30252	.03565
Mean target preference rate in the presence of recognition	Balanced (min 5 and max 7 in each memory condition)	81	.5544	.21008	.02334
	Unbalanced (<4 in one condition and >8 in the other)	73	.5521	.24006	.02810
Mean non-target preference rate in the presence of recognition	Balanced (min 5 and max 7 in each memory condition)	81	.4456	.21008	.02334
	Unbalanced (<4 in one condition and >8 in the other)	73	.4495	.23988	.02808

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Mean target preference rate in the absence of recognition	Equal variances assumed	5.572	.020	-.899	151	.370	-.0389	.0433	-.1244	.0466
	Equal variances not assumed			-.885	132.319	.378	-.0389	.0439	-.1258	.0480
Mean non-target preference rate in the absence of recognition	Equal variances assumed	5.671	.018	.873	151	.384	.03779	.04328	-.04772	.12330
	Equal variances not assumed			.860	132.289	.391	.03779	.04396	-.04915	.12474
Mean target preference rate in the presence of recognition	Equal variances assumed	1.267	.262	.066	152	.948	.00239	.03628	-.06928	.07406
	Equal variances not assumed			.065	143.966	.948	.00239	.03653	-.06981	.07459
Mean non-target preference rate in the presence of recognition	Equal variances assumed	1.222	.271	-.107	152	.915	-.00390	.03626	-.07554	.06774
	Equal variances not assumed			-.107	144.012	.915	-.00390	.03651	-.07606	.06827

7. Brand name pretesting and selection

Finally, one further technical issue that was not elucidated in this thesis is nonetheless worthy of discussion here. As explained in chapter 5 (page 202), the identification of brand name triads was undertaken in a way that ensured that, whilst each met the criteria of equivalence and neutrality, the maximum number of items/trials was available for inclusion in the experiment. Using this approach, therefore, the triad containing the three brand names that exhibited (marginally) the most similar mean liking ratings was not necessarily selected if it could be broken up to create two (marginally) less appropriate triads that nonetheless met the set criteria. Whilst this facilitated the identification of 15 possible trials for inclusion in the experiment, only 12 were actually used (as explained in chapter 5, page 204). In light of this, it is acknowledged that the selected triads could have been re-examined (in light of the decisions to exclude 3 of the triads) to identify whether liking equivalence could be even further enhanced by the replacement of existing stimuli with those from the unused triads. Whilst this was not undertaken prior to experimentation, a subsequent examination of the pretest data reveals that the equivalence of the triads selected could not have been improved in this way. However, the potential for this should perhaps be noted and explored during the pretest phase of future research that adopts a similar methodological approach to this study.

On reflection, however, a more important limitation of stimulus pretesting may be evident in relation to the way in which *equivalence* was identified. In this respect, it

may be recalled that the degree to which participants liked or disliked each potential brand name was measured by way of a 5-point likert scale. Brand name triads were then identified on the basis that each of the three stimuli exhibited an extremely similar mean liking rating that was also very close to neutral (see chapter 5, page 201). However, whilst this might be expected to result in choice pairs that are equally *likable*, based on a consideration of the merits of each stimulus in isolation, it does not necessarily reveal the extent to which systematic bias might arise as a result of the inherent characteristics of the stimuli. To explain; when participants in the main experiment are required to express a time-pressured preference between two equally likable stimuli they may use inherent processing fluency as an heuristic by which to make decisions with regard to the relative qualities of each stimulus (Whittlesea, 1993). In cases whereby one stimulus in the pair is easier to process than the other a systematic preference bias might therefore emerge on this basis alone. Given this, it is acknowledged that the equivalence of stimuli in each triad could have been more effectively pretested by requiring a further sample of pretest participants to indicate their preferences for every potential pairing, in each proposed triad, under similar time-pressure to that imposed during the main experiment.

In the absence of pretesting to identify the possibility of inherent affective bias, consideration was given to the development of an additional control phase of experimentation whereby participants would be required to complete only the preference judgment task from the main experiment; i.e. they would not engage in the exposure phase, filler tasks and recognition memory test. This may facilitate between-

group comparison with the main experimental condition in order to identify the extent to which the observed preference bias is specifically linked to prior exposure. However, this was considered to be unnecessary for two reasons. Firstly, the selection of equally liked stimuli was not the only means by which the experiment was designed to minimise systematic bias on the basis of inherent stimulus characteristics. For example, exposed brand names were counterbalanced so that half the sample was presented with choice pairs containing one set of target brand names (A) whilst the other half was presented with another set (B) during the test phase. In both halves, the choice pairs were completed by the same filler stimuli. As illustrated in figure 9.2, no significant between-group differences are apparent in the overall rate of preference, or those that occur in the presence and absence of recognition. The only potential difference that may be of worthy of note is that the mean recognition rate is higher amongst those that were presented with target set B during the test phase. Not only does this difference fail to reach the level of statistical significant ($M=4.89$, $t=1.797$, $p=0.75$), however, but it does not appear have a substantive influence on the four dependent variables in the current study (i.e. target and non-target preference in the presence and absence of recognition). The subsequent absence of significant differences in each half of the sample may therefore be taken as an indication that the observed effects are not due to the relative characteristics of the two brand names presented in each choice pair (as when all of the choice pairs were changed, no significant changes to the results were observed).

