

**COGNITIVE AND AFFECTIVE RESPONSES TO MUSIC IN ADS AND SERVICE ENVIRONMENTS**

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by

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# **COGNITIVE AND AFFECTIVE RESPONSES TO MUSIC IN ADS AND SERVICE ENVIRONMENTS**

**STEVE OAKES**

## **ABSTRACT**

**This thesis examines the impact of music upon a range of dependent variables within advertising and service environment contexts. Chapter 1 identifies the structural outline of the thesis and introduces key theoretical concepts. Chapters 2 and 3 review previous empirical studies focusing upon cognitive and affective responses to music in advertising and service environments, and identify the positive influence of musical congruity upon consumers. Chapters 4-8 involve original experimental studies. The results of research reported in Chapter 4 show how slow-tempo music produces higher levels of ad recall than fast-tempo music, while musical presence reduces ad recall. Chapter 5 describes a study in which three music timbres are superimposed over a no-music version of another ad. Results reveal positive main effects of timbre congruity upon ad recall and affective responses. Chapter 6 describes a study that superimposes congruous dance and incongruous classical music over ads for a university. Results show how dance music enhances the attractiveness of the university, while classical music has the opposite effect. Musical presence inhibits or enhances ad recall depending upon its congruity. The results of research reported in Chapter 7 show how an incongruous ad narrator reduces the attractiveness of the advertised university, desire to apply to study at the university, and recall. The results of research reported in Chapter 8 show that perceived wait duration is related positively to musical tempo, and related negatively to musical liking, while musical presence reduces mean perceived duration estimates. Slow-tempo music produces more positive affective responses than fast-tempo music. Musical presence enhances positive affective response with low crowd density, but diminishes it with high crowd density. Chapter 9 highlights the contribution of the thesis to the existing literature, and proposes directions for future research, particularly regarding the potential benefits of using purposeful musical incongruity in advertising.**

## **CHAPTER 1: OVERVIEW**

This thesis attempts to develop a clearer understanding of the ways in which background music can influence consumers in advertising and service environment contexts. It refers to a diverse range of literature, but draws most heavily upon the discipline of psychology and the sub-discipline of marketing. The advertising experiments described here assess the impact of musical stimuli (and ad narrator voice) upon dependent variables including recall of visual television ad content, recall of aural radio ad content, perceived duration of the ad, affective responses to the ad, perceived image of the advertised organisation, anticipated prices, and likelihood of purchase activity. A service environment experiment described here examines the influence of musical stimuli upon perceived duration and affective response.

In cinematic scores, music is used to elicit and reinforce desired affective responses, and it is an integral part of the emotional communication process that takes place between film producer and audience. Cinematic music is also used to produce overtly cognitive responses. For example, the saxophone timbre playing gently within a recognizably jazz genre has been used as a cultural convention in countless cinematic productions in order to trigger expectations of an illicit sexual encounter. However, while cinematic music has received extensive academic attention (e.g., Donnelly, 2001; Kassabian, 2001), research examining the use of music in advertising is still relatively sparse. In spite of the lack of supporting empirical evidence, advertising practitioners use music within ads because they believe it possesses potent communicative capacity.

Although background music may be designed by advertisers to provide merely the 'sonic scenery' to an accompanying verbal message, it is also frequently used with the intention of

eliciting desired cognitive and emotional responses from the listener. Despite its near ubiquitous use, there is still only a superficial understanding of the ways in which background music can influence consumers exposed to radio or television advertising. Consequently, one of the broad, practical objectives of this thesis is to contribute to the body of knowledge regarding the impact of music upon cognitive and affective responses to advertising. Such a contribution is intended to be of interest and use to advertising practitioners as well as academics. Another broad, practical objective of this thesis is to contribute to the body of knowledge regarding the impact of service environment background music upon consumers' cognitive and affective responses. Analysis of music in this context is designed to be of value to organisational managers as well as academics.

### **Structural Outline**

Chapter 2 of this thesis is a literature review of previous studies that have investigated the use of music within service environments. It examines the results of studies that have manipulated specific musical variables (genre, tempo, volume, and liking), and attempts to identify consistent patterns of findings and suggest possible explanations for inconsistent findings. The studies identify the importance of musical congruity and focus upon a range of dependent variables including evaluation of the environment, consumption speed, perceived wait and stay duration, affective response, and spending.

Chapter 3 is a literature review of previous studies that have investigated the use of music in advertising. It provides a review and analysis of empirical studies focusing upon cognitive and affective responses. Findings are categorized by introducing five original definitions of music/ad congruity (score, mood, semantic, genre, and image). This highlights the emergence

of a coherent pattern in which increased music/ad congruity contributes to communications effectiveness by enhancing purchase intent, brand attitude, recall facilitation, and affective response. However, additional evidence indicates that future research should also assess the benefits of using more artfully incongruous musical stimuli.

Chapters 4-8 involve a sequence of experiments linked by common themes. Chapter 4 assesses the impact of the presence (versus absence) of music, musical liking, and musical tempo upon recall of radio ad content and perceived duration of the ad. Perceived duration is analysed with reference to the theoretical underpinning of attentional and memory-based models of temporal perception. Chapter 5 also seeks to provide marketers with greater understanding of how background music may influence the cognitive and affective responses of listeners exposed to a radio ad. Three versions of digitally produced background music timbres (piano, church organ, and steel drum) were superimposed over a 'dry' (no music) version of the ad in order to examine the effects of timbre congruity upon recall of ad content and affective responses to the ad.

Chapter 6 involves two experiments that examine the impact upon cognitive responses when manipulating musical genre (dance and classical music) in two university ads. Both ads focussed upon university education and the accompanying lifestyle experience. Experiment 1 used a television ad for an authentic university with an exclusively visual (no ad narrator) communication mode. It examined the impact of musical presence and musical genre congruity upon visual recall of ad content, and sought to assess the influence of musical genre upon the perceived image of the advertised university. For deliberate contrast, Experiment 2 used a radio ad for a fictional university with spoken communication provided by a female ad narrator aged 22. It also assessed the impact of musical genre upon perceived image of the

advertised university, and examined the extent to which perceptions of sophistication of the university learning environment and anticipated cost of university fees were influenced by perceptions of sophistication of the background musical genre. In addition to this, it examined the impact of musical presence and musical genre congruity upon recall of spoken ad content, and assessed the influence of musical genre congruity upon likelihood of application to the advertised university. Chapter 7 involves a replication of Experiment 2 from Chapter 6 using two female ad narrators. While Chapter 6 focuses upon the importance of musical genre congruity, Chapter 7 focuses upon the impact of ad narrator voice congruity upon cognitive and affective responses to advertising. As in Experiment 2 of Chapter 6, this study measured ad content recall, perceptions of image and sophistication of the learning environment, anticipated cost of fees, and likelihood of application.

Within the context of an undergraduate registration queue, Chapter 8 examines the impact of background musical presence, musical liking, and tempo of background music upon perceived wait duration and affective response (satisfaction, relaxation, and positive disconfirmation of expectations of wait duration). It also identifies the influence of crowd density upon affective response. Chapter 9 identifies the contribution made by this thesis to the existing body of knowledge. It reiterates the original perspective of the literature review chapters that attempt to interpret previous empirical research from a congruity perspective, and summarises the key findings from the experiments contained in Chapters 4-8. Chapter 9 also identifies which studies in Chapters 2-3 conflict with or confirm the findings of Chapters 4-8, and provides some tentative, speculative explanation for this. Theoretical and practical implications of the research are discussed within the context of the parent discipline (psychology) and the sub-discipline (marketing). As a result of the findings in Chapters 4-8,



modified versions of those models presented in the literature review (Chapters 2 and 3) are provided. Implications for future research are also highlighted.

### **Theoretical Focus**

In the experiments that focus upon perceived duration as a dependent variable, the thesis refers extensively to theoretical models of temporal perception including attentional models (e.g., Frankenhaeuser, 1959) and memory-based, storage-size models (e.g., Ornstein, 1969). However, it is the concept of congruity that pervades the entire thesis. This aspect of the thesis explores how people evaluate new encounters within the context of prior expectations shaped by previous encounters. Mandler (1982) suggested that moderately incongruous stimuli result in more extensive cognitive processing than congruous stimuli as people seek resolution of the meaning of the incongruity. Increased levels of arousal, interest, and positive valuations may arise if people are able to resolve the incongruity. However, although extreme incongruity also results in increased cognitive processing, inability to resolve the incongruity may lead to feelings of frustration and subsequently negative valuations (Meyers-Levy, Louie, and Curren, 1994). Consequently, such valuations appear to relate to congruity in an inverted-U shaped pattern with moderately incongruous stimuli producing more positive affective responses compared to congruous and highly incongruous stimuli.

Various service environment studies (e.g., North and Hargreaves, 1996a) have stressed the importance of measuring musical liking. Indeed, North and Hargreaves (1996b) identified a positive, monotonic relationship between ratings of musical liking and congruity (appropriateness). In acknowledgement of these findings, Experiment 2 in Chapter 6 monitors the extent to which the effects induced by musical stimuli of differing congruity

occur independently of musical liking. Indeed, congruity issues are fundamental to the literature review sections and all of the experiments in this thesis. Unlike previous literature reviews (e.g., Garlin and Owen, 2006; Oakes, 2000) that have addressed the impact of music in service environments, the review in Chapter 2 of this thesis additionally highlights the importance of musical congruity. In Chapter 3 of this thesis, a musical congruity perspective is used as a unifying framework in reviewing empirical literature that examines the influence of music in advertising. Chapters 4-7 address the advertising implications of the congruity of tempo, timbre, genre, and voice. In addition, Chapter 8 refers to schema incongruity theory in addressing the impact of matched and mismatched conditions of musical tempo and crowd density.

## **CHAPTER 2: THE INFLUENCE OF MUSIC WITHIN RETAIL AND SERVICE ENVIRONMENTS**

This chapter presents a literature review highlighting significant findings from empirical research on the influence of background music within retail and service environments. In addition to providing the research-based background to the work reported in this thesis and (it is hoped) stimulating increased academic endeavour in this area, the review presented here is designed to help managers select background music that will achieve desired organisational outcomes. Previous research (Oakes, 2000) coined the term ‘Musicscape’ to describe a model that drew together findings from previous studies examining the impact upon customer behaviour of music within service environments. The ‘Musicscape’ was an extension of Bitner’s (1992) ‘Servicescape’ framework highlighting music as just one of a range of physical environment dimensions (e.g., temperature, air quality, scent) influencing responses to a service environment. The current literature review chapter focuses on the influence of music on the cognitive and affective responses of consumers in authentic or simulated commercial environments, and summarises findings from empirical research concerning the effects of manipulating the structural elements of music within a variety of organisational contexts.

This review highlights a range of musical variables (genre, tempo, volume, and liking) that may be manipulated to achieve desired effects. Due to the inherent interdependence of variables within a musical composition, it is acknowledged that there is a need to be aware of the possible limitations of studies producing results attributed to individual variables that have glossed over potential interactions. Table 2.1 provides a summary of studies highlighting significant outcomes elicited by musical variables in authentic or simulated

environments. Spending is the most frequently measured outcome and is the only one that has been investigated in the context of each of the musical variables.

**Table 2.1. The musicscape**

<b>Musical Variables</b>	<b>Outcomes</b>	<b>Studies</b>
<b>GENRE</b>	More positive evaluation of the environment with congruous genres	Grewal et al (2003) Spangenberg, Grohmann, & Sprott (2005) Baker, Grewal, & Parasuraman (1994)
	Increased spending with congruous genres	Wilson (2003) North, Hargreaves, & McKendrick (1999a) North & Hargreaves (1998) North, Shilcock, & Hargreaves (2003) Baker, Levy, & Grewal (1992) Areni & Kim (1993)
<b>TEMPO</b>	More positive evaluation of the environment with congruous tempi	Eroglu, Machleit, & Chebat (2005)
	Shorter perceived waits and enhanced affective response to waits with slower tempi	Oakes (2003b) Tansik & Routhieaux (1999)
	Increased spending with congruous tempi	Mattila & Wirtz (2001)
	Increased spending and slower consumption with slower tempi	Milliman (1982*; 1986) Caldwell & Hibbert (2002)
<b>VOLUME</b>	Longer perceived stay duration when musical volume was incongruous with shopper age	Smith & Curnow (1966*) Yalch & Spangenberg (1990)
	Increased spending with congruous volume levels	Smith & Curnow (1966*) Yalch & Spangenberg (1990; 1993) Lammers (2003)
<b>LIKING</b>	More positive evaluation of the environment with liked music (valence congruity)	Hui, Dube, & Chebat (1997) Dube & Morin (2001) Morin, Dube, & Chebat (2007) North, Hargreaves, & McKendrick (2000) North and Hargreaves (1996a) Sweeney & Wyber (2002)
	Liked music increased perceived wait durations	Hui, Dube, & Chebat (1997)
	Increased spending with liked music	Caldwell & Hibbert (2002)

\* Replication studies produced non-significant results

As Table 2.1 shows, the concept of musical congruity is a crucial component in most of the studies. Relevancy and expectancy have been identified as key dimensions of congruity (Goodman, 1980; Heckler and Childers, 1992). Relevancy reflects the extent to which stimulus information contributes to or detracts from clear identification of the message and its meaning. Expectancy relates to the degree to which stimulus information is consistent with an individual's prior knowledge structures associated with a given theme. For example, sensory cues in a retail environment (e.g., scent) may be perceived as pleasant, but may be viewed as irrelevant or unexpected in a particular context (Bone and Ellen, 1999). Indeed, research has revealed how scents that are incongruous with a product have a negative effect on product evaluations, while more congruous scents enhance evaluations of product quality (e.g., Bone and Jantrania, 1992; Mitchell, Kahn, and Knasko, 1995).

However, previous literature reviews (e.g., Garlin and Owen, 2006; Oakes, 2000) examining the effects of music in service and retail environments have not identified the importance of musical congruity. Although a piece of background music may be liked equally by consumers in different environments, its congruity may differ markedly between these environments. For example, while the appropriateness and benefits of slow-tempo music have been revealed in contexts such as a hospital waiting room (Tansik and Routhieaux, 1999), North, Hargreaves, and Heath (1998) reported how fast-tempo music was considered more appropriate in the vigorous environment of a gymnasium. Consequently many of the studies are evaluated in terms of the congruity between the musical stimulus and the retail/service environment.

## **Genre**

Although musical genre subsumes an extensive range of other musical variables (e.g., variations in tempo and timbre etc.), studies have treated musical genre as a discrete variable because it is impossible to manipulate while holding other variables constant.

### **Genre Congruity and Evaluation of the Environment:**

Mehrabian and Russell (1974) claimed that the emotional states of pleasure, arousal, and dominance (i.e., feelings of control within an environment) impact upon approach behaviour (e.g., being attracted into an environment and encouraged to return). They suggested that liked environments lead to approach behaviours, while disliked environments lead to avoidance behaviours. Donovan et al (1994) found that increased congruity between environmental stimuli (e.g., upbeat music and bright colours) can intensify emotional states such as arousal. In seeking to increase approach behaviour by using music in organisational environments, it is possible that a high level of congruity between the background music and the desired organisational image may be effective. For example, classical piano music may be appropriate for an up-market bookshop but not a discount retail store. Grewal et al (2003) also revealed how congruously up-market classical music (compared to no-music) enhanced the perceived atmosphere of a simulated luxury goods (jewellery) store. In a mock retail store study, Spangenberg, Grohmann, and Sprott (2005) reported more favourable store attitudes, stronger intention to visit the store, and a more favourable evaluation of the environment when using ambient Christmas scent in the presence of congruous Christmas music. They suggested that retailers should consider using a single environmental cue rather than introducing incongruous combinations of scent and music.

Baker, Grewal, and Parasuraman (1994) examined the influence of classical and pop music in a study using a video simulation of a card and gift store. They reported that classical music and soft lighting (compared to pop music and bright lighting) produced expectations of higher service and merchandise quality levels. Results of a qualitative study by Areni (2003) indicated that restaurant and pub managers believed jazz and classical music were associated with up-market consumption settings.

### Genre Congruity and Spending:

It has been suggested (Radocy and Boyle, 1997) that consumers may spend more time and money if the background music is considered to be congruous. Wilson (2003) revealed how restaurant diners stayed longer, spent more, and demonstrated a more positive response to a restaurant's atmosphere in the presence of more congruous background jazz compared to less congruous classical music. Wilson also reported how restaurant diners were willing to pay significantly higher prices with background jazz music compared to easy listening music. The importance of cultural congruity between background music and featured product was demonstrated in a supermarket study (North, Hargreaves, and McKendrick, 1999a) that reported how French wine significantly outsold German wine when stereotypical French music was played (whereas German wine significantly outsold French wine when stereotypically German music was played). Consumer knowledge that a style of music is associated with the country of origin of the product influenced purchase behaviour in this context.

Research has suggested that playing congruous background musical genres may increase consumption and influence shoppers to buy more expensive brands. For example, studies have revealed how background classical music (compared to pop music) increased purchase



intent in a cafeteria (North and Hargreaves, 1998), and resulted in higher spending by up-market restaurant diners (North, Shilcock, and Hargreaves, 2003). Using a video simulation of a retail card and gift store, Baker, Levy, and Grewal (1992) reported how ambient cues (classical music and soft lighting versus pop music and bright lighting) interacted with social cues (number and friendliness of employees) to influence customer pleasure, which subsequently impacted upon willingness to buy. Areni and Kim (1993) also revealed how customers purchased more expensive wines in a wine store when exposed to background classical music compared to pop music. In this context, pop music may have provided a cue that was incompatible with the perceived sophistication of the more expensive wines. Classical music may have provided a more congruously sophisticated cue, suggesting that only expensive brands should be considered. However, they reported that the total amount of time spent in the wine store was unaffected when alternating classical and pop genres.

In conclusion, the genre studies indicate that increased congruity between musical genre and retail/service environment produces positive evaluation of the environment and enhanced purchase behaviour. The studies are consistent in suggesting that jazz and classical music are more effective than pop/easy listening music in producing perceptions of an up-market environment and increasing purchase intent. Since, across the population as a whole, jazz and classical music are generally less liked than pop music, genre preference appears to be an unlikely explanation for these responses. Indeed, participants may have been responding to the extrinsic associations of the musical genres rather than their intrinsic structural characteristics because the more 'elite' genres of jazz and classical music are more likely to promote the perception of up-market sophistication. North, Shilcock, and Hargreaves (2003) suggested that the up-market perception of such 'elite' genres may be attributable to associated mental representations concerning wealth and affluence, and argued that these

associations may also prime relevant behaviour leading to increased purchase intent. Furthermore, they suggested that 'elite' musical genres may interact synergistically with other aspects of an up-market restaurant environment to promote increased spending. The 'elite' nature of both genres is reinforced by research (Oakes, 2003a) revealing high levels of degree-level and postgraduate qualifications for the jazz and classical music audience segments.

## **Tempo**

### **Tempo Congruity and Evaluation of the Environment:**

Eroglu, Machleit, and Chebat (2005) discussed the potentially beneficial affective responses that may arise when a retail consumer encounters moderately incongruous stimuli in a busy shopping mall. They suggested that moderate incongruity induces more favourable consumer evaluations than extreme congruity or extreme incongruity (schema incongruity theory) via an inverted-U function. They argued that the novelty of moderate incongruity increases arousal, thus leading to more favourable evaluations. In contrast, extreme incongruity creates frustration because consumers cannot cognitively resolve it without redefining their existing cognitive schema. Their findings revealed how shoppers' utilitarian and hedonic evaluations of the shopping experience were highest under (moderate incongruity) conditions of slow-tempo music/high crowd density, and fast-tempo music/low crowd density.

### **The Impact of Tempo on Perceived Duration and Affective Responses to Waits:**

Storage-size models (e.g., Ornstein, 1969) propose that the perceived duration of a temporal event is greater with exposure to stimuli containing larger amounts of data to be cognitively processed. This occurs because the mind employs a heuristic to the effect that 'it takes more time for more things to happen'. The storage-size model of subjective time estimation was

the explanation provided by Oakes (2003b) in reporting a significant, positive impact of musical tempo upon perceived duration estimates. These estimates were significantly reduced with slow-tempo music (less data) compared to fast-tempo music (more data). The study also revealed how slow-tempo music significantly enhanced affective responses to waiting, thus supporting previous research suggesting that slow-tempo music may be intrinsically more capable of eliciting tranquil responses than fast-tempo music (e.g., Bruner, 1990). Although no comparison with other genres or tempi was made, Tansik and Routhieaux (1999) revealed how slow-tempo classical music (compared to no-music) decreased stress and increased relaxation levels for patients in a hospital surgery waiting room.

#### The Impact of Tempo (and Tempo Congruity) upon Spending and Consumption Speed:

If background musical tempo settings can influence consumer stay duration in retail and service environments, there are likely to be purchase behaviour implications, particularly if musical tempo can be used to overcome problems associated with major fluctuations in demand at different times of the day and week. For example, it is possible that musical tempo may be altered in restaurants to encourage rapid turnover at low profit margin/peak demand periods such as lunchtimes. Alternatively, it may be used to encourage a longer stay with the possibility of increased spending during high profit margin/low demand periods such as midweek evening meals. The storage-size model of perceived duration suggests that slow-tempo music will reduce the amount of time consumers think they have spent in retail or service environments. This may result in an increase in the actual duration of their stay (particularly if the perceived duration is shorter than the anticipated duration of their stay). A longer actual duration of stay may then lead to slower eating and drinking, and could also lead to additional purchases of food and drink. Consequently, the storage-size model is proposed as an explanation for results in the following studies suggesting that slow-tempo

music increases actual stay duration, encourages slower consumption, and potentially increases spending.

Roballey et al (1985) found that fast-tempo (122 BPM) music significantly increased restaurant diner eating speed in terms of bites per minute. These findings were confirmed by McElrea and Standing (1992) who revealed that fast-tempo (132 BPM) versions of unspecified piano tunes increased the drinking speed of 40 undergraduate participants compared to slow-tempo (54 BPM) versions. Milliman (1986) also reported how it took restaurant customers significantly longer to finish their meals when exposed to slow-tempo music compared to fast-tempo music (although musical tempo had no significant impact upon the number of groups leaving before being seated). He defined 72 BPM or less as slow-tempo and 92 BPM or more as fast-tempo. Findings indicated a significant increase in bar purchases of alcohol with slow-tempo music compared to fast-tempo music (although the difference in food purchases was non-significant). Furthermore, Caldwell and Hibbert (2002) reported that people spent longer in a restaurant when slow-tempo music was playing. They suggested that more arousing (e.g., faster) music made consumers carry out their activities (e.g., eating and drinking) more quickly. They also reported higher spending on food and drink in the restaurant when using slow-tempo music.

Using a decibel meter to maintain a constant volume, Milliman (1982) used slow- and fast-tempo background music in a supermarket, reporting increased daily gross sales volume when slow-tempo music was played. The increase in purchase activity was attributed to supermarket shoppers moving slower and shopping longer when slow-tempo music was played compared to fast-tempo music. However, a comparable supermarket study by Herrington and Capella (1996) retained similar (slow/fast) tempo levels, but used the same

digitised musical compositions. Since Milliman had used different pieces of music, Herrington and Capella attempted to ensure that tempo effects were not confounded with other musical characteristics (e.g., genre, harmony, liking). They monitored the total time spent by shoppers in the store's selling area (excluding time spent in a checkout queue) and concluded that tempo of background music did not influence shopping time, although shopping time was reported to increase with the level of preference for the music. They also revealed that tempo did not impact upon shopping expenditure.

In reporting how tempo and mode operated interactively on evaluations of musical liking, Kellaris and Kent (1991) also argued that unacknowledged interactive effects between tempo and other musical variables may have confounded results from the Milliman studies. Likewise, Mattila and Wirtz (2001) highlighted interactive effects in revealing how arousal congruity (either both high or both low) between ambient stimuli increased impulse purchase behaviour in a retail outlet (compared to when these ambient stimuli were mismatched). High arousal stimuli were fast-tempo music and a stimulating scent (grapefruit), while low arousal stimuli were slow-tempo music and a relaxing scent (lavender). Such congruity also encouraged people to enter the retail environment, enhanced their evaluation of it, and increased overall satisfaction levels.

In summary, it is suggested that moderate incongruity induces more favourable consumer evaluations of an environment than either extreme congruity or extreme incongruity (Eroglu, Machleit, and Chebat, 2005). In addition, the storage-size model appears to provide a possible explanation for the impact of background musical tempo variation upon perceived duration, actual stay duration, consumption speed, and purchase behaviour. While the findings of Milliman's restaurant study were confirmed in other studies, the findings of his

supermarket study have not been confirmed elsewhere. Theoretical understanding of why the given effects did or did not occur in replication studies will facilitate their commercial application. The explanation for such inconsistency may be attributable to the differing contexts since it is possible that the impact of musical tempo upon purchase activity may be less predictable in more stressful, work-related environments. Indeed, Hargreaves, MacDonald, and Miell (2005) devised a reciprocal feedback model of musical communication that identified the impact of contexts and situations (e.g., work or leisure) upon responses to music. Although slow-tempo music may slow people down in supermarket aisles, this may not always lead to increases in unplanned purchase behaviour because supermarket patronage is still considered by most consumers to be a chore rather than a pleasure. In contrast, restaurants are designed to provide relaxing and pleasurable environments. Furthermore, restaurant diners frequently wish to linger with no fixed parameters on the duration of their stay, while supermarket shoppers are aware of pressing additional tasks (e.g., loading and unloading groceries into cars and kitchens).

The influence of context upon responses to music may apply to simulated environments as well as naturalistic ones. For example, a study by Chebat, Vaillant, and Gelinas-Chebat (2000) used three pieces of classical music as background to a video simulation of an encounter between a travel agent and customers. Each piece of music differed in tempo (slow, moderate, and fast) and subsequent arousal level (low, moderate, and high). Although they reported no effects of music on participant purchase intent, they revealed that low or moderately arousing music (slow- and moderate-tempo music) enhanced the desire to affiliate with the salesperson (travel agent) and the likelihood of accepting her arguments.

However, a previous study (Dube, Chebat, and Morin, 1995) focused upon a video simulation of a bank using nine different pieces of classical music varying in tempo (and subsequently arousal). It revealed that high-pleasure music demonstrated a U-shaped pattern with less desire to affiliate associated with moderately arousing music (moderate-tempo). The explanation of the results in the latter study suggested that peaks of pleasure may be located at the two extremes of the arousal continuum. Such apparently conflicting findings could be attributable to differences in simulated context between the studies since participants may have associated the travel agent with leisure activities and the bank with work-related activities. It is also possible that measurement of tempo may have been confounded by effects of the other structural variables that comprised the different classical music pieces in these studies (e.g., key and timbre).

### **Volume**

Musical volume is relatively easily modified by managers and academic researchers operating within retail and service environments. Like musical tempo, it is a variable that allows comparative, quantifiable measurement, but unlike musical tempo, research is constrained by defined parameters ensuring that stimuli are neither inaudible nor painful for participants. Most studies have compared stimuli where one piece of music is louder than another piece of music, although little acknowledgement has been made of the impact of musical dynamics (e.g., where one passage of notes is louder/softer than another passage of notes within the same piece).

### Volume Congruity and Perceived Stay Duration:

Effective management of perceived duration may influence the duration of consumer stay. Kellaris and Mantel (1994) suggested that managers may wish to expand consumer perceptions of time. If restaurant music can make people feel that they have spent longer over their meal than they actually did, it may be used to increase the speed of table turnover in peak demand periods without making customers feel rushed. Alternatively, if music can make perceived waiting time seem shorter for consumers waiting in line, it may result in a reduction in dissatisfaction levels. Likewise, if perceived shopping time is shorter than actual shopping time, it could lead to more time being spent in the store, with subsequently greater likelihood of unplanned impulse purchases (Kellaris and Mantel, 1996).

Smith and Curnow (1966) reported that loud music made supermarket customers shop for a shorter time period than soft music, but provided no quantifiable measures of volume. In contrast, a supermarket study by Herrington and Capella (1996) using a decibel meter to monitor loudness and softness concluded that volume of background music did not significantly influence shopping time. A study by Yalch and Spangenberg (1990) revealed how shoppers reported spending more time than expected in a store playing less preferred music (quieter background music for younger shoppers and louder foreground music for older shoppers). In this context, longer perceived stay duration may be associated with musical volume levels that were incongruous with the age band of shopper. Another possible explanation for this result could be that more preferred (either louder or quieter) music increased data processing load and diverted attention from an internal cognitive timer (Frankenhaeuser, 1959), thus leading to shorter estimates of perceived stay duration (although as actual time spent was not observed, it is unclear whether the effect was behavioural or perceptual). Since the storage-size model suggests that perceived duration is shorter with



exposure to stimuli containing smaller amounts of data, this could explain the results of a study by Kellaris and Altsech (1992). With discrete decibel meter settings of 60 dB (less data) for soft background music and 90 dB (more data) for loud foreground music, they reported how loud music led to longer time estimates than quiet music for female participants.

### Volume and Spending:

Although increased stay duration may lead to increased spending, it is acknowledged that the extent of such a relationship would inevitably be context specific. While there was no significant difference in total sales, a study by Smith and Curnow (1966) argued that increased arousal was the reason why loud music made shoppers increase their rate of spending per minute in a store in comparison to soft music. However, a replication study by Herrington and Capella (1996) reported no impact of volume upon purchase behaviour, and suggested that level of musical liking was a more likely explanation for any differences in purchase behaviour. Research by Yalch and Spangenberg (1990) showed that shoppers made more unplanned purchases when exposed to quiet background compared to loud foreground music, although the effect was only significant during purposeful shopping times (mornings and afternoons) rather than leisurely shopping times (evenings and weekends). A later study by Yalch and Spangenberg (1993) reported that shoppers aged 25-49 years spent more in a retail environment when loud foreground music was playing, while shoppers aged 50 and over spent more when quiet background music was playing. They argued that the departments were perceived to have more desirable characteristics by the shoppers when the music was at an appropriate volume level, thus influencing purchase activity. However, the study reported no statistically significant difference in total purchase whether music was played or not.

Areni and Kim (1993) underlined the importance of genre in reporting increased purchases of expensive wines with more sophisticated classical music compared to less sophisticated pop music. However, Lammers (2003) revealed how lower volume rock and classical music both enhanced restaurant spending compared to louder music, concluding that the critical factor may have been the contextual congruity between the quiet serenity of the restaurant setting and the quietness of the musical volume. Such findings may be explained by the elaboration likelihood model (Petty, Cacioppo, and Schumann, 1983) suggesting that attitudes are formed without active thinking in a peripheral route to persuasion (e.g., by associating the peaceful restaurant environment with the low volume, relaxing music). A high level of congruity between musical and environmental stimuli may have enhanced attitudes to the restaurant, thus encouraging increased purchases.

In summary, an attentional (cognitive timer) model is a suggested explanation for the impact of musical volume upon perceptions of stay duration, while a storage-size model has been proposed as an explanation for the impact of musical volume upon differences in time estimation. Results in this section regarding the impact of volume congruity upon stay duration and purchase behaviour are not entirely conclusive. However, since Yalch and Spangenberg (1993) reported how participants' age moderated the impact of musical volume congruity upon perceived spending, future research with clearly defined decibel level parameters needs to examine in more detail the intuitive assumption that louder music is more effective for younger shoppers, while quieter music is more effective for older shoppers. Indeed, a similar point is made in a qualitative study by Beverland, Lim, Morrison, and Terziovski (2006) revealing that musical volume above a zone of tolerance decreased

stay duration and impeded the ability to shop. Consequently, future research should also discriminate between the effects of musical volume and liking.

### **Liking**

Using occupation as a determinant of social class, Shepherd (1986) revealed how individuals placed higher up the social class structure were more likely to prefer up-market musical genres such as classical and jazz. Holbrook and Schindler (1989) indicated that consumers' sensitivity to pop music peaks in the early 20s age band, creating bonds with individual pieces of pop music that can last a lifetime. Findings such as these clearly have social class and age segmentation implications for many organisations that use background music.

Scott (1990) argued that musical responses are not biologically imbedded, but are gradually learned through a process of social conditioning. Consequently, musical liking and the subsequent effectiveness of musical communication might well depend upon an individual's cultural background, which would be a function of various factors (e.g., the importance of peer group approval of musical preference). Indeed, Sawyer (2005) outlined the inadequacy of explanations of musical communication based only upon the structural characteristics of music. He suggested that the semiotic concept of indexicality (the association between a sign and its object) could provide a broader explanation of how musical meaning is inevitably context-specific and implicitly referential. For example, consumers may associate their own personal experiences with a piece of music, so that when the music is heard within a retail or service environment, it stimulates memories of the original experience and the emotions induced. The nature of these memories is likely to influence whether the music is liked or disliked. Disney use music to appeal to parents (Carson, 2004) by linking theme park

experiences back to nostalgic memories of music used in Disney films enjoyed as children. In addition to using designated background music for individual rides and attractions, Disney use music to identify geographically themed locations (e.g., a live 'Oom-Pah' band in the German pavilion).

Other studies have investigated how preference is a function of properties of the music itself. Most notably, Berlyne (1971) suggested that musical properties such as complexity and familiarity combine to elicit listener arousal, and argued that musical liking is highest at intermediate arousal levels. In contrast, Martindale and Moore (1988) used neural network models of human cognition in proposing that musical liking is a function of the extent to which a musical stimulus is prototypical of its class. North and Hargreaves (2000) argued that prototypicality and arousal should not be regarded as mutually exclusive concepts since they may operate simultaneously to impact upon musical liking.

#### Liking and Evaluation of the Environment:

If background music is liked, valence congruity arises because the music supports managerial intention to elicit positive environmental evaluations. Using a video simulation of a real bank branch, Hui, Dube, and Chebat (1997) identified how liked music produced a more positive emotional evaluation of the service environment, while Dube and Morin (2001) reported enhanced customer attitudes towards the physical environment dimensions of a store using liked background music. Two experiments (Morin, Dube, and Chebat, 2007) carried out in a video simulation and an e-service environment also revealed how variations in musical valence made participants perceive the service environment more or less favourably.

North, Hargreaves, and McKendrick (2000) reported a positive correlation for each of 20 adjectives between ratings of background music (classical and easy-listening) and ratings of a bank. Similarly, they also revealed a positive correlation between ratings of background classical and pop music and ratings of a bar. While such broad genres as jazz, classical, and pop music embrace numerous stylistic sub-genres that are clearly distinct from each other, research has also considered the impact of specialist niche genres. For example, North and Hargreaves (1996a) revealed how liking for new age background music in a cafeteria was correlated positively to liking for the cafeteria and ratings of likelihood of return. They also reported how new age music of moderate complexity produced more positive responses than high or low complexity new age music, suggesting that the relationship between musical preference and complexity level was consistent with an inverted-U hypothesis. Sweeney and Wyber (2002) reported how more liked music enhanced perceptions of merchandise and service quality using a video simulation of a fashion store. The study also revealed interactive effects of genre and tempo since pleasure levels and perceived service quality were enhanced by fast-tempo classical music and by slow-tempo pop music. Consistent with Mehrabian and Russell's (1974) model of environmental psychology, these enhanced perceptions may be attributable to increased levels of environmental pleasure and arousal elicited by the music.

#### Liking and Perceived Wait Duration:

The bank branch video simulation study by Hui, Dube, and Chebat (1997) revealed how liked music increased perceived wait durations rather than serving as a distraction that reduced them, and reported how liked music produced a more positive emotional response to waiting. Various experimental studies have also suggested that the more consumers like music played during a time period, the longer they perceive the time period to be (Kellaris and Kent, 1991; Kellaris and Kent, 1992; Kellaris and Mantel, 1994). Kellaris and Kent (1991) revealed how

the major scale was evaluated as more appealing than either the minor scale or the dissonant whole-tone scale. Kellaris and Kent (1992) subsequently altered the harmony of the same pop-style composition using digital technology to hold other musical variables constant, and reported that the perceived duration of an event filled with music varied significantly between musical modes. They revealed longest estimates for the major key, shorter estimates for the minor key, and shortest estimates for dissonant atonal music. In this study, the least liked version (dissonant atonal music) elicited the shortest mean duration estimate, while the most liked version (major key) produced the longest mean duration estimate.

Block (1990) provided a possible explanation for such findings. Assuming that increased attention is paid to liked music, the subsequent increase in cognitive processing may lead to the perception that more happened while listening to liked music, thus increasing retrospective duration estimates. However, since Kellaris and Altsech (1992) revealed that loud (more disliked) music produced longer time estimates than quiet (more liked) music, such apparently conflicting evidence suggests that the impact of musical stimuli variation upon perceived duration cannot simply be attributed to the level of musical liking.

Results regarding the impact of familiar music upon perceived duration are inconsistent. Yalch and Spangenberg (2000) revealed how customers perceived they had shopped longer when exposed to familiar music, although their actual shopping time was longer when exposed to unfamiliar music. In contrast, laboratory experiments using student participants (Areni and Bailey, 2006a) reported that perceived duration was shorter with familiar music, but only when participants were not engaged in a cognitive task while waiting.

### Liking and Spending:

Caldwell and Hibbert (2002) reported that musical liking enhanced restaurant spending, enjoyment levels, intention to return, and intention to recommend the restaurant, thus suggesting that these enhanced cognitive and affective responses to the environment may be linked to increased levels of environmental pleasure and arousal elicited by the music (Mehrabian and Russell, 1974).

The empirical studies in this section have produced some interesting findings. For example, the simulated bank environment and most of the experimental studies suggest that liked music tends to increase perceived wait durations. This conclusion may alarm retail and service environment managers using liked music in attempts to reduce perceived waiting times. However, since the studies in this section have consistently reported the positive impact of musical liking upon evaluation of the environment and purchase behaviour, this suggests that the enjoyable experience of listening to liked music might have the potential to override the negative effects of longer wait perceptions. It is possible that managers may need to decide which outcome is most important to them.

### **Discussion**

Just one study in this thesis focuses specifically on a service environment. Chapter 8 considers the impact of musical presence, liking, and tempo upon perceived duration and affective response. Furthermore, it addresses the impact of crowd density in a waiting context, reassessing the shopping mall study findings of Eroglu, Machleit, and Chebat (2005) who argued that moderate incongruity between musical tempo and crowd density induced more favourable consumer evaluations than extreme congruity or extreme incongruity.

Although musical volume is not addressed by the empirical studies in this thesis, all of the other musical variables identified in Table 2.1 are examined in varying degrees of detail. Given the findings regarding the impact of musical genre upon evaluation of the environment and purchase behaviour, Chapter 6 of this thesis reports a study investigating the impact of background musical genre on responses to television and radio ads. The outcomes identified by the genre studies (see Table 2.1) are very similar to some of the dependent variables tested in Chapter 6, such as perceived image of the advertised university and likelihood of application to the university. Musical tempo effects are investigated in the context of advertising (Chapter 4) and a service environment (Chapter 8) by addressing two of the outcomes identified in Table 2.1 (perceived duration and affective response). The outcomes identified by the musical liking studies (see Table 2.1) are also addressed in the thesis. The impact of musical liking upon perceived duration is examined in Chapters 4 and 8, while Chapter 6 assesses the influence of musical liking upon perceived image of the advertised university and likelihood of application. The concept of congruity is highlighted in all of the empirical studies in the thesis.

This review highlights the need to be aware of potential interactions that may take place between the interdependent structural variables of a musical stimulus (e.g., tempo and volume). Furthermore, it is suggested that single variable studies need to ensure their results are not confounded with musical characteristics (e.g., genre, liking, and congruity) that have not been taken into account. Failure to do so could explain why the results of some single variable studies (e.g., Milliman 1982) have not been confirmed in replication studies (e.g., Herrington and Capella, 1996). Indeed, although his conclusions were based on a review of the literature rather than direct empirical evidence, Bruner (1990) produced a broad



projection of the likely interactive effects of combinations of various structural elements of music (tempo, mode, pitch, rhythm, harmony, and volume), suggesting that single variable studies can lead to erroneous conclusions if undetected interactions exist. In the same way that consumers may respond to multi-sensory environmental stimuli by combining them to reach a unified perspective (Morin, Dube, and Chebat, 2007), consumers' responses to the structural variables and characteristics of a musical stimulus are likely to be much more holistic than many studies of individual musical variables imply. Although interactive effects between musical variables are not examined in this thesis, unlike many previous studies (e.g., Milliman, 1982), the single variable studies of tempo and timbre in Chapters 4, 5, and 8 are carefully designed to prevent the possibility of any undetected and potentially confounding interactions between musical variables.

### **CHAPTER 3: THE INFLUENCE OF MUSIC IN ADVERTISING**

This chapter presents a literature review highlighting significant findings from empirical studies focusing upon cognitive and affective responses to music in advertising. The influence of music in advertising has received less attention than it may deserve, perhaps because existing empirical research has frequently produced contradictory findings, thus making it problematic for researchers to distil meaningful conclusions. Consequently, this research seeks to review the literature with the intention of identifying underlying patterns that allow appropriate categorization of findings.

The review incorporates discrete sections highlighting the most prominent dependent and independent variables analysed in the literature. Table 3.1 is provided to inform academic research and practitioner decision-making when considering musical stimuli. It summarizes the impact of five different types of congruity (score, mood, semantic, genre, and image) between musical stimulus and ad upon measures of purchase intent, brand attitude, recall facilitation, and affective response. Furthermore, it highlights the importance of incongruity resolution as well as affect transfer. Key dimensions of congruity identified by Heckler and Childers (1992) include relevancy and expectancy. The musical congruity perspective is used as a unifying framework to reconcile apparently disparate findings. The overt identification of an underlying dichotomy between congruous and incongruous musical stimuli may well help to crystallize advertising thought by revealing how various forms of musical congruity have successfully achieved desired outcomes in empirical studies.

In order to provide a more coherent exposition of the literature, terminology has been standardized across the different studies reviewed here. For example, the more frequently

employed term 'musical congruity' is used to replace alternative authorial terms such as 'musical fit' (e.g., MacInnis and Park, 1991). There is a need for consolidation and appraisal of the existing literature on music in advertising, particularly because music forms such a considerable component of advertising communication in its various forms such as instrumental background music (no lyrics), chart hits, and customized jingles (ad compositions with lyrics). Indeed, some studies estimate that the number of television ads using music is in excess of 90%, and furthermore, music is the main creative ingredient in many ads (Kellaris, Cox, and Cox, 1993). The belief that advertisers have in the importance of music is reflected in the size of fees that can be commanded for creative composition or the rights to use a popular song. For example, Microsoft paid US\$3 million to use The Rolling Stones' song 'Start Me Up' (Naughton, 1999) during the commercial launch of the Windows 95 operating system. Such expenditure suggests that worldwide annual expenditure on music in advertising is likely to be measured in terms of billions of dollars. It may also indicate the desire of advertisers to have their products associated with the success and popularity of famous performers, and reflects the perceived brand benefits of selecting a song with appropriate lyrics and imagery.

Choice of musical genre is also likely to be important, since research (e.g., Oakes, 2003a) indicates that genres differ widely in their appeal to different demographic segments (e.g., by age, gender, education level, lifestyle, and family lifecycle stage). However, rather than using existing music, many advertisers adopt the less expensive option of original background music produced by subcontracted ad agency musicians. As Dunbar (1990) describes, the specifics of this specially-produced music are rarely considered during the early stages of creative advertising planning, and are typically an afterthought. While advertising agency executives must be verbally and visually adept, it may be a matter of chance whether agent or client has any musical experience or interest beyond familiarity with chart hit songs.