Figure 3: Comparison of dependent variable results for target sets A and B

Group Statistics

	Target Set Used	N	Mean	Std. Deviation	Std. Error Mean
Mean target preference rate	Target Set A	81	45.8851	15.92788	1.76976
	Target Set B	73	49.2011	13.40595	1.56905
Mean target recognition rate	Target Set A	81	52.9837	14.39230	1.59914
	Target Set B	73	57.8770	18.83461	2.20442
Mean target preference rate in the absence of recognition	Target Set A	81	.3595	.23805	.02645
	Target Set B	72	.4162	.29496	.03476
Mean non-target preference rate in the absence of recognition	Target Set A	81	.6410	.23802	.02645
	Target Set B	72	.5843	.29504	.03477
Mean target preference rate in the presence of recognition	Target Set A	81	.5451	.23662	.02629
	Target Set B	73	.5625	.21047	.02463
Mean target preference rate in the presence of recognition	Target Set A	81	.4559	.23628	.02625
	Target Set B	73	.4379	.21067	.02466

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Mean target preference rate	Equal variances assumed	1.602	.208	-1.390	152	.167	-3.31603	2.38636	-8.03075	1.39869
	Equal variances not assumed			-1.402	151.315	.163	-3.31603	2.36516	-7.98903	1.35696
Mean target recognition rate	Equal variances assumed	5.623	.019	-1.822	152	.070	-4.89328	2.68621	-10.20042	.41385
	Equal variances not assumed			-1.797	134.256	.075	-4.89328	2.72337	-10.27954	.49298
Mean target preference rate in the absence of recognition	Equal variances assumed	2.742	.100	-1.315	151	.190	-.05674	.04314	-.14198	.02849
	Equal variances not assumed			-1.299	136.427	.196	-.05674	.04368	-.14312	.02964
Mean non-target preference rate in the absence of recognition	Equal variances assumed	2.783	.097	1.314	151	.191	.05668	.04314	-.02856	.14192
	Equal variances not assumed			1.297	136.397	.197	.05668	.04369	-.02971	.14307
Mean target preference rate in the presence of recognition	Equal variances assumed	1.131	.289	-.480	152	.632	-.01740	.03625	-.08902	.05421
	Equal variances not assumed			-.483	151.977	.630	-.01740	.03603	-.08859	.05378
Mean target preference rate in the presence of recognition	Equal variances assumed	1.066	.304	.496	152	.620	.01798	.03623	-.05360	.08957
	Equal variances not assumed			.499	151.985	.618	.01798	.03602	-.05318	.08914

It is acknowledged, however, that it remains theoretically possible that both targets A and B were systematically preferred/not-preferred as a result of almost identical inherent processing advantages over the filler stimuli with which they were paired. In order to supplement the above evidence, therefore, an attempt was made to directly link the observed effects to the exposure phase. In this respect, it should be recalled that the MEE has been consistently demonstrated to be significantly larger under conditions of

subliminal versus supraliminal perception during exposure (see Bornstein, 1989). With this in mind, it may be argued that a similar finding in this study would clearly link changes in the observed affect-bias to a relevant change in the exposure phase. As illustrated in chapter 7 (page 342-343), this result was indeed apparent; providing further evidence that the observed effects are causally linked to the exposure phase of the experiment. In light of these two additional factors, therefore, it would seem unnecessary to continue with additional data collection in the present study. However, the pretesting of stimulus choice-pairs under the same conditions as in the main experiment should be considered as a means by which to improve the reliability of pretesting in future mere exposure research that utilises stimulus-based forced-choice tests.

In light of the discussion in this section, therefore, it is proposed that the basis on which stimuli were selected for inclusion in this study should not necessarily be considered a limitation. However, it may be useful for researchers in this field to acknowledge that it could have been further improved by a second review of the selected brand triads prior to experimentation and, more importantly, the inclusion of an additional phase of pretesting for inherent fluency-bias in which the requirements of the planned preference judgment task were more closely replicated.