Yalch (1991) identified conflicting evidence regarding the commercial effectiveness of ad music, since studies have highlighted how it can affect listeners by positively enhancing recall of an accompanying message, or by impacting negatively upon their comprehension of the accompanying message. Such conflicting reports regarding the effectiveness of ad music underline the need for more research to provide managers with a greater insight into the likely effects of specific musical variables upon listeners. Increased knowledge regarding the precise benefits offered by different musical alternatives will make it easier to evaluate and discriminate between those alternatives in order to ascertain the optimum selection. In this context specifically, it is important that client organisations and advertising agencies who commission original music or purchase the rights to use established music in ads should become more critically discriminating in evaluating the likely effects of the music upon consumers.

Many studies highlighted in the following review used student participants in an artificial environment in which they were instructed to focus their attention actively upon the ad stimulus. It is acknowledged that in a more naturalistic setting, ad music operates in a passive listening context. Regarding the studies highlighted in Table 3.1, some used television ads (Bozman, Mueling, and Pettit-O'Malley, 1994; Gorn, Goldberg, Chattopadhyay, and Litvack, 1991; Hung, 2000; Hung, 2001; MacInnis and Park, 1991; Park and Young, 1986; Stewart, Farmer, and Stannard, 1990; Stewart and Punj, 1998), others used static visual slides accompanied by music (Alpert, Alpert, and Maltz, 2005; Blair and Shimp, 1992; Mitchell, 1988), while the remainder used radio ad stimuli. The empirical studies have been broken down into three discrete categories of dependent variable, namely purchase intent, brand attitude, and recall facilitation. These responses are all cognitive of course, and only one study has examined specifically affective response as a dependent variable.

**Table 3.1 Empirical Findings Highlighting the Impact of Music upon Responses to Advertising**

<b>Dependent Variables</b>	<b>Outcomes</b>	<b>Studies</b>
<b>PURCHASE INTENT</b>	Music composed specifically to be appropriate with an ad increased purchase intent (score congruity)	North, Hargreaves, MacKenzie, & Law (2004)
	Increased purchase intent arose with high congruity between the mood induced by the music ('sad') and the greeting card for ill friend (mood congruity)	Alpert, Alpert, & Maltz (2005)
<b>BRAND ATTITUDE</b>	Sung version of ad produced a positive, linear trend in brand evaluation over repeated exposures	Anand & Sternthal (1990)
	Music associated with an unpleasant experience lowered brand evaluation through transfer of affect	Blair & Shimp(1992)
	Musical disliking diminished brand attitude via transfer of affect	Simpkins & Smith (1974)
	Musical liking enhanced brand attitude via transfer of affect	Mitchell (1988)
	Musical liking enhanced brand attitude via transfer of affect when ad involvement was low	Park & Young (1986); Bozman, Mueling, & Pettit-O'Malley (1994)
	High congruity between ad song lyrics and message enhanced brand attitude with low and high ad involvement (semantic congruity)	MacInnis & Park (1991)
	High congruity between musical genre and ad enhanced brand attitude (genre congruity)	Hung (2000; 2001)
<b>VISUAL RECALL</b>	High congruity between musical genre and product attributes enhanced recall of visual imagery from the ad (genre congruity)	Stewart, Farmer, & Stannard (1990); Gorn, Goldberg, Chattopadhyay, & Litvack (1991); Stewart & Punj (1998)

<b>VERBAL RECALL</b>	Music composed specifically to be appropriate with an ad increased recall levels (score congruity)	Tom (1990); Yalch (1991); North, Hargreaves, MacKenzie, & Law (2004)
	High music-message congruity (matching evocation of images elicited by the music and the product) enhanced brand name and message recall with attention-gaining music (image congruity)	Kellaris, Cox, & Cox (1993)
	Music fading back in facilitated recall by indicating that the verbal material spoken over unexpected silence was being highlighted due to its importance	Olsen (1995)
	Participants resolved the incongruity of absent lyrics by singing along, thus enhancing subsequent ad message recall (resolved incongruity)	Roehm (2001)
<b>AFFECTIVE RESPONSE</b>	Music composed specifically to be appropriate with an ad enhanced affective response to the ad (score congruity)	North, Hargreaves, MacKenzie, & Law (2004)

## **Cognitive Response**

### **Purchase Intent:**

North et al (2004) reported the findings of a study in which an advertising agency prepared separate versions of a radio ad containing music that was designed to be either appropriate or inappropriate with a product's brand image. They revealed how likelihood of purchasing the advertised product was greater with music designed to be highly congruous with the ad compared to less congruous ad music. This study can be categorized as an example of the impact of musical score congruity. Building upon the findings of an earlier study by Alpert and Alpert (1990), Alpert, Alpert, and Maltz (2005) reported increased product preference and purchase intent where there was congruity between the mood induced by music and the context-specific purchase occasion (e.g., 'sad' music was significantly more effective than 'happy' music in positively influencing preference and purchase intent of a greeting card for an ill friend). Context-specific mood congruity ensured that the mood of the music was semantically integrated with a key benefit of product acquisition. The authors argue that, in conveying sadness to the listener, the music reflected the desire to convey empathetic sadness through the greeting card for the ill friend. This underlined the importance of a match between the mood induced by the music and the mood associated with the advertised product.

When associating slides of pens with liked and disliked music, Gorn (1982) revealed a significant preference for pen colours associated with liked music. However, when Kellaris and Cox (1989) replicated Gorn's classical conditioning experiment with minor modifications to minimize demand artefacts, they found no confirmatory evidence. In one experiment, Kellaris and Cox (1989) used the same liked/disliked musical genres as Gorn (an Indian classical music extract and a pop song), and in another experiment used liked and disliked

compositions by different classical composers, but again neither experiment showed an effect on pen colour preference. Pitt and Abratt (1988) also concluded that liked (pop) music did not enhance product preference compared to a disliked (classical) stimulus. Consequently, the conflicting evidence means that liked ad music has not been included as an empirically verified variable (see Table 3.1) that impacts significantly upon product preference or purchase intent.

### Brand Attitude:

Although brand attitudes are often included under the umbrella term of affect, some authors define attitudes in cognitive terms as evaluative judgments rather than emotional states (e.g., Cohen and Areni, 1991), while others regard them as a hybrid of affective and cognitive components (e.g., Breckler and Wiggins, 1989). For the purpose of this thesis, brand attitude is regarded as a predominantly cognitive component. Anand and Sternthal (1990) revealed significant differences in brand attitudinal responses to a soft drink ad using a spoken message compared to the same message sung with musical accompaniment. In contrast to the spoken version, the song gave rise to a positive, linear trend in brand evaluation over repeated exposures. These findings underline how music can elicit a more favourable brand attitude over the course of a campaign of repeated ad exposures. While repetition of the spoken word can become tedious and irritating, song uses rhythmic and tonal variety to support verbal repetition and make it potentially pleasurable. Anand and Sternthal argue that, in their study, the greater complexity inherent to the musical compared to the spoken version allowed greater repetition before habituation set in.

MacInnis and Park (1991) explored 'indexicality', or the potential for music in ads to be associated with previous emotion-laden experiences. Although well-known music offers



opportunities for attention gain and the possibility of the transfer of positive affect, memories associated with that music may be positively- or negatively-valenced. For example, Blair and Shimp (1992) found that positive brand evaluation declined due to the transfer of affect that arose when slides with a brand name were accompanied by music associated with the negative emotions of an unpleasant experience.

Transfer of affect may also take place if the background music itself (rather than its autobiographical association) is liked or disliked. For example, Simpkins and Smith (1974) showed how a disliked musical genre (country) accompaniment for an ad message resulted in significantly lower brand evaluations compared to a liked musical genre (rock) and a no-music treatment. Mitchell (1988) provided a corresponding example in a study showing how ad music that induced a happy mood produced more positive brand attitudes than did ad music that induced a neutral mood.

Park and Young (1986) chose a number one chart hit as an exemplar of positively-valenced background music, and showed how it enhanced brand attitude (although only for participants with low ad involvement). Bozman, Mueling, and Pettit-O'Malley (1994) also reported how brand attitude was positively related to the valence of affective response to ad music under conditions of low (but not high) ad involvement. Despite liking the music, participants in the high ad involvement condition may have been more skeptical due to the high perceived risk associated with high-involvement. In the low-involvement (low perceived risk) condition, brand attitude enhancement may have been more susceptible to musical valence as there would be little need to expend additional cognitive resources evaluating alternative brands. Perhaps a more convincing explanation of effects such as these may be provided by the elaboration likelihood model (e.g., Petty, Cacioppo, and Schumann, 1983) which suggests that liked music

should be more effective in enhancing brand attitude in a low ad involvement condition because attitudes are formed without active thought, and are shaped by affect transfer between musical valence and brand.

MacInnis and Park (1991) showed that high congruity between ad song lyrics and ad message resulted in a more positive emotional response, which in turn led to enhanced attitude to the ad and brand. Since these findings were consistent under conditions of low and high ad involvement, they underline the importance of a high level of semantic congruity between advertising proposition and song. Likewise, Hung (2000) reported how increased congruity between genre of music and ad subject matter (genre congruity) produced the desired response from the advertising (e.g., Brazilian music reinforced perceptions of the natural authenticity of a Brazilian coffee brand). Further research by Hung (2001) revealed how brand attitudes were significantly altered after superimposing contrasting musical genres (classical and rock) over a television ad. The congruously up-market classical music treatment reinforced the desired up-market brand image of the advertised shopping mall. It should be noted that the three studies of music and brand attitude citing involvement as an independent variable (see Table 3.1) should be categorized as examples of ad involvement, although participants were encouraged to imagine the product had personal relevance for them and to try to learn about brand performance and key benefits in order to simulate product involvement (e. g., Park & Young, 1986).

#### Recall Facilitation:

Hoyer, Srivastava, and Jacoby (1984) reported that music could enhance verbal comprehension of ad messages, using a selection of 22 ads in which music was either present or absent. However, since ads with music may deliberately contain simpler, more easily

comprehended messages to offset the distracting influence of the music, results from this study may differ from those obtained from experimental designs that compare versions of the same ad where the message is identical with and without music. Consequently, the mere presence of music has not been included in Table 3.1 as an empirically verified variable that impacts upon recall. Much research in the advertising literature has focused upon discriminating between music's ability to draw attention to an ad, and its potential to distract the listener from the actual ad message. For example, unless a song with a deliberately mnemonic element is used, processing of musical data may impinge upon the resources allocated to processing of verbal data, and the inevitable cognitive trade-off is likely to have recall implications. For example, when using chart hits, proactive interference theory (e.g., Eysenck and Keane, 2000) suggests that the ability to process and subsequently remember the ad message may be disrupted by what consumers have previously learned about the chart hit. However, the following visual and verbal recall studies explicitly or implicitly reveal the positive impact of musical congruity upon recall.

#### Visual recall:

With visual ads, one function of music has been to maintain viewer attention by smoothing out scene changes and binding together sequences of discrete visual images. However, studies using household respondents (e.g., Stewart, Farmer, and Stannard, 1990; Stewart and Punj, 1998) have also found musical cues to be more effective than verbal cues in eliciting recall of visual imagery (action and motion recall) from a montage of car scenes with musical accompaniment. Since the music (exciting hard-rock) was intended to evoke the key product benefit (exciting to drive), the positive results could be attributed to the benefits of congruity between musical genre and ad (genre congruity). Although the musical genre involved was not described explicitly, Gorn et al (1991) reported significantly increased visual recall as a result

of using ad music (compared to no-music) that was selected by a studio musician as representative of the style of ad music normally associated with the generic product (apple juice).

#### Verbal recall:

Empirical studies have examined the effects on verbal recall induced by jingles, instrumental background music, and chart hits. The importance of ensuring congruity between ad music and brand has been highlighted by research (e.g., Tom, 1990) revealing that well-known chart hits were less effective in generating brand recall than music scored specifically for its appropriateness with an ad campaign. In accordance with this, Yalch (1991) revealed that jingles scored specifically for an ad enhanced brand name recall (although the recall benefits of the jingle versus no-jingle treatment diminished with increasing ad exposures, implying that jingles may be more effective in low-exposure campaigns). North et al (2004) also revealed how content recall was significantly higher with musical stimuli evaluated as highly congruous with the ad compared to less congruous ad music. These three studies can be categorized as examples of the way in which congruity between ad and musical score (score congruity) enhances verbal recall.

MacInnis and Park's (1991) concept of 'music's fit with the ad' relates to the congruity between two types of verbal cue (ad copy and song lyrics). This differs from the concept of music-message congruity (the fit between ad copy and instrumental music) developed by Kellaris, Cox, and Cox (1993), who found that attention-gaining music with high music-message congruity had a positive effect on brand name and message recall. In the latter study, image congruity was evident as retention was reinforced when the images evoked by advertised products matched the images evoked by different pieces of music (e.g., a James

Bond film matched with exciting music). However, when congruity was low, music (either high or low in attention-gain) distracted attention and impeded ad processing and subsequent recall. Results showed that only music high in attention-gain and music-message congruity could outperform a no-music condition in terms of brand name and message recall. The authors suggested that it is essential for ad music and message elements to complement each other, rather than compete for attention.

Note also however that although music may contribute to ad message reception by attracting and holding attention, it may become so captivating that it actually distracts attention from the main advertising message. Brooker and Wheatley (1994) reported how background music reduced unaided verbal recall of an ad compared to a treatment in which music was only used as an introduction and faded out when the voice message was introduced. Olsen (1995) developed this finding in reporting a significant increase in recall when ads with music cut to silence just before presentation of crucial verbal content. This indicates the importance of using musical dynamics in ads (including more subtle volume gradations from loud to soft) in order to gain attention and facilitate enhanced recall. The study revealed how the dramatic change of unexpected silence enhanced recall compared to background music or background silence throughout. The presumed *modus operandi* in this case is that a dramatic pause jolted the listener and directed attention to verbal content through attention-focusing juxtaposition of the expected and unexpected. Since the background music faded back in after presentation of the verbal content, it facilitated resolution of the incongruity by allowing participants to realize that the verbal material spoken over silence was being highlighted due to its importance.

An example of incongruity resolution can be found in a study by Roehm (2001), who revealed that day-after verbal recall of lyrics containing the ad brand message was greater with instrumental (no lyrics) rather than vocal versions of a pop song for respondents familiar with the song. Since a familiar song presented without its normal lyrics may be considered incongruous with expectations, participants may have been attempting to resolve the incongruity by actively generating (e.g., mentally 'singing along with') the absent lyrics, thus enhancing subsequent recall. In this context, it is possible that incongruity may actually enhance content recall provided that the listener can participate in its resolution. If so, this suggests that advertisers should consider using instrumental versions of songs if the target audience is likely to be highly familiar with the song.

### **Affective Response**

Although North et al (2004) revealed how a high level of musical score congruity enhanced positive affective response to the ad, most of the studies identified in Table 3.1 focused upon desired cognitive outcomes. Nevertheless, it is important to highlight the impact of affective response. While the spoken word in an ad can provide objective product attribute information that consumers can cognitively evaluate, accompanying background music may be used to evoke more of an emotional response to the ad. This underlines the difficulty in attempting to divorce emotional and cognitive response to ads, since cognitive messages may have emotional undertones, while emotional stimulation through mood-inducing music may elicit cognitive processing that ultimately impacts upon purchase behaviour. In short, there is considerable ambiguity regarding the consistent direction of any supposedly one-way relationship between emotional and cognitive responses to advertising.

Studies have suggested that the affective consequences of exposure to a television ad were important mediators of consumer behaviour (North and Hargreaves, 1997b). For example, Mitchell and Olson (1981) presented participants with ads for tissues and found that differences in attitudes towards the tissues were not entirely attributable to differences in product attribute beliefs elicited by the ads. The affective responses of participants to the ads also appeared to influence their attitude towards the product. A further problem with approaches based on affective responses to advertising is that, although music is capable of eliciting an emotional intensity beyond the capacity of verbal description, ad music often relies upon bland clichés designed to trigger emotions that are socially conditioned. Effective musical communication in an advertising context may be dependent upon the extent to which consumers understand the underlying cultural conventions and symbolic resonance of such stimuli.

### **Discussion**

Analysis of the empirical studies has distinguished between five variants of music/ad congruity (mood, semantic, genre, score, and image). Score and image congruity have been reported to enhance verbal recall, while genre congruity enhanced visual recall. Increased musical score congruity resulted in enhanced affective response to the ad. The evidence also suggested that increased musical score congruity and mood congruity enhance purchase intent. However, further research is required to confirm the intuitive link between liked ad music and purchase intent.

The available research also demonstrates that high congruity between musical genre and ad leads to more positive brand attitudes. Likewise, a high level of semantic congruity between

ad song lyrics and message was reported to enhance brand attitude. Although instrumental music is comparatively disconnected from the verbalized ad narrative it supports, the empirical studies suggest that instrumental music should be perceived to be as congruous as possible with the ad in order to create a seamless (less distracting) fusion of words and music. There is also evidence that musical liking as well as positive autobiographical memories associated with music can enhance brand attitude via the transfer of affect.

Regardless of whether a piece of ad music is liked or disliked, it is possible that cultural attitudes to a musical genre or sub-genre may impact upon brand attitude. While a 1950s rock and roll composition in an ad targeting the youth market may be liked by younger respondents, the musical sub-genre may still be associated with the culture of a previous generation (genre incongruity), thus providing a potentially deleterious influence upon brand attitude that would not have resulted from use of a liked composition in a more contemporary pop music style. For example, Pirelli's recent marketing campaign demonstrated a high level of congruity between the urban images in the ad message and the contemporary hip-hop sub-genre by using rap music to target youthful tire buyers. The benefits of genre congruity were evident as hip-hop reinforced perceptions of the modern, streetwise, urban credibility of the Pirelli brand.

Although the findings highlighted in Table 3.1 are consistent in endorsing increased musical congruity with the ad, the implications for advertising practitioners need further clarification. Many of the findings appear to confirm intuitive expectations since advertisers are aware that there are benefits to be gained from using liked music, appropriate musical genres (genre congruity), and chart hits or repetitively sung jingles with a clear relationship between ad song lyrics and message (semantic congruity). For example, the campaign to launch



Microsoft Windows 95 demonstrated semantic congruity between the title of The Rolling Stones' hit ('Start Me Up') and the booting up of a computer. These congruity variables are generally controllable by advertisers. However, although a popular and well-known piece of music may be liked by most consumers, it may bring back memories of an unpleasant experience for some of them, thus lowering brand evaluation. Use of an original composition produced specifically for its appropriateness with an ad campaign (score congruity) increases the degree of control an advertiser has over many of the other variants of music/ad congruity because the composition can be customized to meet precise communicative requirements. With effective pre-testing, an original composition can be designed to ensure high congruity between the mood induced by the music and the product (mood congruity), and to match evocation of images elicited by the music and the product (image congruity).

However, despite the unanimous endorsement of congruous ad music demonstrated in Table 3.1, many innovative ad campaigns have not simply used uniformly congruous music. Advertising practitioners have frequently used verbal and visual incongruity resolution to convey humour (Spotts, Weinberger, and Parsons, 1997), and subsequently to enhance attitude to the ad and encourage consumers to think about the communicative purpose of this humour. For example, Heckler and Childers (1992) discussed an ad in which a famous rap singer sounded incongruously like a cabaret singer after drinking the wrong brand of cola, thus using musical incongruity to undermine a competing product. Rather than using musical incongruity merely as a device to gain attention, there is evidence to suggest that advertising practitioners have used it in a creative fashion to complement the ad message. Interpretive research by Scott (1990) has identified examples of ads using music in a purposeful and artfully incongruous manner (including for example the use of the musical device of

transition from dissonant tension to consonant release in an ad for a pain relief product as a metaphor for the effectiveness of its pain relieving properties).

Chapters 4-6 in this thesis focus specifically on the influence of musical properties (tempo, timbre, and genre) upon responses to advertising, while Chapter 7 examines the impact of ad narrator voice on responses to advertising. All of the dependent variables identified in Table 3.1 are examined by various experiments in the thesis. Purchase intent, brand attitude, and visual recall are addressed in Chapter 6, verbal recall is considered in Chapters 4 and 5, and affective response is investigated in Chapter 5. Chapter 6 addresses relationships that have not been considered in previous studies: it addresses the influence of musical genre congruity on purchase intent, and considers how the incongruous absence of music may influence visual ad content recall. Although Hung (2000; 2001) has previously examined the impact of musical genre congruity upon brand attitude, Chapter 6 examines the extent to which genre congruity may facilitate transmission of various attributes associated with the music to the advertised brand. While Table 3.1 indicates that research has previously identified how musical congruity enhances verbal ad content recall, Chapter 4 (tempo) and Chapter 5 (timbre) examine relationships between musical congruity and verbal recall that have not been considered in previous studies. Chapter 5 also addresses another gap in the research literature by assessing the relationship between musical timbre congruity and affective response.

## **CHAPTER 4: THE INFLUENCE OF MUSICAL TEMPO, PRESENCE, AND LIKING**

### **ON AD CONTENT RECALL AND PERCEIVED AD DURATION**

Attentional models of temporal perception (e.g., Frankenhaeuser, 1959; Hicks, Miller, Gaes, and Bierman, 1977) have argued that an increased data processing load diverts attention from an internal cognitive timer, thereby producing shorter estimates of temporal duration. Such models suggest that temporal perception is an inverse function of the cognitive load imposed by the stimuli experienced during that period. In contrast, memory-based models of temporal perception (e.g., Ornstein, 1969; Zakay, 1989) have used a storage-size metaphor to suggest that allocation of larger memory space to an increased data processing load results in larger perceived duration estimates. In this study, the hypothesized existence of a significant, positive relationship between background musical tempo and temporal perception draws upon the storage-size model in suggesting that increased stimulus information during a specific time period might cause the perceived duration of that time period to increase. This study also proposes that perceived duration estimates will be greater when verbal text has a musical accompaniment (compared to a no-music treatment) because more aural data is processed and stored. In addition, it is suggested that more positively-valenced (i.e. liked) music will stimulate enhanced levels of data processing, thus increasing retrospective perceptions of temporal duration. The underlying rationale assumes that increased attention paid to liked music increases cognitive processing, resulting in the perception that more happened while listening, and subsequently increasing retrospective estimates of duration (Block, 1990).

More specifically, this study explores the extent to which ad content recall and the perceived duration of an ad can be influenced through superimposition of instrumental background

music (musical presence), musical valence (reported dis/liking of the ad music), and manipulation of musical tempo. It is proposed that musical presence and faster tempo will result in significantly diminished ad content recall due to the cognitively distracting nature of enhanced data processing load, thus establishing the existence of a negative relationship between increased data load and ad content recall. It is argued that more liked music induces increased cognitive processing activity resulting in longer temporal perception estimates, but leads to diminished verbal content recall due to the distracting nature of the liked music. It is also proposed that perceived duration estimates will be greater in ads containing music because this music necessarily requires that more aural data is processed; and that increased processing activity associated with the musical stimulus will distract the listener from processing (and subsequently being able to recall) the verbal material containing key message components.

***- H1: Mean temporal perception will be a positive function of faster background musical tempo***

*Perceived Ad Duration:* Musical scores with more notes have been reported to produce greater estimates of length than scores of equivalent temporal length with fewer notes (Ornstein, 1996). This is consistent with the numerosity heuristic (Pelham, Sumarta, and Myaskovsky, 1994) in suggesting that people are likely to overinfer quantity from a divided stimulus. Regarding temporal perception research, studies have reported a significant, positive impact upon perceived duration estimates by varying the beats per minute of a metronome (Ornstein, 1969), the flickering of a light bulb (Zakay, Nitzan, and Glicksohn, 1983), and the beats per minute of musical tempo (Oakes, 2003b). In apparent contrast with these findings, Burt and Popple (1996) used different verbs (run, pass, walk) to describe an

action, and identified how the increase in implied speed of the action produced a significant decrease in its perceived duration. However, more recent research (Pedersen and Wright, 2002) concluded that language did not have a direct effect upon estimates of duration.

Four previous studies have reported a significant relationship between individual musical variables and temporal perception. Kellaris and Kent (1992) revealed a significant relationship between harmony (modality) and perceived duration, while Kellaris and Altsech (1992) identified a significant positive relationship between musical volume and perceived duration. North, Hargreaves, and Heath (1998) found that fast-tempo music was perceived as more congruous for a gym and led to more accurate time perception estimates among people using a gym than did slow-tempo, incongruous music. Recruiting participants from an undergraduate registration queue who had waited for different lengths of time, Oakes (2003b) confirmed the existence of a significant, positive relationship between background musical tempo variation and temporal perception (perceived minus actual waiting time). The majority of these studies used digital musical software to produce the musical stimuli and isolate variations in one specific musical variable, focusing upon the cognitive resources required to process the music. Indeed, of all the musical variables considered by previous research, it is worth noting that tempo is linked more intuitively to temporal perception and temporal measurement than either volume or modality. Consequently, this study investigates the possible existence of a positive relationship between temporal perception and the increased data load inherent to faster musical tempi. Faster tempi inevitably increase the density of auditory data (compared to slower tempi) because participants are exposed to more bars of music in a given time period. Therefore, drawing upon the storage-size model (e.g., Zakay, 1989), temporal perception is hypothesized to be a positive function of musical tempo (stimulus complexity).

***- H2: Mean temporal perception estimates will be increased by musical presence***

North and Hargreaves (1999a) revealed how the presence of music (compared to a no-music treatment) caused people to wait longer. Similarly, Stratton (1992) found that music led to greater underestimation of time duration, perhaps suggesting that people exposed to music were prepared to wait longer because they thought less waiting time had elapsed. Nevertheless, the findings from these two studies are not clear-cut. Furthermore, the storage-size model of temporal perception indicates that increased data processing load should lead to higher estimates of perceived duration. Since the presence of music within an ad containing verbal messages inevitably increases the complexity of auditory data that is required to be processed, this study proposes that perceived duration estimates should be greater in music treatments than in no music treatments. Consequently, temporal perception is hypothesized to be a positive function of the presence of music.

***- H3: Mean temporal perception will be a positive function of musical liking***

Previous research (e.g. Hui, Dube, and Chebat, 1997) has reported the existence of a significant relationship between musical valence and perceived duration. Various studies (e.g. Wansink, 1992) have claimed that listeners underestimate time durations when they hear music they like. However, other research draws upon cognitive models of temporal perception in disputing the suggestion that perceived duration contracts when a time interval is filled with affectively positive stimulation. These models propose that if listeners devote greater attention to liked music, the increased cognitive processing should trigger a heuristic that more happened while listening to that music. The effect of this is to augment estimates of

perceived duration (Block, 1990). This is consistent with Ornstein's storage-size model in which remembered events seem longer when more information is stored in memory. In apparent support of this, Kellaris and Mantel (1994) found that disliked music produced shorter time duration estimates than liked music. Similarly, Kellaris and Kent (1992) revealed how major key (happy) music produced the longest duration estimates compared to minor key and atonal modes. They argued that the positively-valenced major mode motivated listeners to devote more attention to the music, and to allocate more cognitive resources to processing it. Consequently, this study proposes that increased ad duration estimates will be positively related to liking for the music used in that ad.

**- H4: *Ad content recall will be a negative function of background musical tempo***

*Ad Content Recall:* Balch and Lewis (1996) presented music during the learning of words and during the recall of those words. They revealed that changing from one tempo to another (fast to slow or slow to fast) decreased recall. In contrast, an advertising study by Brooker and Wheatley (1994) reported no significant effect of musical tempo upon ad content recall using extracts of differing tempi from 'The Four Seasons: Summer' by Vivaldi. However, the study did not acknowledge the possibility that tempo effects may have been confounded by unspecified variations between extracts in terms of key, harmony, timbre, etc., all of which might mediate temporal perceptions. Indeed, Wakshlag, Reitz, and Zillman (1982) revealed how liked fast-tempo music (compared to disliked slow-tempo music, and no background music) significantly reduced visual attention to an educational television programme. Fast-tempo music (regardless of liking) inhibited information acquisition when compared to slow-tempo music or a no-music control condition. While their research used different genres of music as liked and disliked stimuli, the present study seeks to confirm their findings using an

ad with the same piece of background music varying only in tempo. Since faster tempi of ad background music will increase the processing load requirements for participants, ad content recall is hypothesized to be a negative function of musical tempo.

**- H5: *Ad content recall will be a negative function of musical presence***

Konečni (1982) argued that processing of music inevitably draws upon cognitive resources, and that such resource deployment has potentially detrimental implications for other cognitive activity. Although not a formal advertising study, research by Furnham and Bradley (1997) supported this argument in revealing a deleterious effect on recall for introverts and extraverts when music was played. Ad content recall studies have produced conflicting results regarding the influence of musical presence. A study by Hoyer, Srivastava, and Jacoby (1984) compared verbal comprehension of different ads (some with and some without music), concluding that the mere presence of background music could enhance message comprehension. However, the research failed to hold other non-musical aspects of the ad constant, perhaps overlooking the possibility that ads with (potentially distracting) music may deliberately convey simpler, more easily comprehensible messages.

Contrasting empirical research has suggested that music may actually inhibit recall of product information. For example, Park and Young (1986), Gorn, Goldberg, Chattopadhyay, and Litvack (1991), and Kellaris, Cox, and Cox (1993) reported how the presence of background music impeded verbal recall of ad content. Although Olsen (1995) revealed a significant increase in recall when ads containing music cut to silence just before presenting crucial verbal content, no significant increase in ad content recall was reported for ads without any background music (compared to music throughout). This could have been attributed to the excessive quantity



of information contained in the ad, such that future research should focus upon recall of just one or two major items of information. Consequently, although background music may initially attract attention to an ad, the present research proposes that it inevitably distracts the listener, thus impeding cognitive processing and recall of branded product name and featured offer.

**- H6: *Ad content recall will be a negative function of musical liking***

Wakshlag, Reitz, and Zillman (1982) reported no significant effect of musical liking upon information acquisition. However, since the study used a wide range of musical genres as stimuli (including classical, ragtime, world music, and contemporary jazz), it is possible that other genre effects confounded the results for musical liking per se. For example, participants listening to the verbal components of communication may filter out disliked music in a genre they are familiar with, but disliked music in an unfamiliar genre may be as cognitively distracting as liked music in a familiar genre.

Olsen (1997) reported how liked classical music (compared to a no-music treatment) diminished recall under low-involvement conditions (in which participants were not expecting to be asked to recall ad content), but not under high-involvement conditions (in which participants were expecting to be asked to recall ad content). However, the music treatment may have impeded recall for a variety of reasons (other than liking) unique to the composition itself (e.g. genre, tempo, harmony, congruity with the ad message). Kellaris and Kent (1992) argued that liked music promotes the illusion that more auditory information is being encountered because the pleasantness of the music motivates listeners to devote more attention and allocate more cognitive resources to process it. Consequently, the present research proposes that liked

music in an ad will lead to poorer ad content recall due to the disruption to attention, decoding, and storage of verbal data.

Note also that data on these subjects is not just of theoretical interest. Specifically, studies of the perceived duration of ads may have a variety of commercial implications. For example, if musical tempo, presence, or liking can be used to make perceived ad duration shorter than actual ad duration, it may be argued that it can then be used to reduce boredom levels and maintain the attention spans of ad viewers/listeners. In short, carefully selected background music could perhaps be used to reduce subjective time estimation, thereby enhancing the attention span of consumers exposed to ads, thus having a positive impact upon consumer recall of ad content.

### **Method**

*Participants:* The sample comprised 114 (48 male and 66 female) second year undergraduate marketing students who arrived by appointment in groups of two or three over a period of three days, having previously been divided into three cells by their student registration number. The mean age of participants was 19.52 (SD = 1.32) years. One cell of 38 was assigned to listen to a version of the ad with fast-tempo background music accompaniment, another cell of 38 listened to a version with slow-tempo background music accompaniment, while a third cell of 38 listened to a control-condition version with no music.

*Materials:* The stimuli were three versions of a radio ad provided by a regional radio station. There was no variation in duration (40 seconds) or verbal content of the ad between versions. The 'dry' ad was used to provide a control condition and featured no background music. The

radio station's resident musician used musical software to superimpose identical background music over the other two recordings with tempo as the only variation (90 BPM and 170 BPM) between versions. Pre-testing with a music graduate ensured that the polarized tempi did not compromise musical integrity.

The instrumental musical composition used by the radio station for this ad was selected in order to represent a genre of commercial pop music regularly targeted at the 25-50 age segment. The radio station musician intended that the composition should be relatively lively and cheerful. The ad had originally been scheduled to run at various intervals during radio programs that were broadly targeted at adults under 50 years of age. An obvious problem with slowing down a 40 second musical sequence to half speed is that the musical sequence is only half way through when the recording ends. To cope with this, Kellaris and Rice (1993) used multiple versions of the composition. Slower versions containing the full musical sequence would thus last about twice as long as the fast version. However, in order to ensure that tempo effects were not confounded with ad duration effects, the present study modified the Kellaris and Rice procedure by maintaining all of the recordings at the same duration. This was achieved using background music that consisted of 4 bars repeating in a loop, rather than using a longer, finite musical sequence. This ensured that the slow-tempo version did not appear to end abruptly halfway through a musical sequence. Using a 40 second ad, a fast-tempo version will simply produce more exposures of the same looped musical data than the slow-tempo version.

*Design:* The study used an ad for a product (home improvement windows and doors) that would not normally be targeted at the 19-20 age segment. A product with a relatively low level of involvement for student participants (e.g. in terms of immediate purchase desirability

or self-image enhancement) was chosen as a counterweight in acknowledging that participant attention was already focused upon the ad due to the artificiality of the experimental environment.

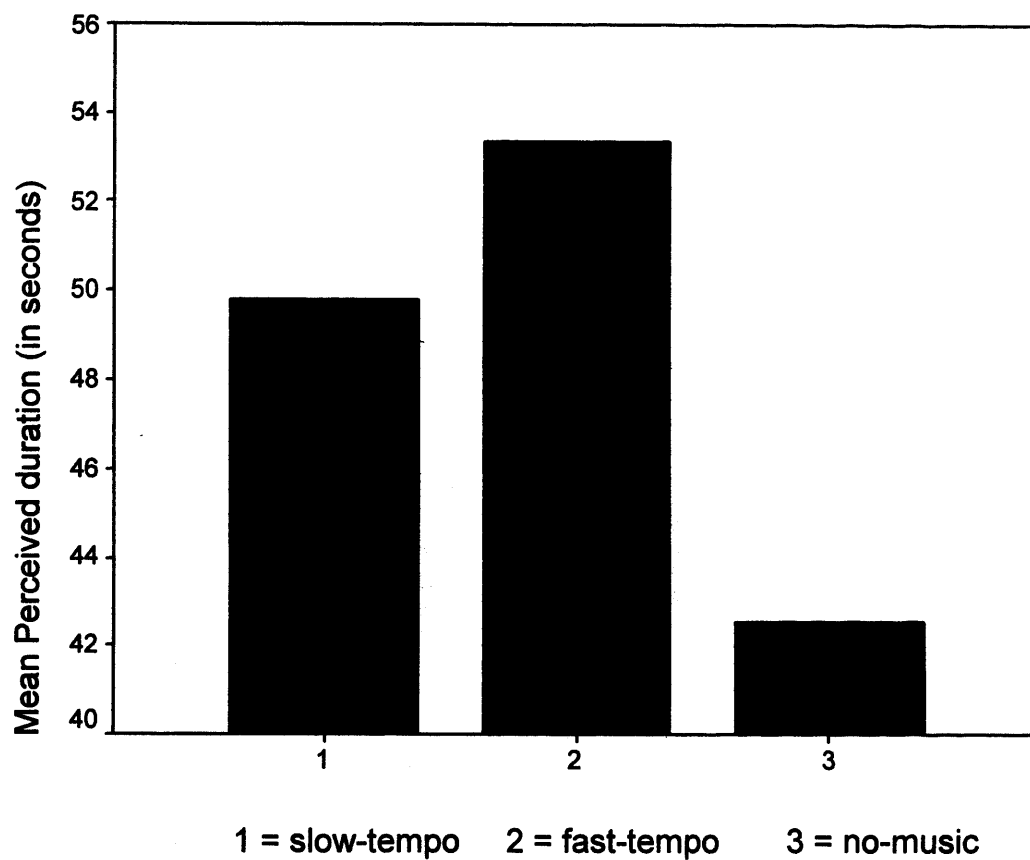
*Procedure:* Upon arrival, participants were informed that they would be listening to a radio ad. After listening to the radio ad, they were provided with a written questionnaire (see Appendix 4.1). Using an independent-participants design, the questionnaire included two questions to measure recall of the featured offer ('Free delivery') and product name ('Ultrasecure System 2000 range of windows'). Five multiple-choice alternatives with only one correct answer were provided for both questions. A further question assessed how interesting participants found the ad by asking them to provide a rating on a scale ranging from 'very interesting' (1) to 'very boring' (5). Since pre-tests with an open-ended perceived duration question revealed the tendency to 'round up' ad duration estimates to the nearest multiple of 10 seconds, a table of numbers (1-180) was used to provide respondents with a full 3-minute span of perceived duration options. It was intended that the visual impact of the number table would encourage more precise responses to the nearest second. For respondents listening to the ads with the slow- and fast-tempo musical accompaniment, an extra question was included to determine how enjoyable they found the music. This was measured on a 5-item scale ranging from 'very enjoyable' (1) to 'very irritating' (5). Volume levels were pre-tested to verify comfortable listening, and a constant volume setting was maintained throughout in a listening environment that was uniformly spacious.

## Results

*Perceived Ad Duration (H1, H2, and H3):* Two extreme outlier responses (namely 2 and 3 seconds respectively) were excluded from analyses as it seemed clear that participants had misinterpreted the instructions. The mean perceived ad duration results revealed a tendency to overestimate the actual duration (40 seconds) in all treatments (see Figure 4.1). The smallest amount of temporal overestimation was evident in the no-music treatment ( $\underline{M}$  = 42.55 seconds,  $\underline{SD}$  = 22.01). Temporal overestimation was greater in the slow-tempo treatment ( $\underline{M}$  = 49.81 seconds,  $\underline{SD}$  = 28.39), and greatest in the fast-tempo treatment ( $\underline{M}$  = 53.37 seconds,  $\underline{SD}$  = 28.53). A one-way ANOVA and Tukey HSD tests were carried out to test for differences between these means. However, the results ( $\underline{F}(2,111) = 1.65$ , n.s.) did not reveal a significant impact of background musical tempo upon mean temporal perception, thus rejecting H1.

An independent-samples t-test was then carried out to test for any differences in temporal duration estimates between the presence of music (both music treatments combined produced a mean estimate of 51.64 seconds,  $\underline{SD}$  = 28.32) and the no music condition (42.55 seconds,  $\underline{SD}$  = 22.01). However, the results ( $t(110) = 1.87$ , n.s.) did not indicate a significant impact of musical presence on mean temporal perception, thus rejecting H2. Pearson correlation results revealed no significant correlation coefficient between temporal perception and musical liking ( $r(76) = 0.06$ , n.s.), thus rejecting H3.

**Figure 4.1. Mean perceived duration overestimates for an ad of 40 seconds actual duration using slow-tempo, fast-tempo, and no-music treatments**



*Ad Content Recall and Musical Tempo (H4):* Ad content recall was collapsed into a single measure comprising the question on branded product name recall and the question on featured offer recall. Results revealed a statistically significant association between musical tempo (slow-tempo versus fast-tempo treatment) and ad content recall (chi-square (2) = 6.01,  $p < 0.05$ ). Inspection of Table 4.1 indicates that the nature of this association confirms higher levels of ad content recall with slow-tempo music compared to fast-tempo music, thus supporting H4. Analysing each recall question separately, further evidence (see Table 4.1) was provided to suggest that slow-tempo music enhances ad content recall. A significant association was revealed between musical tempo and branded product name recall (chi-square (1) = 5.85,  $p < 0.05$ ), although featured offer recall was not associated significantly with tempo (chi-square (1) = 1.92, n.s.).

*Ad Content Recall and Musical Presence (H5):* Compared to the no-music treatment, ad content recall was non-significantly diminished in the slow-tempo treatment, but significantly diminished (chi-square (2) = 12.70,  $p < 0.005$ ) in the fast-tempo treatment. Overall, a significant association was revealed between musical presence (slow- and fast-tempo treatments combined versus no-music) and ad content recall (chi-square (2) = 7.40,  $p < 0.05$ ). Inspection of Table 4.1 suggests that musical presence reduced levels of ad content recall, thus supporting H5. A significant association was also revealed between musical presence and featured offer recall (chi-square (1) = 4.78,  $p < 0.05$ ), since the no-music treatment enhanced levels of accurate recall of the featured offer compared to the combined music treatments (see Table 4.1). Musical presence was not associated significantly with branded product name recall (chi-square (1) = 2.10, n.s.). A one-way ANOVA indicated no significant impact of musical liking upon recall ( $F(2,75) = 0.25$ ; n.s.), thus rejecting H6.

**Table 4.1. Tempo and correct ad content recall**

	Name	Offer	Total
Slow Tempo (90 BPM)	30/38 (79%)	24/38 (63%)	54/76 (71%)
Fast Tempo (170 BPM)	20/38 (53%)	18/38 (47%)	38/76 (50%)
Musical Presence (90+170 BPM)	50/76 (66%)	42/76 (55%)	92/152 (61%)
No-Music	30/38 (79%)	30/38 (79%)	60/76 (79%)

and temporal perception has frequently produced inconsistent findings. Although previous research (Giles, 2003b) has suggested the existence of a significant, positive relationship between background musical tempo variation and perception of waiting time in a queue (with tested parameters of actual waiting time ranging from 4-25 minutes), the lack of significant findings in the current study could perhaps be attributed to the relatively narrow duration parameters associated with a television or radio ad. The marketing undergraduate participants would have been fully aware that the vast majority of television or radio ads last between 30 and 70 seconds, thus encouraging them to compress the range of temporal estimates they provided (and note that 94/114 of the temporal estimates were within the relatively narrow 20-70 seconds band).

More encouragingly, results revealed how the fast-tempo music treatment significantly reduced ad content recall compared to the slow-tempo treatment and to the no-music treatment. Since faster tempo increase processing load requirements, the deleterious impact upon ad content recall of fast-tempo music compared to slow-tempo music can be explained with reference to the storage-size model. Alternatively, since Kellaris and Rice (1993) argued that it is unusual to hear music faster than 170 BPM in an ad, this could support the argument that it was the potential incongruity of the fast-tempo (170 BPM) treatment that distracted cognitive resources from processing of ad message content. Seeking to resolve the purpose of the incongruity may have occupied cognitive resources that would otherwise have been allocated to processing verbal data. Since the results showed greater recall with the more



## Discussion

Perceived duration estimates were not significantly influenced by variations in musical tempo, presence, or liking. The results are not entirely surprising since the literature on music and temporal perception has frequently produced inconsistent findings. Although previous research (Oakes, 2003b) has suggested the existence of a significant, positive relationship between background musical tempo variation and perception of waiting time in a queue (with broad parameters of actual waiting time ranging from 4-25 minutes), the lack of significant findings in the present study could perhaps be attributed to the relatively narrow duration parameters associated with a television or radio ad. The marketing undergraduate participants would have been fully aware that the vast majority of television or radio ads last between 20 and 70 seconds, thus encouraging them to compress the range of temporal estimates they provided (and note that 94/114 of the temporal estimates were within the relatively narrow 20-70 seconds band).

More encouragingly, results revealed how the fast-tempo music treatment significantly reduced ad content recall compared to the slow-tempo treatment and to the no-music treatment. Since faster tempi increase processing load requirements, the deleterious impact upon ad content recall of fast-tempo music compared to slow-tempo music can be explained with reference to the storage-size model. Alternatively, since Kellaris and Rice (1993) argued that it is unusual to hear music faster than 120 BPM in an ad, this could support the argument that it was the potential incongruity of the fast-tempo (170 BPM) treatment that distracted cognitive resources from processing of ad message content. Seeking to resolve the purpose of the incongruity may have occupied cognitive resources that would otherwise have been allocated to processing verbal data. Since the results showed greater recall with the more

congruous (slow-tempo) treatment, this would appear to confirm the findings of previous advertising research since musical genre congruity (e.g., Stewart and Punj, 1998) and musical score congruity (e.g., North, Hargreaves, MacKenzie, and Law, 2004) have been found to enhance recall. As such, it is unfortunate that direct measures of congruity were not collected from participants in this study.

Ad content recall was non-significantly diminished in the slow-tempo treatment, but significantly diminished in the fast-tempo treatment compared to the no-music treatment. In addition to the impact of high incongruity, this could indicate that the increased amount of message processing required by the additional musical data at the faster tempo resulted in a distraction from ad message processing. These results could be worrying for advertisers using fast-tempo music in an attempt to attract audience attention while enhancing the communicative power of their ad message.

Further research could involve selection of an ad for a product specifically targeted at the 19-20 age segment in order to contrast high-involvement and low-involvement effects. In addition, it would be desirable to replicate this study with a larger sample size, since results regarding temporal perception and musical tempo (although not significant) were often in the predicted direction, such that further methodological refinements may lead to significant results. Future research could also consider pre-testing a variety of musical compositions in order to elicit open-ended responses of imagery evocation, as well as to identify the most congruous match between advertised products and background music selections. Kellaris, Cox, and Cox (1993) highlighted the benefits of music-message congruency (the fit between instrumental music and ad message copy), arguing that retention is reinforced as similar content is communicated through music-evoked thoughts as well as through the verbal

content of the ad. Consequently, future studies could incorporate congruity questions based upon the 5-point agreement scales used in their study.

## **CHAPTER 5: THE IMPACT OF BACKGROUND MUSICAL TIMBRE CONGRUITY UPON AD CONTENT RECALL AND AFFECTIVE RESPONSE**

This research altered the timbre of background music in a radio ad, and examined the impact of the alteration upon ad content recall and affective response. The research aimed to provide greater understanding of the ways in which perceived congruity between musical timbre and non-musical elements of an ad can influence affective response to the ad, and retrospective recall of key elements of its verbal content (i.e. brand name, company telephone number, and claimed benefit of the featured product).

Using non-advertising stimuli, Balch and Lewis (1996) found no significant difference in verbal recall of material accompanied by different musical timbres. In contrast, the present research focuses upon timbres that differ in their congruity with an ad stimulus, since previous research has suggested that congruous musical stimuli are likely to enhance verbal recall of ads, whereas incongruous music distracts listeners from the ad message, thus inhibiting message processing and content recall (Kellaris, Cox, and Cox, 1993). Indeed, studies that have manipulated the congruity of musical genres (Stewart, Farmer, and Stannard, 1990; Stewart and Punj, 1998) and musical scores (North, Hargreaves, MacKenzie, and Law, 2004; Yalch, 1991) support such an assertion. In terms of ad content recall, it is possible that musical timbres that are congruous with ad message and brand image will complement each other by reassuring the listener and confirming expectations. In contrast, incongruous timbres are likely to create cognitive distraction because listeners' expectations are undermined. However, incongruous ad music may have some benefits in terms of attention-gain due to its novelty. Indeed, verbal and visual incongruity is frequently used by television advertisers to engage the consumer (McQuarrie and Mick, 1999).

It should be acknowledged that musicological research has failed to reach consensus regarding a single operational or constitutive definition of timbre (Sloboda, 1997). However, for the purposes of this research, timbre is regarded as a categorical variable permitting the assignment of a verbal label (e.g. instrument name) to each musical stimulus. This is based on the intuitive notion that different instruments sound different in terms of tone or resonance, even when playing identical musical phrases. For example, a flute timbre produces a thinner sound compared to the richness of a violin timbre because the violin timbre contains more overtones. Bruner's (1990) review categorized timbre as a subset of musical texture, and highlighted findings from psychological research exploring the relationship between musical timbre and emotional response. From a musical orchestration perspective, Bruner suggested that the piano timbre is the optimum choice if the musical intention is to induce a sense of tranquillity, while woodwind instruments would be most effective in conveying mournful feelings. Although such broad conclusions undoubtedly over-generalize the subtleties inherent to different pieces of music, the notion that different timbres may have distinctive emotional associations has clear implications for advertising.

Musical tempo is quantifiable and measurable by using a metronome to monitor the number of beats per minute, perhaps explaining why it is the musical variable that has arguably been researched most extensively (e.g. Oakes, 2003b). However, measuring any effect of timbre variation is comparatively more problematic. For example, a clarinet cannot be considered 'greater' or 'less' than a trumpet (Sloboda, 1997), and unlike tempo, timbre cannot be measured on a single scale due to its multidimensional attributes. Consequently, despite its musical importance, inherent difficulties in quantifying timbre variation have meant that it has received minimal (if any) attention from empirical advertising research. Indeed, reviews

of the service environment literature have examined the influence of numerous isolated musical variables upon cognitive and emotional responses (e.g. Oakes, 2000), but have ignored timbre because its effects have not been documented empirically.

- **H1: *Increased congruity between background musical timbre and affective intentions of the ad message will enhance elicitation of desired (positive) affective responses to the ad***

*Affective Response as a Function of Musical Timbre:* The agency involved in preparing the radio ad featured in this study used a piano timbre with the intention of eliciting a variety of responses that would be consistent with the emotional response objectives of the ad message (including calmness, relaxation, happiness, sentimentality, and light-heartedness). The selection of a piano timbre was consistent with Bruner's (1990) hypothesized relationship between timbre and elicited emotion. By preparing other versions of the ad which feature different timbres of contrasting congruity, the present research examines the extent to which variations in congruity between musical timbre and ad message could influence affective responses to the ad. For the purpose of this research, desired affective response relates to the emotional elicitation objectives specified by the agency, and is hypothesized to be a function of the congruity between the musical timbre and the affective intentions of the ad stimulus it accompanies.

- **H2: *Increased congruity of background musical timbre will enhance ad content recall***

*Ad Content Recall as a Function of Musical Timbre:* Several musical variables have been addressed in research investigating how to improve recall of advertising content. However, the results of this research have been equivocal. For example, research has shown that ad

music can improve recall of an accompanying message (Hoyer, Srivastava, and Jacoby, 1984), or hamper the acquisition of explicit product information (Gorn et al, 1991). Moreover, other studies have concluded that background music neither enhances nor inhibits ad recall (e.g. Stewart and Furse, 1986). Such inconsistency might stem from a lack of knowledge concerning the effect of individual musical variables on participant responses to advertising. For example, different musical variables might have different effects in different contexts (North and Hargreaves, 1997a). In a similar vein, Chebat, Gelinas-Chebat, and Vaillant (2001) showed that highly arousing music can hamper cognitive activity, while Kellaris, Cox, and Cox (1993) reported that highly arousing music that was also congruous with an ad produced significantly higher levels of ad message recall compared to incongruous ad music. In accord with these findings, North, Hargreaves, MacKenzie, and Law (2004) showed how musical stimuli evaluated by participants as highly congruous with the ad produced significantly higher content recall levels compared with less congruous (low fit) ad music.

In the present study, it is hypothesized that congruous (piano timbre) music should enhance listener ability to process advertising (as evidenced by verbal content recall) relative to less congruous timbres. Semantic memory can be represented by many networks consisting of nodes connected by associative pathways: such networks represent elements of thought, and connections between networks are determined by factors such as congruity (Furnham, Bergland, and Gunter, 2002). Consequently, cognitive priming impacts positively upon ad content recall when activation of a node through a congruous stimulus results in the activation of related constructs along memory network connections.

In contrast, an incongruous stimulus is unlikely to activate ad- or product-related constructs along network connections. In addition, it is suggested that incongruous background music is

likely to produce disconfirmation of listener expectations, thereby distracting attention from the ad message and reducing the ability to recall it. In apparent support of this contention, studies of divided attention have demonstrated reductions in performance levels when participants try to accomplish multiple tasks simultaneously or to attend simultaneously to multiple stimuli (e.g., Fernandes and Moscovitch, 2000; Parasuraman and Davies, 1984). Listening to an ad message concurrently with a piece of music requires analysis and processing of the components of each. Furthermore, the decoding of ad stimuli containing incongruous music is a task likely to induce greater information processing than the decoding of congruous stimuli. Consequently, if additional cognitive resources are allocated to resolving timbral incongruity, this reduces the availability of resources to process verbalized ad message content.

### **Method**

*Participants:* The sample comprised 202 (70 male and 132 female) 1<sup>st</sup> and 2<sup>nd</sup> year marketing undergraduate volunteers who arrived by appointment, and were divided into 4 cells according to their student registration number. The mean age of participants was 19.23 (SD = 3.16) years.

*Materials:* An ad agency musician had provided the original musical background to the ad using a digital electronic piano. Since consumers are likely to be fearful of the risks associated with cosmetic surgery, the ad agency had briefed the musician to compose an instrumental accompaniment for the verbal ad message inducing feelings of light-hearted happiness, calm reassurance, relaxation, and sentimentality. Hevner (1935) suggested that major keys are associated with positive feelings while minor keys are frequently used to elicit more negative feelings such as fear or melancholy. Consequently, the composition used a



harmonic resolution from minor to major key to convey the sense of problem resolution inherent in the ad message. The same score was employed when superimposing alternative timbres over the ad. Since the music was composed for a single instrument (unlike more elaborate musical stimuli used in other chapters of this thesis), the basic score is included for reference (see Appendix 5.1).

*Design:* Using a between participants design, one cell of 55 participants was assigned to listen to a version of the ad with piano accompaniment, another cell of 58 listened to a version with church organ accompaniment, a third cell of 49 listened to a version with steel drum accompaniment, while a fourth cell of 40 listened to a no-music version. For the purpose of this experiment, the church organ timbre was selected to provide contextual incongruity with the advertised service due to its cultural associations linking it to formal religious occasions such as marriages and funerals. The steel drum timbre was selected for its Caribbean associations, thus providing a sense of ethnic and cultural incongruity. Two representative examples of incongruous timbres were selected in order to ensure that effects were not specific to individual timbres.

The research included no specific question on timbre appropriateness or congruity in order to ensure that participants were not alerted to the purpose of the study. However, a pre-test with eight students exposed to all treatments revealed unanimous reporting that the church organ and steel drum timbres were inappropriate to the ad, while the piano timbre was considered to be appropriate by seven of the eight participants. Consequently, the piano timbre used by the ad agency musician was indeed assumed to be the most congruous, while church organ and steel drum timbres were adopted for deliberate contrast. Additional pre-test questions revealed agreement that the church organ and steel drum timbres were sufficiently

incongruous to distract attention from the verbal content of the ad. The pre-test also revealed that all eight participants could accurately identify and name the timbres of piano and church organ, while six of the eight participants were able to identify and name the steel drum timbre.

Three versions of the digitally produced composition were superimposed over a 'dry' (no music) version of the ad. The digital simulations of piano, church organ, and steel drum were carried out using a Roland SD35 Midi-Player, and were pre-tested with a music major graduate to ensure aural authenticity in replicating the timbres of the original instruments. There was no variation in duration (60 seconds) or verbal content of the ad between versions. While digital technology was used to produce the illusion of contrasting instruments by simulating the timbres of piano, church organ, and steel drum, the musical accompaniment was identical in all other ways between each version, thereby keeping all other musical variables (e.g., tempo and harmony) constant.

Previous research (e.g., MacInnis and Park, 1991) has underlined the importance of monitoring the potentially moderating influence of high- and low-involvement with the advertised service. Since perceived risk and personal relevance have been identified as key components of involvement (Rossiter et al, 1991), the potentially moderating effect of these components upon ad content recall was monitored in this study using two multiple-choice questions. Accordingly, a radio ad for cosmetic surgery was used because it was considered likely to elicit variations in the perceived risk and personal relevance components of involvement.

*Procedure:* Upon arrival, participants were informed that they would be listening to a radio ad. They took their seats and listened once to the radio ad, which was played at a comfortable listening volume. A questionnaire was administered immediately after participants listened to the ad. Content recall was measured using open-ended questions to monitor recall of company name ('Transform') and telephone number, and these responses were coded 'incorrect' even if a single letter or digit was inaccurate. Featured product benefit recall was measured using a multiple-choice question containing only one correct alternative ('Refund if dissatisfied'). Adjectives representing emotional responses to the ad were selected to correspond with those desired emotional responses specified within the agency brief. In order to allow participants a neutral ('don't know') option, responses were measured using five 7-point semantic differential scales bounded at each end by a range of bipolar adjectives ranging from 'happy' (1) to 'sad' (7), 'solemn' (1) to 'light-hearted' (7), 'sentimental' (1) to 'dispassionate' (7), 'frightening' (1) to 'calming' (7), and 'relaxing' (1) to 'irritating' (7). Perceived risk was measured on a scale ranging from 'extremely risky' (1) to 'not at all risky' (5), while personal relevance (likelihood of using the advertised service) was measured on a scale ranging from 'very likely' (1) to 'very unlikely' (5).

## **Results**

*Affective Response:* Analyses indicated a similar pattern of responses concerning the two different incongruous music treatments and so data from the latter were collapsed. A MANOVA was carried out to test for any differences between congruous (i.e. piano), incongruous (i.e. church organ and steel drum conditions collapsed), and no-music treatments in participants' ratings of the five measures of affective response. Results ( $F(2,185) = 4.64; p < 0.005$ ) suggested that the congruous musical timbre enhanced overall (desired) affective response to the ad (see

Table 5.1). This supports H1. Univariate analyses revealed significant main effects of timbre congruity upon three of the five scales, namely: 'Happy/Sad' ( $F(1,146) = 5.97$ ;  $p < 0.05$ ), 'Frightening/Calm' ( $F(1,146) = 12.17$ ;  $p < 0.005$ ), and 'Relaxing/Irritating' ( $F(1,146) = 15.46$ ;  $p < 0.001$ ), with mean ratings indicating that the congruous timbre treatment produced significantly happier, more calming, and more relaxing responses compared to the incongruous timbre treatment and also the no music treatment. Note that two scales have been reverse coded in Table 5.1 ('Light-Hearted/Solemn' and 'Calm/Frightening') to enhance clarity by making the desired emotional response the first item in each of the five scales.

**Table 5.1. Timbre and affective response**

	Mean (and SD) Congruous Music	Mean (and SD) Incongruous Music	Mean (and SD) No Music	F	d.f.	p<
Happy/Sad	3.13 (1.49)	3.63 (1.28)	3.30 (1.22)	3.42	(2,185)	0.05
Light-hearted/Solemn *	4.20 (1.51)	4.33 (1.27)	3.75 (1.32)	2.66	(2,185)	n.s.
Sentimental/Dispassionate	3.07 (1.09)	3.44 (1.23)	3.40 (1.37)	1.57	(2,185)	n.s.
Calming/Frightening *	2.38 (1.09)	3.09 (1.33)	3.17 (1.24)	7.05	(2,185)	0.005
Relaxing/Irritating	3.00 (1.53)	4.08 (1.86)	4.30 (1.64)	9.53	(2,185)	0.001
<b>Overall Affective Response</b>	<b>3.15 (1.68)</b>	<b>3.71 (1.51)</b>	<b>3.59 (1.47)</b>	<b>4.64</b>	<b>(2,185)</b>	<b>0.005</b>

\* Two scales have been reverse coded for visual clarity ('Light-Hearted/Solemn' and 'Calming/Frightening')

*Content Recall:* A significant association was obtained between treatments regarding both recall of advertised brand name (chi-square (2) = 6.70,  $p < 0.05$ ), and recall of the advertised benefit (chi-square (2) = 6.80,  $p < 0.05$ ). Perhaps due to the inherent difficulty in remembering multiple digit numbers, recall of the advertised telephone number was not significantly associated with the congruity of background music timbre (chi-square (2) = 1.34, n.s.). A one-way ANOVA also indicated that there was no significant difference between treatments in the mean number of telephone number digits accurately recalled in the correct sequence ( $F(2,201) = 1.96$ ; n.s.). However, when combining scores for the three correct/incorrect recall elements (providing a score for each participant from 0-3), a one-way ANOVA indicated that there was a significant difference in recall between treatments ( $F(2,201) = 4.21$ ;  $p < 0.05$ ). Overall, the frequencies presented in Table 5.2 indicate that the congruous background music timbre enhanced recall of these ad content elements compared to the incongruous treatment, thus supporting H2.

**Table 5.2. Timbre and correct ad content recall**

	Name	Number	Benefit	Total
Congruous Piano	42/55 (77%)	11/55 (20%)	50/55 (91%)	103/165 (62%)
Incongruous Church Organ	40/58 (69%)	11/58 (19%)	47/58 (81%)	98/174 (56%)
Incongruous Steel Drum	24/49 (49%)	3/49 (6%)	33/49 (67%)	60/147 (41%)
Combined Incongruous	64/107 (60%)	14/107 (13%)	80/107 (75%)	158/321 (49%)
No Music	31/40 (78%)	6/40 (15%)	29/40 (73%)	66/120 (55%)

## Discussion

The results provided broad support for the two hypotheses, in that increased congruity between background music timbre and ad message enhanced the elicitation of desired affective responses to the ad and also ad content recall. Findings such as these have particular relevance for ads choosing to use a solitary or predominant timbre to accompany an ad message. However, the results also have implications for the majority of ads where background music consists of compositions in which several timbres produce an ensemble sound, since the overall sound produced by ensemble timbres may also be categorized as congruous or incongruous.

In short, the present findings indicate that more incongruous timbres appeared to function as extraneous 'noise' that inhibited recall of ad content, whereas a congruous timbre did not. In the former case, the results are consistent with the notion that participants' cognitive resources were allocated to resolving the incongruity, thus reducing the availability of resources to process the message content. This has some interesting practical implications. For instance, if advertisers switch between individual timbres within the same ad, more congruous timbres may emphasize crucially important informational elements and highlight a

Further analyses were carried out to investigate the role of involvement. As noted earlier, two aspects of involvement were considered, namely perceived risk and personal relevance (i.e. high likelihood of using the advertised service). When combining scores for the three correct/incorrect recall elements and using this as a grouping variable, a one-way ANOVA indicated no significant impact on perceived risk ( $F(3,201) = 0.49$ ; n.s.) or personal relevance ( $F(3,201) = 2.62$ ; n.s.).

### **Discussion**

The results provided broad support for the two hypotheses in that increased congruity between background music timbre and ad message enhanced the elicitation of desired affective responses to the ad and also ad content recall. Findings such as these have particular relevance for ads choosing to use a solitary or predominant timbre to accompany an ad message. However, the results also have implications for the majority of ads where background music consists of compositions in which several timbres produce an ensemble sound, since the overall sound produced by ensemble timbres may also be categorized as congruous or incongruous.

In short, the present findings indicate that more incongruous timbres appeared to function as extraneous 'noise' that inhibited recall of ad content, whereas a congruous timbre did not. In the former case, the results are consistent with the notion that participants' cognitive resources were allocated to resolving the incongruity, thus reducing the availability of resources to process the message content. This has some interesting practical implications. For instance, if advertisers switch between individual timbres within the same ad, more congruous timbres may emphasize crucially important informational elements and highlight a



product's unique positioning. Similarly, incongruous timbres may be used at the start of an ad to attract consumer attention amidst the 'noise' of competing ad messages. Having attracted attention through the novelty of incongruity, a careful segue into a more congruous timbre may then induce enhanced focus upon key components of an ad message without the distraction of incongruity.

Inspection of Table 5.2 indicates that the difference between congruous and incongruous musical timbres seemed largely due to the particularly inhibiting effect of the steel drum timbre. Although in the context of the present research design it is impossible to determine why this should have occurred, future research may investigate why this incongruous timbre should have been more detrimental than the other incongruous timbre, namely church organ (since the pre-testing established that both were perceived as equally incongruous). However, one possibility highlighted by this finding is that previous research demonstrating a deleterious effect of music upon ad content recall (e.g., Brooker and Wheatley, 1994; Gorn et al, 1991) may have used excessively incongruous musical stimuli: future research into the influence of musical congruity may need to use more graduated deviations from maximal congruity (Berlyne, 1971; McQuarrie and Mick, 1999).

Inconsistent evidence from previous empirical studies regarding the effectiveness of background music in advertising underlines the need for more research to provide managers with a greater insight into the likely effects of individual musical variables. In this context, client organisations and advertising agencies that purchase the rights to use background music need to become more critically discriminating in evaluating the likely effects of their music upon consumers. Increased knowledge of the affective properties of individual musical variables would ultimately enhance ad communication effectiveness, thus allowing advertising agencies to become more

discerning in compiling libraries of music categorized to elicit specified effects. Future musical timbre research should aim to understand the extent to which different consumer segments may respond differently to the same melody (e.g. played on oboe or electric guitar), when it is articulated using timbres that differ markedly in terms of their cultural resonance. Furthermore, if empirical research can demonstrate how different musical timbres have the capacity to produce widely differing affective responses (e.g. in terms of relaxation/irritation), advertisers can exploit the affective properties of timbre to match the requirements of specific communication contexts. For example, ads attempting to communicate problem resolution (e.g. pain relief) could use digital technology to incrementally alter the timbre of background music at an appropriate pace along a continuum from irritating to relaxing timbres.

Since it is reasonable to assume that radio ads are often processed passively, the use of student participants in a focused experimental context meant there was perhaps an artificially high level of attention paid to the ad employed in the present research. Consequently, in terms of external validity, it is difficult to ascertain the extent to which results provided a prediction of how consumers would respond to the musical timbre stimuli in a more naturalistic (passive listening) advertising context, and future research might well investigate this issue. Since findings from this study suggest that different cognitive and affective responses may be elicited from the same timbre depending upon its congruity with the advertised product, it would be intriguing to replicate the present study in a context in which a steel drum may be regarded as the most congruous timbre (e.g., ads for Caribbean holidays or sun-screen products). Furthermore, although musical timbre is a non-verbal mode of communication, there are massive cross-cultural differences in responses to music, and a specific timbre may well encounter some of the same cultural problems faced by international marketers seeking to use standardized brand names or ad colour schemes in different countries (for example, Javanese funeral music

frequently sounds jolly to western ears). Consequently, research that builds upon the findings from the present study could seek to identify whether specific timbres in ad campaigns can elicit homogeneous measures of content recall and affective response across a range of countries.

## **CHAPTER 6: THE IMPACT OF BACKGROUND MUSICAL GENRE ON RESPONSES TO TELEVISION AND RADIO ADS**

This research involved two experiments to manipulate the genre (dance versus classical) of background music in two ads for a university in order to examine the impact of genre upon cognitive responses. Experiments 1 and 2 focused upon ads for the same generic service (university education and the accompanying lifestyle experience), but were otherwise designed to contrast with each other in terms of medium (television versus radio), communication mode (visual versus spoken), and brand (an authentic versus a fictional university). Musical genre may be regarded as a meta-variable that inevitably contains a wide range of other musical variables (e.g., variations in instrumentation etc.). Nevertheless, numerous studies (e.g., North, Shilcock, and Hargreaves, 2003) have treated musical genre as a discrete variable because it is practically impossible to manipulate genre without manipulating other variables (at least while maintaining ecological validity). For example, although the musical genres used in the current experiments differ in terms of variables such as tempo (the dance music tracks are faster than the classical music tracks) and timbre (the dance music tracks use electronic rather than orchestral acoustic instruments), they can still be regarded as distinctive exemplars of their respective genres.

Previous experiments in the thesis included the tempo study ad (home improvement windows and doors) and the timbre study ad (cosmetic surgery services). These ads featured products that were not specifically targeted at students. Consequently, this study involves experiments that examine the influence of contrasting background music genres upon responses to television and radio ads for real and fictional institutions respectively using participants who were actually consumers of the advertised service (namely university education). These

experiments examined the importance of musical genre as a cue of service quality within a context likely to demonstrate a high level of involvement due to its personal relevance to the participants.

## **EXPERIMENT 1**

**- H1: *Increased congruity of background musical genre will enhance visual recall of ad content***

*Ad Content Recall as a Function of Musical Genre Congruity:* Previous research (Gorn, Goldberg, Chattopadhyay, and Litvack, 1991) showed significantly increased visual recall with music chosen to be representative of the style of ad music normally associated with a specific product. As reported in Chapter 3, recall of visual imagery was enhanced in studies (Stewart, Farmer, and Stannard, 1990; Stewart and Punj, 1998) in which the music was congruous with the key product benefit (namely that the car was supposedly exciting to drive). In this thesis, previous experiments examining musical tempo and timbre have identified a deleterious impact of incongruity upon ad content recall. In the context of the current experiment, it is suggested that the classical music treatment will be regarded as the most incongruous with the ad because it is a genre that has not been used in ads for U. K. universities. In contrast, most ads for U. K. universities (e.g., De Montfort, Salford, and Central Lancashire) have used dance music in order to target and attract the youth market. Consequently, it is hypothesized that contextually congruous (dance) music will enhance visual recall of ad content compared to contextually incongruous (classical) music.

**- H2: *Ad content recall will be lower in the incongruous absence of music***

*Ad Content Recall as a Function of Incongruous Musical Absence:* Konečni (1982) argued that the deployment of cognitive resources required to process music will inevitably draw upon the resources needed for other cognitive activity. In support of this argument, Furnham and Bradley (1997) reported a deleterious effect on recall when music was played. Various advertising studies (Gorn et al, 1991; Kellaris, Cox, and Cox, 1993; Park and Young, 1986) have also revealed how background music can distract the listener, thus impeding cognitive processing and subsequent recall. Olsen (1995) identified the impact of the juxtaposition of presence and absence of music and reported a significant increase in ad content recall when music cut to silence prior to crucial verbal content. Indeed, the negative impact of musical presence upon recall of ad content was identified in the tempo study in this thesis. However, since H1 argued that increased congruity of musical genre will enhance recall, it is logical to assume that the congruity of the presence (or absence) of music may also impact upon recall. The no-music version of the ad in this experiment is arguably extremely unusual and unexpected in the sense that it contains neither music nor the spoken word. Consequently, it is hypothesized that the cognitively distracting incongruity of exposure to a television ad containing no audio elements whatsoever will diminish ad content recall.

**- H3: *Genre of background music will impact upon perceived image of the advertised university***

*Perceived Image as a Function of Musical Genre:* North and Hargreaves (1998) showed how classical music increased perceptions that a service environment was up-market. However, a later study (North and Hargreaves, 1999b) reported that classical music fans were considered to be less interested in having fun compared to fans of pop music. Although the desired

image for universities may well be one of sophistication and intelligence, this is not an image that they have dared communicate in radio or television advertising campaigns because they are wary of the potentially detrimental effect on student recruitment. University entry tariffs (required qualifications), along with research and teaching quality league tables are publicised in other sources, but due to the commercial realities of the marketplace, advertising has focused more superficially on conveying the exciting experience of student life. This emphasis is reflected in the choice of pop/dance as the background music for successive advertising campaigns by different universities. Consequently, it is proposed that dance music will enhance perceptions of the image of the advertised university (e.g., in terms of modernity and excitement).

### **Method**

*Participants:* The sample comprised 135 (58 male and 77 female) 2<sup>nd</sup> year Marketing undergraduate students from a 'new' (former polytechnic) U.K. university that was awarded university status in 1992. Participants arrived by appointment in groups of six to eight, having previously been divided into three groups by registration number. The mean age of participants was 19.60 (SD = 1.39) years.

*Materials:* The stimulus was a television ad for the participants' university containing visual images of students (at work and leisure) and various prominent campus buildings. The original version of the ad was provided by an ad agency. It used dance music throughout to accompany visuals of an undergraduate student. Although words flashed on to the screen for approximately 1-2 seconds each, the ad contained no spoken words. The words were intended to fall into three categories (namely careers, degrees, and benefits). Four careers (politician, air

traffic controller, researcher, and sports commentator), three benefits (quality, experience, and prospects), and three degrees (Fine Art, Health Promotion, and Journalism) appeared briefly on the screen. After discussion with university managers involved in funding the ad campaign, it became clear that five adjectives were part of the original brief they had given the ad agency regarding desired perceptions of the university and its brand (namely modern, exciting, trendy, serious, and adult). The background music was an original composition by a musician who had been commissioned by the ad agency on behalf of the client university. The genre of music was broadly categorised by the musician as dance music in order to ensure the ad had self-relevance for the student audience and promoted the desired brand image. The intention was to create congruity between self-image and the brand-image of the university (Kamp and MacInnis, 1995) by making the student consumers feel that the university brand was right for them. The music was entirely instrumental. For the purpose of this experiment, in addition to a no-music version, an additional version of the ad was created that was visually identical but aurally different, since classical music by *J. S. Bach* (Brandenburg Concerto Number 4, Andante) was superimposed over the ad.

*Design:* The no-music and classical music versions of the ad were produced with the assistance of an audio-visual technician. Participants observed video recordings of one of the versions of the ad (41 were exposed to the original dance music version, 47 were exposed to the version with superimposed classical music, while 47 were exposed to the no-music treatment). By featuring an ad for the university they were actually studying at, participants were familiar with the images presented in the ad (including buildings such as the university library and Business School). However, they would not have had prior exposure to the actual ad itself because it was not scheduled for television exposure until several months after data collection for this experiment.



A pre-test was carried out in order to establish that results would not be attributable to the unique nature of one example of each musical genre, and also to establish that dance music was perceived as more congruous with the central ad message. A group of four student participants watched the dance and classical music versions of the ad and unanimously identified the dance music as more congruous than the classical music with the university managers' desired image for the university. Four further groups of two students were then shown the no-music version of the ad and were told that two pieces of music were under consideration as background music for the ad. The two classical music tracks were taken from a compilation CD entitled *Technics Music Lovers Choice Volume 7 – Authentic Classics*. The two dance music tracks were taken from a compilation CD entitled *Ministry of Sound – The Annual Spring 2003*. One group of participants then listened to a classical music track followed by a dance music track, while another group listened to the other classical music track followed by the other dance music track. The sequence of tracks was played in reverse order for the other two groups of participants (the classical music tracks followed the dance music tracks). Participants were asked to choose the piece of music that they considered most appropriate for the ad and its target audience. All eight participants identified the dance music tracks as more appropriate for the ad than the classical music tracks. Most of them remembered seeing television ads for universities using pop or dance music accompaniment, and were in agreement that pop/dance music was the most suitable musical genre to use in attempting to capture the attention of the late teenage segment. There was general consensus that pop/dance music would be expected (congruous) while classical music would be unexpected (incongruous) in ads targeting students.

*Procedure:* Audibility and visibility levels were pre-tested to verify comfortable listening and viewing of the ad from all available seats within the room. Upon arrival, participants were informed that they would be watching a video recording of a new television ad for their university in order to monitor their perceptions of it. They were told that they would be asked to complete a brief questionnaire after viewing the ad. Participants were asked to rate the ad they had seen in terms of the five adjectives contained within the original brief (namely the extent to which the ad was perceived as modern, exciting, trendy, serious, and adult). In order to allow participants a neutral ('don't know') option, responses were measured using five 7-point semantic differential scales bounded at each end by bipolar adjectives ranging from 'modern' (1) to 'traditional' (7), 'dull' (1) to 'exciting' (7), 'trendy' (1) to 'old-fashioned' (7), 'serious' (1) to 'frivolous' (7), and 'adult' (1) to 'childish' (7). Ad content recall was measured using an open-ended question to monitor recall of the ten items flashed on to the screen. When summing scores for these items, it provided an overall recall score of 0-10 for each participant.

## **Results and Discussion**

A one-way ANOVA was carried out to investigate differences in recall scores between the three conditions. The result of this was significant ( $F(2,134) = 10.60$ ;  $p < 0.001$ ), although Tukey tests indicated that the mean visual recall scores for the dance ( $M = 2.12$ ,  $SD = 1.99$ ) and classical music ( $M = 1.49$ ,  $SD = 1.40$ ) treatments did not differ significantly from each other, thus rejecting H1. The low scores for recall in Experiment 1 were not unexpected since participants were not informed in advance that they would be asked questions on specifically ad content.

However, the Tukey tests also showed that mean recall scores in the dance (2.12) and classical music (1.49) treatments were significantly higher than the mean recall score for the no-music treatment ( $\underline{M} = 0.70$ ,  $\underline{SD} = 0.81$ ), thus supporting H2. The positive impact of musical presence upon recall is particularly interesting because it appears to conflict with findings from the tempo study in this thesis that revealed how musical presence (slow- and fast-tempo treatments combined versus no-music) significantly reduced levels of ad content recall. These results appear to underline the impact of the congruity of musical presence (or absence) within the context of other audio elements in the ad. This positive impact of musical presence upon recall was perhaps due to the cognitively distracting incongruity of exposure to a television ad containing no audio elements whatsoever.

A MANOVA was carried out on responses to the five adjectival measures (modern, exciting, trendy, adult, and serious) and showed a significant difference between treatments ( $\underline{F}(2,134) = 4.14$ ;  $p < 0.001$ ). Univariate tests revealed that results were significant for ratings of the ad as modern/traditional ( $\underline{F}(2,134) = 14.19$ ;  $p < 0.001$ ), dull/exciting ( $\underline{F}(2,134) = 12.73$ ;  $p < 0.001$ ), and trendy/old fashioned ( $\underline{F}(2,134) = 8.75$ ;  $p < 0.001$ ). Results for serious/frivolous ( $\underline{F}(2,134) = 0.06$ ; n.s.) and adult/childish ( $\underline{F}(2,134) = 2.56$ ; n.s.) were non-significant. Tukey tests were carried out for those three scales that gave rise to significant univariate results within the MANOVA. These Tukey tests indicated that the classical music treatment created an image for the university that was significantly less modern ( $\underline{M} = 2.68$ ,  $\underline{SD} = 1.07$ ) than the no-music ( $\underline{M} = 2.13$ ,  $\underline{SD} = 0.85$ ) and dance ( $\underline{M} = 1.71$ ,  $\underline{SD} = 0.56$ ) treatments; significantly less exciting ( $\underline{M} = 4.38$ ,  $\underline{SD} = 1.24$ ) than the no-music ( $\underline{M} = 5.13$ ,  $\underline{SD} = 1.04$ ) and dance ( $\underline{M} = 5.63$ ,  $\underline{SD} = 1.24$ ) treatments; and significantly less trendy ( $\underline{M} = 2.91$ ,  $\underline{SD} = 1.33$ ) than the no-music ( $\underline{M} = 2.38$ ,  $\underline{SD} = 0.92$ ) and dance ( $\underline{M} = 1.98$ ,  $\underline{SD} = 0.82$ ) treatments, thus supporting H3.

There was no significant difference between mean scores for measures of adult/childish perceptions for the classical music ( $\underline{M} = 2.91$ ,  $\underline{SD} = 1.02$ ), dance music ( $\underline{M} = 2.85$ ,  $\underline{SD} = 1.01$ ), and no-music ( $\underline{M} = 3.28$ ,  $\underline{SD} = 0.85$ ) treatments. Similarly, mean scores for measures of serious/frivolous perceptions were practically identical for the classical music ( $\underline{M} = 4.45$ ,  $\underline{SD} = 1.12$ ), dance music ( $\underline{M} = 4.39$ ,  $\underline{SD} = 1.18$ ), and no-music ( $\underline{M} = 4.36$ ,  $\underline{SD} = 1.24$ ) treatments. Consequently, the adjectives 'modern', 'exciting', and 'trendy' were retained in the design of the questionnaire compiled for Experiment 2, but the adjectives 'serious' and 'adult' were omitted.

Results revealed that genre of background music significantly impacted upon the perceived image attractiveness of the advertised university. Results also indicated that recall of visual ad content was significantly lower in the incongruous absence of music. While this study manipulated the presence and absence of music, future television ad research could assess the impact of the incongruous absence of various verbal and non-verbal audio components. Although increased congruity of background musical genre did not significantly enhance visual recall of ad content, the data were at least in the expected direction since mean recall scores were highest with the more congruous (dance music) genre. Therefore, it is possible that significant results may arise in future studies using a larger sample. Future research should also take into account the possibility that the greater congruity of the dance music may have been confounded with the student sample's greater degree of liking for this music. Consequently, Experiment 2 involved a larger sample and included a question to monitor musical liking.

## **EXPERIMENT 2**

Experiment 2 involved the collection of data from undergraduate students at an 'old' (member of the Russell Group) university founded in 1881. Since the television ad used in Experiment 1 contained no verbal material apart from the ten items flashed on to the screen for approximately 1-2 seconds, Experiment 2 involved the production of a radio ad for a fictitious university with a more elaborate verbal message in order to facilitate aural content recall questions. Experiment 2 attempted to generalise and build upon the findings from Experiment 1 in a medium chosen for deliberate contrast (Experiment 1 contained visual images without the spoken word, while Experiment 2 contained the spoken word without visual images).

***- H4: Genre of background music will impact upon perceived image of the advertised university***

*Perceived Image as a Function of Musical Genre:* H4 in Experiment 2 is worded identically to H3 in Experiment 1 as it focuses upon the same three perceived image measures that produced significant results in Experiment 1. As with Experiment 1, it is possible that the impact of musical genre upon the perceived image of the university could be moderated by participant age. Indeed, there may be differing motivations for coming to university according to the age of the student. For example, younger people may place more emphasis upon the importance of social interaction at university compared to older people, and dance music in university ads may attract young people because it highlights the pleasures of social interaction. Furthermore, there exist clear demographic differences in genre preference with research (e.g., Oakes, 2003) indicating that musical genres differ markedly in their appeal to

different demographic segments (e.g., by age, gender, education level, family lifecycle stage, and lifestyle). Consequently, in order to eliminate any potentially confounding effects of participant age variation, data were collected only from participants aged 18-22 years.

***- H5: Perceptions of sophistication of the university learning environment will be a positive function of perceptions of sophistication of the background music genre***

*Musical Genre Influence upon Perceptions of Service Sophistication:* Experiment 2 also considered the role of ad music in perceptions of service sophistication, given the obvious relevance of these factors to universities. Hung (2001) suggested that ad music (like verbal captioning) becomes a cue for the schema used to interpret the visual image, and reported how the desired up-market brand image of an advertised shopping mall was enhanced through congruously up-market classical music. Baker, Grewal, and Parasuraman (1994) found that classical music and soft lighting led to inferences that merchandise and service quality would be higher when compared to Top 40 pop music and bright lighting. They also revealed how classical music was more closely associated than pop music with the image of a prestigious store. This suggests that consumers with incomplete information about a real or hypothetical organisation are likely to make qualitative inferences on the basis of stimulus cues that have prior associations. North and Hargreaves (1999b) revealed how fans of classical music were stereotypically perceived to be more sophisticated, better educated, and of a higher social class compared to fans of pop music, reflecting previous findings (North and Hargreaves, 1998) reporting how classical music increased the perception that a cafeteria was up-market. Consequently, it is hypothesized that background classical music will enhance perceptions of learning environment sophistication for the hypothetical university used in the present study.

**- H6: *The anticipated cost of university fees will be a positive function of the perceived sophistication of the background music***

*Service Valuation as a Function of Perceptions of Musical Genre Sophistication:* The positive impact of perceptions of musical genre sophistication upon purchase behaviour was revealed by Areni and Kim (1993) who reported how customers purchased more expensive merchandise in a wine store when classical music rather than pop music was played in the background. In this context, classical music may have produced perceptions of a more sophisticated ambient environment, perhaps creating the expectation that only expensive merchandise should be considered. However, as a no-music control condition was not used, it is unclear whether classical music facilitated, or pop music inhibited selection of expensive wines.

North, Shilcock, and Hargreaves (2003) revealed how background classical music in an up-market restaurant resulted in higher spending by diners compared to pop music and no-music. These findings were in accord with previous research (North and Hargreaves, 1998) revealing increased purchase intent with classical rather than pop music. They argued that musical genres invoke a heuristic that influences purchase behaviour under conditions of consumer uncertainty (e.g., regarding product quality). However, the present study proposes that a higher level of musical sophistication will not automatically lead to an increase in desire to purchase, but will lead to a higher valuation of the likely cost of the product under consideration for purchase. This proposal is supported by research (Yalch and Spangenberg, 1990) suggesting that retailers should use background classical music if they wish to convey a high prestige image justifying accompanying high prices. Likewise, Stone (1983) underlined the association of classical music with higher socio-economic status. In the

context of the present study, it is suggested that background classical music will inflate expectations of the likely cost of studying at the advertised university. This has particular relevance for undergraduate students who are aware that there are substantial differences in tuition fees between institutions for the same postgraduate degree.

**- H7: *Purchase intent will be a positive function of musical genre congruity***

*Genre Influence upon Purchase Intent as a Function of Musical Congruity:* Chapter 2 of this thesis identified a supermarket study (North, Hargreaves, and McKendrick, 1999a) showing how congruous musical genres increased purchase intent. Hung (2000; 2001) revealed how a high level of congruity between musical genre and advertised product enhanced brand attribute evaluation, while Alpert, Alpert, and Maltz (2005) identified increased purchase intent where there was congruity between the mood induced by music and the mood of the purchase occasion.

Pop music (more specifically the sub-genre of dance music associated with the 'club scene') has been adopted in television and radio ads by several universities because it is a genre of music that is particularly popular with the youth segment. North and Hargreaves (1999b) identified the link between pop music and the desire to have fun. Consequently, this genre is considered more congruous for a fictional university ad seeking to promote university life as a 'fun' experience. Since dance music is likely to be considered more appropriate than classical music for a university ad message emphasising the entertainment and night-life available within the city, the present study proposes that the more congruous (dance) genre accompaniment for the university ad will enhance the likelihood of undergraduate participants applying for a postgraduate course (purchase intent).



In the tempo and timbre experiments in this thesis, neither the congruous nor the incongruous treatments involved compositions targeted specifically at student participants. In the present study however, dance music is a genre that is targeted specifically at the late teenage participants, and it is therefore important to identify the extent to which liking for the music may supplement or detract from any effects of congruity. Information on this issue is particularly interesting because previous advertising research has suggested that both genre congruity (Hung, 2000; 2001) and musical liking (e.g., Park and Young, 1986) can enhance brand attitude. Indeed, using participants in aerobic exercise and yogic relaxation classes, North and Hargreaves (1996a) reported a strong positive correlation between ratings of liking of pop music and the appropriateness of the music for the listening situation. Similarly, North and Hargreaves (1996b) also showed that liking for a university cafeteria was positively related to liking for the background music being played, suggesting that the causal relationship between liking for the music and liking for the service environment may well work in both directions. This underlines the importance of additionally measuring the strength of association between purchase intent and liking for the music.

**- H8: *Increased appropriateness (congruity) of background musical genre will enhance verbal recall of spoken ad content***

*Ad Content Recall as a Function of Musical Genre Congruity:* Research has reported how verbal (e.g., Kellaris, Cox, and Cox, 1993; North, Hargreaves, MacKenzie, and Law, 2004; Yalch, 1991) and visual (e.g., Stewart, Farmer, and Stannard, 1990; Stewart and Punj, 1998) content recall was significantly higher with musical stimuli evaluated as highly congruous with the ad. Miller and Marks (1992) also suggested that product-congruent 'sound effects'

may enhance content recall in radio ads (e.g., using the sound of a lawn mower engine in a lawn mower ad). While music that ‘fits’ an ad should complement the message, reassure the consumer, and confirm their prior expectations, it is proposed that a low ‘fit’ genre will diminish recall due to its cognitively distracting incongruity. Consequently, it is hypothesized that congruous (dance) music will enhance verbal recall of spoken ad content compared to incongruous (classical) music.

**- H9: *Ad content recall will be hampered by the presence of music***

*Ad Content Recall as a Function of Musical Presence:* As noted earlier, since the processing of music employs cognitive resources, this is likely to have detrimental implications for the ability to carry out other concurrent cognitive activities such as the encoding of information into memory. However, Experiment 1 in this chapter revealed how visual ad content recall was higher in the presence of music because it was framed within a context (a television ad containing no audio elements) in which the absence of music was incongruous. Consequently, in a context in which the absence of music is not incongruous, it is proposed that the presence of music in an ad will diminish ad content recall.

## **Method**

*Participants:* The sample comprised 240 first and second year undergraduate management students (majoring in marketing, human resource management, or international business) who arrived by appointment in groups of 20 over a period of two days, having previously been divided into 12 groups by their student registration number. Four groups were assigned to listen to a version of the ad with classical music accompaniment, another four groups listened

to a version with dance music accompaniment, while an additional four groups listened to a control-condition version with no music. Participants were not recruited on the basis of age in order to avoid alerting them to the potential importance of age within the context of the study. However, since a pre-test with late teenage student participants suggested that they thought classical music in an ad would make the university more attractive to mature students, data from participants aged over 22 was excluded from the data set (a total of 9 participants) in order to eliminate potentially confounding effects of participant age, leaving a final sample of 231. 223 participants reported their gender (100 males and 123 females), and the mean age of participants was 18.91 ( $SD = 0.93$ ) years.

*Materials:* The aural stimuli comprised two instrumental pieces of music from each genre. The two classical music stimuli were extracts from Weber's *Clarinet Concerto Number 2 (Romanza)* and Bach's *Brandenburg Concerto Number 5 (Affettuoso)* taken from a compilation CD entitled *Technics Music Lovers Choice Volume 7 – Authentic Classics*. The two pop music stimuli were extracts of dance music from State One's *Forever and a Day Vox Off* and Svenson and Gielen's *Beachbreeze (Remember the Summer) Original Instrumental Mix* taken from a compilation CD entitled *Ministry of Sound – The Annual Spring 2003*. During recording mix-down using a Yamaha AW16G Professional Audio Workstation, voice levels were set at a level to ensure that the ad narrative was louder than the background music. Voice levels were set at the same decibel level in all versions of ads. The text of the ad was written by the researcher and was recorded in a studio (with the assistance of a sound engineer) by a female postgraduate drama student aged 22. It reflected the content of many authentic university ads by focusing primarily upon the enjoyment of the university lifestyle experience and the enhanced career prospects upon graduation rather than emphasizing intellectual or academic rigor. The text said "The University of Northern England enjoys

consistently high ratings for the quality of its teaching and research. Job prospects for graduates are extremely good because the University is highly valued by potential employers. Students past and present agree that this is a great place to study. The city-based campus offers students the opportunity to sample all of the benefits associated with living in a major European city. In addition to regular live music and entertainment to suit all tastes, the city centre offers a wide selection of bars, clubs, and restaurants. For general course enquiries, or to receive a free prospectus, you can speak to a member of staff on 0800 080 808 between 10.00 am and 4.00 pm from Monday to Saturday. The University of Northern England – a University for the 3<sup>rd</sup> millennium.”

*Design:* There was negligible variation in the actual duration of the musical stimuli. The duration of the shortest piece was 67 seconds, while the longest piece lasted 71 seconds. Since the spoken narrative of the two ads lasted approximately 58 seconds, this allowed listeners the opportunity to hear, categorise, and evaluate the music in isolation as it briefly preceded and followed the spoken text. Although the same two genres (pop and classical music) used in Experiment 1 were retained here, two representative pieces of music for each genre were selected in order to ensure that genre effects were not specific to individual compositions.

Participants' responses were obtained via a questionnaire. Three multiple-choice questions measured image perceptions on a 5-item scale ranging from 'very modern' (1) to 'very traditional' (5), 'very dull' (1) to 'very exciting' (5), and 'very trendy' (1) to 'very old-fashioned' (5). Additional questions measured the perceived sophistication of the learning environment ranging from 'very sophisticated' (1) to 'very unsophisticated' (5), and the likely effectiveness of the ad in encouraging people to apply to the university ranging from 'very effective' (1) to 'very ineffective' (5). A multiple-choice question to measure expectations of

tuition fee levels was framed within the context of increasing variability between universities in terms of bursaries, scholarships, and top-up fees. This question monitored expectation of fee levels ranging from 'much higher than average' (1) to 'much lower than average' (5). A further multiple-choice question monitored perceived attractiveness of the university to mature students (aged over 30) ranging from 'very attractive' (1) to 'very unattractive' (5).

Two questions measured ad content recall. One question used a multiple-choice format with only one correct option to measure recall of the stated telephone contact hours, while a second question was an open-ended measure of telephone number recall which allowed measurement of the number of digits (0-10) recalled in the correct place in the sequence. As a manipulation check for participants exposed to the music treatments, two multiple-choice questions at the end of the questionnaire measured musical congruity and musical liking. Consistent with previous research into music/ad congruity (e.g., Kellaris, Cox, and Cox, 1993), the term 'appropriate' was used as a proxy for the term 'congruous' in order to minimise potential participant misunderstanding of the question. Perceived congruity of the ad music was assessed by asking how appropriate the background music was to the communication of this ad with responses ranging from 'very appropriate' (1) to 'very inappropriate' (5). The other question measured musical liking with responses ranging from 'very enjoyable' (1) to 'very irritating' (5). Finally, participants rated the music in terms of the adjectives on which they had earlier rated the advertised university in order to allow testing of H4. Responses were measured using three 5-point semantic differential scales bounded at each end by a range of bipolar adjectives ranging from 'modern' (1) to 'traditional' (5), 'exciting' (1) to 'dull' (5), and 'unfashionable' (1) to 'trendy' (5). To correspond with the previous measure of perceived sophistication of the university (H5), an additional 5-point

semantic differential scale measured responses to the music ranging from 'unsophisticated' (1) to 'sophisticated' (5).

*Procedure:* The experiment took place in a language laboratory. Volume levels were pre-tested to allow comfortable listening. Upon arrival, participants were informed that they would be listening to a radio ad for a fictional university targeting undergraduate and postgraduate students, after which they would be asked to complete a brief questionnaire. They were not made aware that any variation existed between the ads in terms of musical genre background. Having listened to the ad using the cassette recorders and headphones provided, they were then asked to complete the written questionnaire.

## Results

Results for the radio ad revealed a pattern of responses that was generally consistent with the responses for the television ad in Experiment 1. MANOVA results indicated a significant difference between the treatments in ratings of the university on the three adjectival scales derived from Experiment 1 ( $F(2,227) = 17.13$ ;  $p < 0.001$ ). Univariate tests indicated that there were significant differences on measures of modern/traditional ( $F(2,228) = 61.68$ ;  $p < 0.001$ ), dull/exciting ( $F(2,228) = 20.81$ ;  $p < 0.001$ ), and trendy/old fashioned ( $F(2,227) = 24.77$ ;  $p < 0.001$ ). Tukey tests indicated that the classical music treatment created an image for the university that was significantly less modern ( $M = 3.21$ ,  $SD = 1.22$ ) than the no-music ( $M = 1.89$ ,  $SD = 0.92$ ) and dance ( $M = 1.62$ ,  $SD = 0.63$ ) treatments, significantly less exciting ( $M = 2.91$ ,  $SD = 1.11$ ) than the no-music ( $M = 3.64$ ,  $SD = 1.00$ ) and dance ( $M = 3.85$ ,  $SD = 0.69$ ) treatments, and significantly less trendy ( $M = 3.14$ ,  $SD = 1.09$ ) than the no-music ( $M = 2.37$ ,  $SD = 1.00$ ) and dance ( $M = 2.10$ ,  $SD = 0.75$ ) treatments, thus supporting H4. Additional tests

revealed that people were responding similarly to the two pieces within each genre: each piece of classical music was perceived to be significantly less modern, exciting, and trendy than each piece of dance music.

One-way ANOVA results revealed a significant difference between treatments in terms of the perceived sophistication of the learning environment ( $F(2,228) = 24.78$ ;  $p < 0.001$ ). Tukey tests indicated that all three treatments were significantly different from each other. The no-music treatment ( $M = 2.49$ ,  $SD = 0.99$ ) produced a significantly more sophisticated image compared to the dance music treatment ( $M = 2.96$ ,  $SD = 0.96$ ), but a significantly less sophisticated image compared to the classical music treatment ( $M = 1.90$ ,  $SD = 0.88$ ), thus supporting H5. The Pearson product-moment correlation between ratings of sophistication and liking for the music was non-significant ( $r(153) = 0.07$ , n.s.).

A one-way ANOVA identified a significant difference between treatments regarding expectation of fee level ( $F(2,225) = 11.03$ ;  $p < 0.001$ ). Tukey tests indicated that the classical music treatment ( $M = 2.39$ ,  $SD = 0.93$ ) produced the expectation that university fees would be significantly higher compared to the no-music treatment ( $M = 2.92$ ,  $SD = 0.89$ ) and the dance music ( $M = 3.01$ ,  $SD = 0.81$ ) treatment, thus supporting H6. Since the classical music treatment produced expectations of significantly higher fee levels compared to the no-music treatment, this suggests that classical music enhances (rather than that dance music inhibits) perceived value within an advertising context. The Pearson product-moment correlation between expectation of fee levels and liking for the music was non-significant ( $r(153) = 0.07$ , n.s.).

A one-way ANOVA indicated that there was a significant difference between treatments regarding likelihood of application to study at the advertised university ( $F(2,228) = 3.48$ ;  $p < 0.05$ ). Tukey tests revealed that participants were significantly more likely to apply to the university after hearing the dance music treatment ( $M = 2.58$ ,  $SD = 0.96$ ) compared to the classical music treatment ( $M = 3.04$ ,  $SD = 1.18$ ), thus supporting H7. There was no significant difference between the no-music treatment ( $M = 2.86$ ,  $SD = 1.15$ ) and the other two treatments. Pearson correlation results revealed a significant association between likelihood of application to study at the advertised university and liking for the music ( $r(153) = 0.35$ ,  $p < 0.001$ ). A one-way ANOVA indicated that there was a significant difference between treatments regarding perceived attractiveness of the university to mature students ( $F(2,228) = 78.73$ ;  $p < 0.001$ ). Tukey tests indicated that the university was rated as significantly more attractive to mature students in the classical music treatment ( $M = 2.08$ ,  $SD = 0.97$ ) compared to the no-music treatment ( $M = 3.20$ ,  $SD = 1.16$ ) and the dance music treatment ( $M = 4.09$ ,  $SD = 0.86$ ). Pearson correlation results revealed a significant association between ratings of attractiveness to mature students and liking for the music ( $r(153) = -0.21$ ,  $p < 0.05$ ).

Correct recall of contact hours was not associated significantly with treatment (chi-square (2) = 1.15, n.s.). However, a one-way ANOVA indicated that there was a significant difference between treatments in the mean number of telephone number digits accurately recalled in the correct sequence ( $F(2,230) = 3.46$ ;  $p < 0.05$ ). Tukey tests indicated that the only significant difference was between the classical music treatment ( $M = 4.26$ ,  $SD = 3.74$ ) and the no-music treatment ( $M = 5.72$ ,  $SD = 3.54$ ). Neither of these treatments differed significantly from the dance music treatment ( $M = 4.38$ ,  $SD = 4.13$ ). While the difference in mean recall scores between the dance and classical music treatments was in the predicted direction, the non-



significance of this leads to rejection of H8. Although correct recall of contact hours (chi-square (1) = 0.64, n.s.) was not associated significantly with presence of music (i.e. the combined music treatments), a one-way ANOVA indicated that there was a significant difference between the combined music treatments ( $\underline{M} = 4.32$ ,  $\underline{SD} = 3.93$ ) and the no-music treatment ( $\underline{M} = 5.72$ ,  $\underline{SD} = 3.54$ ) in the mean number of telephone number digits accurately recalled in the correct sequence ( $F(1,230) = 6.91$ ;  $p < 0.01$ ). This result is consistent with findings from the tempo study in this thesis in suggesting that musical presence inhibits recall of ad content, thus supporting H9. The Pearson product-moment correlation between mean number of telephone number digits accurately recalled and musical liking was non-significant ( $r(153) = 0.01$ , n.s.).

When focusing solely upon the music, an independent-samples t-test indicated that the dance music treatment ( $\underline{M} = 2.63$ ,  $\underline{SD} = 1.15$ ) was regarded as significantly more appropriate for the communication of the ad ( $t(152) = -4.17$ ,  $p < 0.001$ ) than was the classical music treatment ( $\underline{M} = 3.43$ ,  $\underline{SD} = 1.25$ ). This result was clarified by post-test discussions indicating that many participants had been exposed to radio or television ads for universities, but that in all cases, these ads had used pop music exclusively. With regard to liking for the music, an independent-samples t-test indicated that the classical music ( $\underline{M} = 3.54$ ,  $\underline{SD} = 1.23$ ) was rated as significantly less enjoyable ( $t(151) = -2.53$ ,  $p < 0.05$ ) than the dance music ( $\underline{M} = 3.01$ ,  $\underline{SD} = 1.34$ ). A MANOVA showed that, consistent with the results concerning the perceived image of the university, ratings of the music along the same three adjectival scales indicated that dance music was regarded as more modern, exciting, and trendy ( $F(1,149) = 161.49$ ;  $p < 0.001$ ). An independent-samples t-test also showed that the dance music was regarded as significantly less sophisticated ( $t(149) = -9.36$ ,  $p < 0.001$ ) than the classical music.

## **Discussion**

MANOVA results highlighted consistent findings in both experiments regarding the relationship between musical genre and perceived image of the university. Experiments 1 and 2 showed how the less congruous classical music treatment created an image for the university that was significantly less modern, exciting, and trendy than the no-music and dance music treatments. In Experiment 2, likelihood of application to study at the university was significantly higher with the dance music treatment than the classical music treatment. However, Experiment 2 also showed that the classical music treatment resulted in a significantly more sophisticated perceived image for the learning environment and an expectation of higher university fees compared to the no-music and dance music treatments.

Advertisers seeking to differentiate the image of a brand from that of a competitor frequently use music in the expectation that positive attributes associated with the music will be transferred to the advertised brand. The present results indicate that such a process of attribute transference occurred in Experiments 1 and 2. While it is possible that the effects in Experiment 1 could have been confounded by liking for the music, it should be noted that the majority of variables in Experiment 2 were not correlated with liking for the music (with the exception of inducement to apply to the university and attractiveness to mature students). Experiment 2 was also consistent with the tempo study (Chapter 4 of this thesis) in demonstrating a non-significant correlation between ad content recall and musical liking.

Consistent with Experiment 1, although the difference in mean recall scores between the dance and classical music treatments was in the predicted direction, higher levels of musical genre congruity did not lead to significantly greater recall of ad content. In Experiment 1, recall

was significantly lower in the no-music treatment compared to the dance and classical music conditions (probably because of the distracting incongruity of exposure to a television ad containing neither music nor the spoken word). In contrast, Experiment 2 indicated no deleterious impact of the no-music treatment upon content recall. Indeed, in Experiment 2, the mean number of telephone number digits accurately recalled in the correct sequence was greater in the no-music treatment compared to the dance music treatment, and significantly greater in the no-music treatment compared to the more incongruous classical music treatment (as well as the combined music treatments). Discussion of the cognitively distracting nature of musical incongruity needs to acknowledge that silence may sometimes be more distracting than musical genre incongruity in a context in which music is normally expected.

It has been argued previously that the additional cognitive resources involved in resolving musical incongruity reduce the availability of resources to process verbalized ad message content. This reduction in processing ability inevitably means that less ad message data is stored and available for subsequent retrieval. However, there is an important distinction between the genre study and the tempo and timbre studies in this thesis (see Chapters 4 and 5 respectively) regarding selection of the incongruous musical treatment. For example, it is unlikely that participants will have had much exposure to ads for any products at the incongruously fast-tempo of 170 BPM. In addition, it is unlikely that participants will have been exposed to ads for any products using the solitary (incongruous) timbres of church organ or steel drum.

In contrast, although classical music has not been used in ads for universities in the U.K., it has an extensive history of ad usage in order to convey an up-market image. Indeed, participants

will inevitably have been very familiar with the use of classical music in ads for numerous goods and services. The reassuringly up-market association of classical music has been regularly exploited by advertisers in order to complement a message of high product quality. Dance music may have been the most congruous genre because it is consistently used in ads for the generic sector (higher education), thus confirming associative expectations. However, the most effective music in promoting congruity also depends on the kind of image an ad is attempting to promote. While the radio ad highlighted attractions congruous with the use of dance music (e.g., 'regular live music and entertainment'), it also focused upon the type of up-market, aspirational benefit commonly associated with ads using classical music ('quality of its teaching and research').

It has been suggested that cognitive priming has a positive impact upon ad content recall when a congruous stimulus activates a node resulting in activation of related constructs along memory network connections (Furnham, Bergland, and Gunter, 2002). However, it is possible that participants' inevitable prior exposure to the use of classical music in ads allowed them to draw an alternative (but equally congruous) interpretation compared to their interpretation of the dance music. Indeed, the up-market association of classical music is likely to have influenced participant responses indicating that the classical music treatment produced perceptions of a significantly more sophisticated learning environment.

An equally congruous (up-market) interpretation of classical music would mean that cognitive resources were not allocated to resolving musical stimulus incongruity, thus allowing unimpaired processing, storage and subsequent retrieval of ad content data. This provides a possible explanation for the non-significant content recall results. In short, the effect of classical music in promoting the perception of up-market sophistication may have

cancelled out the advantages caused by the use of congruous dance music, leading to no overall difference between the two conditions. Such an evaluation of the non-significant content recall results would be consistent with congruity research (Heckler and Childers, 1992) suggesting it is the relevance of the material that allows the formation of associative cognitive linkages, thus enhancing the likelihood of successful ad content retrieval. Consequently, classical music may have been unexpected, but equally relevant as its up-market associations allowed participants to draw rapid conclusions regarding the purpose of its presence within the ad. In order to examine the relevance component of congruity in more depth, the experiment in Chapter 7 was designed to replicate Experiment 2 using an ad narrator considered to be less appropriate (i.e. relevant) to the student participants.

## **CHAPTER 7: THE IMPACT OF NARRATOR VOICE ON RESPONSES TO A RADIO AD**

North et al (2004) suggested that ad narrator voice 'fit' (congruity) may enhance cognitive and affective responses to advertising. In the same way that musical genres may embrace broader, non-musical connotations, North et al's findings indicate that different voices may also carry meaning that is extraneous to the actual words spoken. They found that high voice 'fit' led to significantly higher likelihood of purchasing an advertised brand. Consequently, the present study involved replication of Experiment 2 in Chapter 6 using only the no-music treatment, but this time using an additional ad narrator in order to monitor the moderating influence of voice congruity rather than genre congruity. While Experiment 2 in Chapter 6 used a female postgraduate drama student aged 22 (the maximum age of participants in Experiment 2 and the current study), the present study used a female university lecturer aged 46 as ad narrator. Hypotheses 1-5 in this chapter are related to Hypotheses 4-8 in Experiment 2 since they also measure perceived image, perceptions of sophistication of learning environment, anticipated cost of fees, purchase intent, and ad content recall.

***- H1: Perceived image of the advertised university will be a positive function of ad narrator voice congruity***

***- H2: Perceptions of sophistication of the university learning environment will be a positive function of ad narrator voice congruity***

***- H3: The anticipated cost of university fees will be a positive function of ad narrator voice congruity***

**- H4: *Purchase intent will be a positive function of ad narrator voice congruity***

**- H5: *Verbal recall of spoken ad content will be a positive function of ad narrator voice congruity***

Chapter 6, Experiment 2 described the possible importance of the relationship between age and musical genre. For example, results suggested that the dance music genre made the university more attractive to participants aged 18-22, but also showed that they thought the university would be more attractive to mature students when exposed to the version of the ad using classical music. Research has indicated that responses to a voice can be determined in part by the perceived age of the speaker (e.g., Mulac and Giles, 1996). Consequently, H6 proposes that participants will consider that an older narrator will make the university more attractive to older students.

**- H6: *The advertised university will be perceived to be more attractive to mature students with an older ad narrator***

## **Method**

**Participants:** The sample comprised 114 first year undergraduate management students (majoring in marketing or international business) who arrived by appointment, having previously been divided into 2 groups by their student registration number. As in Chapter 6, Experiment 2 (hereafter 'Experiment 2'), data from participants aged over 22 was excluded from the data set (a total of 2 participants) in order to eliminate potentially confounding effects of participant age, leaving a final sample of 112 (56 congruous narrator and 56

incongruous narrator) participants. 109 participants reported their gender (54 males and 55 females), and the mean age of participants was 19.05 (SD = 1.01) years.

*Materials:* Use of materials in the current study replicated Experiment 2, although it involved recording of another version of the university ad using the voice of a female university lecturer (aged 46) from a different institution. The design and procedure of the current study replicated Experiment 2.

*Pre-test:* A pre-test with a separate sample of 8 students was carried out to contrast perceptions of the congruity of the ad narrator voices used in this study. The Experiment 2 narrator was unanimously considered more appropriate for communicating the ad message, more appealing to the target student segment, and more successful in maintaining audience interest, and six out of the eight participants indicated that the Experiment 2 narrator sounded more professional. The Experiment 2 narrator was perceived to be aged 18-25 by seven of the participants and aged 26-34 by one of the participants. The older ad narrator in the current study was perceived to be aged 44-52 by six of the participants, aged 35-43 by one of the participants, and aged over 52 by one of the participants. In short, they believed that the ad would be more effectively targeted at their (late-teen) age segment with the younger ad narrator. Additional verbal feedback from participants after completion of the pre-test suggested that they thought the older ad narrator voice would be more successful in attracting mature students.



## Results

MANOVA results showed a significant difference between ad narrators ( $F(1,110) = 37.22$ ;  $p < 0.001$ ) in ratings of the perception of the university in terms of the three adjectival scales. One-way ANOVA results revealed statistically significant differences between ad narrators in terms of perceived image of the university as modern/traditional ( $F(1,111) = 43.06$ ;  $p < 0.001$ ), dull/exciting ( $F(1,111) = 103.47$ ;  $p < 0.001$ ), and trendy/old-fashioned ( $F(1,110) = 56.08$ ;  $p < 0.001$ ). The incongruous ad narrator in the current study created an image for the university that was less modern ( $M = 3.14$ ,  $SD = 1.15$ ) than the congruous ad narrator ( $M = 1.88$ ,  $SD = 0.88$ ), less exciting ( $M = 1.82$ ,  $SD = 1.08$ ) than the congruous ad narrator ( $M = 3.75$ ,  $SD = 0.92$ ), and less trendy ( $M = 3.79$ ,  $SD = 1.06$ ) than the congruous ad narrator ( $M = 2.35$ ,  $SD = 0.97$ ), thus supporting H1.

An independent-samples t-test ( $t(110) = 1.70$ , n.s.) revealed no significant difference between the congruous ad narrator ( $M = 2.48$ ,  $SD = 1.06$ ) and the incongruous ad narrator ( $M = 2.86$ ,  $SD = 1.27$ ) in terms of impact upon perceived sophistication of image, thus rejecting H2. An independent-samples t-test ( $t(105) = 0.66$ , n.s.) also revealed no significant difference between the congruous ad narrator ( $M = 2.96$ ,  $SD = 0.92$ ) and the incongruous ad narrator ( $M = 3.08$ ,  $SD = 0.84$ ) in terms of anticipated level of university fees, thus rejecting H3.

However, an independent-samples t-test did reveal a significant impact of ad narrator upon likelihood of applying to the university ( $t(110) = 7.83$ ,  $p < 0.001$ ). The incongruous ad narrator ( $M = 4.29$ ,  $SD = 0.87$ ) reduced the likelihood of application compared to the congruous ad narrator ( $M = 2.80$ ,  $SD = 1.12$ ), thus supporting H4. A further independent-samples t-test also revealed a significant impact of ad narrator upon the mean number of

telephone number digits accurately recalled in the correct sequence ( $t(109) = -1.99, p < 0.05$ ). The incongruous ad narrator ( $\underline{M} = 3.91, \underline{SD} = 3.68$ ) reduced mean recall compared with the congruous ad narrator ( $\underline{M} = 5.30, \underline{SD} = 3.69$ ). Results also revealed a statistically significant association between narrator voice and correct recall of contact hours (chi-square (1) = 6.56,  $p < 0.05$ ). The nature of this association confirms higher levels of ad content recall with the congruous ad narrator, thus supporting H5. An independent-samples t-test also revealed a significant impact of ad narrator upon attractiveness of the university to mature students ( $t(110) = -2.16, p < 0.05$ ). The incongruous ad narrator ( $\underline{M} = 2.77, \underline{SD} = 1.03$ ) enhanced the attractiveness of the university to mature students compared to the congruous ad narrator ( $\underline{M} = 3.21, \underline{SD} = 1.16$ ), thus supporting H6.

### **Discussion**

There were a variety of significant differences when comparing the different ad narrator voices. Compared to the congruous ad narrator, the incongruous ad narrator significantly reduced perceptions of the image attractiveness of the advertised university (supporting H1), significantly reduced ratings of likelihood of applying to the university (supporting H4), and significantly reduced mean recall of the telephone number digits and contact hours (supporting H5). Such results may be attributable to the lack of relevance of the older narrator for the student participants. For example, in discussing the relevance component of congruity, Heckler and Childers (1992) reported how lack of relevance inhibits the formation of associative linkages that enhance the probability of successful ad content retrieval. Although there was no significant difference between ad narrators regarding perceptions of the sophistication of the learning environment (rejecting H2), it should be noted that the incongruous narrator had a neutral accent while the congruous narrator had a mild regional

accent. In short, awareness of the regional accent of the congruous ad narrator may have diminished the perception of up-market sophistication, thus cancelling out the congruity advantages, leading to no overall difference between the two conditions. This could also account for the lack of a significant difference between ad narrators regarding the level of expected fees (rejecting H3).

Since the university was perceived to be significantly more attractive to mature students when the older, incongruous ad narrator was featured (supporting H6), this suggests that it would be interesting to replicate the study with mature student participants responding to young and middle-aged ad narrators. It is also possible that perceptions of the congruity of vocal ad elements with an advertised product may differ depending upon other demographic characteristics (e.g., gender) of people who are exposed to the ad. Furthermore, congruity effects may be a function of the contextual expectations of a particular advertising medium. For example, while Experiment 2 of Chapter 6 reported that musical presence inhibited recall of ad content, Experiment 1 of Chapter 6 revealed how a no-music treatment resulted in a negative impact upon visual recall of a television ad due to the cognitively distracting incongruity of exposure to an ad containing no other audio elements. Chapter 4 of this thesis also revealed how the presence of incongruous music significantly reduced ad content recall compared to congruous music. Future research could assess the impact upon content recall in situations where the absence of such auditory elements is congruous with expectations, in other words, situations where the presence of either music or voice would be considered incongruous.

Chapters 6 and 7 used participants from 'old' and 'new' U. K. universities. 'Old' universities have felt less compulsion than 'new' universities to use formal advertising because the strength of their brand reputation has enabled them to achieve their student recruitment

targets more easily. Consequently, it is possible that students at 'old' and 'new' universities may have different attitudes and responses to ads for universities because such ads have had differing levels of relevance for them. Future studies using university ads could seek to identify differences between 'old' and 'new' university student participants in terms of the cognitive and affective responses elicited by the same ad narrator stimuli.

## **CHAPTER 8: THE IMPACT OF MUSICAL TEMPO, PRESENCE, AND LIKING ON COGNITIVE AND AFFECTIVE RESPONSES TO WAITING**

Consumers value their time as a precious and finite resource, and increasingly view it as a significant component of the total cost of a transaction (Kellaris and Kent, 1992). Several studies (e.g., Houston, Bettencourt, and Sutha, 1998; Taylor, 1994) have indicated that longer perceived waits result in less positive service evaluation, suggesting that dissatisfaction will intensify if waits are longer than expected. Organisations are presumably aware of such potential costs in terms of customer dissatisfaction when lengthy waits are required, but there are also higher operational costs involved in reducing actual waiting time. Consequently, this study seeks to identify the potential of music to alleviate the boredom and frustration of customers waiting to receive service.

***- H1: Perceived wait duration will be a positive function of faster background musical tempo setting***

*Musical Tempo and Perceived Duration:* The current study focuses upon the cognitive resource requirements involved in processing a higher density of auditory data (more bars of music) when participants are exposed to identical musical stimuli played at faster tempi. Although some studies have failed to establish the existence of a significant relationship between musical tempo and perceived duration (e.g., Caldwell and Hibbert, 2003; Chebat, Gelinias-Chebat, and Filiatrault, 1993), several studies indicate that perceptions of the passage of time can be inflated by measures (e.g., increases in tempo) that increase the amount of auditory data that participants are required to process (e.g., Bickel, 1984; Fraisse, 1984; Kellaris and Altsech, 1992; Oakes, 2003b; Ornstein, 1969; Piaget, 1969; Zakay, Nitzan, and Glicksohn, 1983). Such

results are arguably consistent with models of temporal perception (e.g., Ornstein, 1969) that used a storage-size metaphor in proposing that the allocation of larger memory space to an increased data processing load leads to higher estimates of perceived duration. Consequently, the current experiment supports the theoretical underpinning of the storage-size model in seeking to establish the existence of a positive relationship between increased data load (faster tempo) and perceived wait duration.

**- H2: *Perceived wait duration will be a negative function of musical presence***

*Musical Presence and Perceived Duration:* In the ad music study (Chapter 4), musical presence did not significantly influence mean temporal perception estimates. Although the current experiment supports the storage-size model rather than the attentional model in proposing a positive relationship between increased data load (faster tempo) and perceived duration, such models may not be mutually exclusive, and may even co-exist. The storage-size model of perceived duration suggests that temporal estimates will increase in the presence of music, since music inevitably increases the auditory data load to be processed. However, attentional models would suggest that presence of music leads to shorter perceived duration estimates because it distracts attention from an internal cognitive timer, thus impeding the storage of events that define duration. For example, Hicks et al. (1977, p. 443) described how increased “information processing prevents the storage of events into the counter, causing a decrease in judged time”.

North and Hargreaves (1999a) revealed how the presence of music (regardless of complexity) caused student participants to wait significantly longer for the return of the experimenter compared to a no-music treatment. When taking into account the difference between

perceived and actual waiting time, the study confirmed previous findings by Stratton (1992) in demonstrating that the no-music treatment produced the longest duration estimations, perhaps suggesting that music makes people feel attended to in a waiting situation. Consequently, taking into account this evidence from previous research in a specific waiting context, the attentional distraction (cognitive timer) model is suggested as an explanation for the proposed reduction in perceived duration estimates in the presence of music during waiting.

**- H3: *Perceived wait duration will be a negative function of musical liking***

*Musical Liking and Perceived Duration:* Using music and no-music stimuli, North, Hargreaves, and McKendrick (1999b) reported that telephone callers were willing to wait longer on-hold when listening to liked (compared to disliked) stimuli. Similarly, Bailey and Areni (2006a) revealed perceived duration to be shorter with familiar (compared to unfamiliar) music when participants were not engaged in a cognitive task while waiting. In contrast, a simulated retail environment study by Yalch and Spangenberg (2000) revealed how individuals reported that they had shopped significantly longer when exposed to familiar music. Assuming that familiar music tends to be more liked than unfamiliar music, this result appears to suggest that perceived duration is a positive function of musical liking. However, since the participants in the latter study had actually shopped longer when exposed to the unfamiliar music, there appears to be a discrepancy between perceived and actual shopping behaviour.

As reviewed in Chapter 2, various studies (Hui, Dube, and Chebat, 1997; Kellaris and Kent, 1991; Kellaris and Kent, 1992; Kellaris and Mantel, 1994) have suggested that the more

consumers enjoy music, the longer they will perceive the time period during which it is played. If greater attention is paid to liked music than disliked music, increased cognitive processing could result in the perception that more happened while listening to liked music, thus increasing duration estimates (Block, 1990). This argument proposes that liked music evokes more thoughts and feelings than disliked music. Therefore, greater duration estimates are a function of the larger amount of information processed while listening to liked music, thus confirming the prediction of the storage-size model of perceived duration. However, contradictory results (e.g., Kellaris and Altsech, 1992; Whiting and Donthu, 2006) indicated that disliked music produced longer duration estimates than liked music, thus supporting theories claiming that listeners underestimate time durations when they hear liked music (e.g., Wansink, 1992). Such conflicting findings suggest that musical dis/liking cannot be the sole cause of variation in perceived duration responses to musical stimuli. Although the ad music tempo study carried out as part of this thesis suggested that musical liking did not significantly influence mean temporal perception estimates, it is possible that results may differ in the current experiment as it involves collection of concurrent perceived duration data at the culmination of a waiting encounter. Consequently, the attentional distraction (cognitive timer) model is suggested as an explanation in proposing that liked music will decrease perceived wait duration estimates.

***- H4: Positive affective response will be a negative function of background musical tempo setting***

*Musical Tempo and Affective Response:* While results revealed from the Chapter 5 of this thesis revealed positive main effects of timbre congruity upon affective responses to the ad, the current experiment assesses the impact of musical tempo variation upon affective response using tempi that are equally (in)congruous. Several studies have suggested that



slow-tempo music may be intrinsically capable of evoking more tranquil responses than fast-tempo music (Berlyne, 1971; Hevner, 1937). As such, slow-tempo music may counteract some of the stress and frustration experienced as a consequence of waiting, leading in turn to more positive affective responses than those that would be elicited by faster tempi.

***- H4a: Positive affective response will be highest under congruous (low) arousal conditions of slow-tempo music and low crowd density***

***Actual Wait Band and Affective Response:*** Mattila and Wirtz (2001) reported how evaluation of the service environment, approach behaviour, impulse buying, and satisfaction levels were enhanced through arousal congruity (either both low or both high) between ambient stimuli compared to when these ambient stimuli were mismatched. Low arousal stimuli were slow-tempo music and a relaxing scent (lavender) while high arousal stimuli were fast-tempo music and a stimulating scent (grapefruit). In contrast, Eroglu, Machleit, and Chebat (2005) drew upon schema incongruity theory in reporting that moderately incongruous stimuli induced more positive consumer evaluations than matched (i.e. congruous) stimuli. Examining the interactive effects of musical tempo and store crowding density, they described how shoppers' positive affective responses and evaluations of the shopping experience were most positive under conditions of fast-tempo music/low crowd density and slow-tempo music/high crowd density (i.e. moderate incongruity). In the present study, actual wait band (either short or long) can be regarded as equivalent to crowd density since actual wait band was inevitably dependent upon the number of other people waiting. It is proposed that positive affective response to the waiting environment will be highest when there is arousal congruity between the musical tempo (slow) and the desired (low) crowd density in a waiting context.

- H5: *Positive affective response will be enhanced by musical presence*

- H6: *Positive affective response will be enhanced by musical liking*

*Musical Presence/Liking and Affective Response:* Cameron et al (2003) argued that high-cost waits (e.g., an airline delay that may cause passengers to miss a connection) are likely to concentrate attention upon the passage of time. Their research focused upon a low-cost wait involving student participants waiting 10 minutes for the return of the researcher initiating an experiment. Using a classical music stimulus, they found that musical liking enhanced participant mood and wait-length evaluation. However, the artificial nature of the experiment meant that participants were not actually waiting for a genuine service. Furthermore, unlike a typical queue in which people may have differing lengths of wait depending upon arrival time, there was no discrepancy between participants as they were aware that everybody had waited for the same amount of time (10 minutes). In proposing that affective response to the waiting environment will be enhanced through musical presence and musical liking, the current study uses a more authentic queue setting with differing wait times.

## **Method**

*Participants:* The sample comprised 274 (135 male and 139 female) 1<sup>st</sup> and 2<sup>nd</sup> year undergraduate student participants broken down into 3 cells (95 slow-tempo music, 84 fast-tempo music, and 95 control condition no-music participants). Data was collected over three days with one day allocated to each condition. The mean age of participants was 18.98 (SD = 1.64) years.

*Materials:* Some musical tempo studies (e.g., Milliman, 1986) have used entirely different pieces of music and have not accounted for the potentially confounding interactive effects between different musical variables (e.g., genre, timbre, harmony), thus increasing the likelihood of reaching erroneous conclusions where undetected interactions exist. In contrast, this study set out to observe the effects of manipulating the musical tempo variable while retaining other musical variables as constants (Kellaris and Rice, 1993). The musical stimuli were produced using a Yamaha SY77 digital keyboard to simulate authentic sounds of instruments (e.g., drums and bass guitar) notated in the original musical score. The technology allowed reproduction of the compositions at various slow- and fast-tempi without altering other musical variables. Along with one original composition, the other four pieces were original arrangements of relatively obscure jazz compositions. Since research (e.g., Oakes, 2003a) has suggested that the jazz genre has a predominantly middle aged audience, it is likely that these compositions would be unfamiliar to most of the student participants. None of the compositions featured lyrics. In collaboration with a music major graduate, the compositions were pre-tested at various tempi, and selection of slow- and fast-tempo setting for each composition sought to retain the musical integrity of each piece. Compositions, composers, and slow-/fast-tempo BPM settings used were as follows:

Bullet Train (Ritenour/Watts) 109 and 142 BPM

Brazilian Love Affair (Duke) 109 and 140 BPM

Weekend in LA (Benson) 104 and 130 BPM

Birdland (Zawinul) 129 and 179 BPM

Happy Hour (Oakes) 120 and 136 BPM

Slow-tempo versions were set within a tempo band of 104-129 BPM ( $\underline{M} = 114.2$ ), while fast-tempo versions were set within a band of 130-179 BPM ( $\underline{M} = 145.4$ ). These tempo parameters were set because it was considered that the musical integrity of the pieces would be compromised with tempi below 104 BPM or greater than 179 BPM. Slow- and fast-tempo versions were set at an approximately equal distance from the original tempo set by the composer (in terms of BPM reduction or increase). This ensured that any participants who may have been familiar with a composition would find either version displaying an equal level of tempo incongruity. Categorization of music as slow- or fast-tempo is likely to be a function of various factors including listening context, musical genre, and listener age (student participants' tempo expectations may well have been influenced by the faster musical tempi found in dance club culture). Since such factors are likely to make distinctions between slow- and fast-tempo music highly subjective, this study used identical musical stimuli that were relatively slower or faster than each other, and should not be considered as objective exemplars of slow-tempo or fast-tempo music.

*Design:* Using a between participants design, participants waited while listening to slow-tempo music, fast-tempo music, or no-music. The waiting environment was one in which university students queue to register for undergraduate degree courses at the start of the academic year. Since actual waiting time varied at different times of the day, this allowed comparison of musical tempo effects during short and long actual waits. Student arrival and actual waiting times (ranging from 4-26 minutes) were observed and noted. A median split halfway between the shortest and longest actual wait (i.e. 15 minutes) was used to distinguish between short- and long-waits. Consequently, waits of 4-15 minutes were regarded as short, while waits of 16-26 minutes were regarded as long. In this context, short waits correspond to low crowd density, while long waits correspond to high crowd density. Consistent with previous temporal

perception studies (e.g., Bailey and Areni, 2006b) that sought to preserve a naturalistic waiting environment rather than creating an overtly experimental one, participants were not asked to remove their watches. This ensured that students would not be alerted to their participation in perceived duration research, thus allowing them to interact normally during the waiting process and prior to the administration of the questionnaire. Upon arrival, participants took their seats at the back of several rows of structured seating allowing gradual progression to the front row of the queue. In the music treatments, an amplifier and speakers were used to project slow- and fast-tempo music throughout the large room. Volume levels had been pre-tested with university registration staff to ensure comfortable listening.

The total duration of the compositions at slow-tempo was 33 minutes and 42 seconds. At fast-tempo the total duration was 26 minutes and 49 seconds. In order to ensure that participants were not exposed to repetitions of the same piece of music, the total duration at either tempo was greater than the maximum actual waiting time (26 minutes). Data was not collected from students waiting longer than 26 minutes because exposure to repetition of the same pieces of music could have increased feelings of frustration and irritation with the wait, thus potentially confounding the results of the study. Eleven participants in the fast-tempo treatment endured additional delays at the culmination of their wait. Since this delay meant that their wait was in excess of 26 minutes, their questionnaires were retrospectively discarded, thus resulting in a shortfall of participants in the fast-tempo treatment compared to the other treatments.

*Procedure:* Since pre-tests using an open-ended perceived duration question indicated the tendency to 'round up' duration estimates to the nearest multiple of 5 minutes, a table of numbers (1-60) was used to provide participants with a 60-minute span of perceived duration options, thus encouraging more precise responses to the nearest minute. Participant arrival and

actual waiting time was covertly monitored. At the culmination of their wait, just prior to interaction with a registration administrator, they were asked to complete the questionnaire. They were informed that the purpose of the questionnaire was to measure levels of satisfaction with the registration queuing process, but were made aware that completion and submission of the questionnaire was on an entirely voluntary basis. Previous research has identified the potentially confounding effects that may arise when participants are asked to mentally reconstruct events, and retrospectively infer their duration from memory (Chebat, Gelinas-Chebat, and Filiatrault, 1993; Kellaris and Mantel, 1996). Therefore, in order to obtain a more concurrent (less retrospective) estimate of perceived duration, the questionnaire was administered shortly before the potentially distracting interaction with the registration administrator took place. Since the duration of interactions with administrators varied in length depending upon the personal circumstances of the student, this eliminated the potentially confounding impact of such variation upon retrospective memory of the waiting process.

Satisfaction with waiting times was measured on a 5-item scale ranging from 'very dissatisfied' (1) to 'very satisfied' (5), and stress/relaxation levels with the registration process were recorded on a 5-item scale ranging from 'very relaxing' (1) to 'very stressful' (5). Disconfirmation of wait duration expectations was also measured on a 5-item scale ranging from 'much longer than I expected' (1) to 'much shorter than I expected' (5). In the music treatments, participants were asked to indicate their liking of the music on a 5-item scale ranging from 'very enjoyable' (1) to 'very irritating' (5). Previous research (North, Hargreaves, and Heath, 1998) found that fast-tempo music was regarded as more appropriate in a vigorous exercise environment (a gymnasium). In addition, Kellaris and Mantel (1996) revealed how incongruous (inappropriate) music produced more inaccurate perceived duration

estimates. Consequently, a question sought perceptions of appropriateness of the music at slow- and fast-tempo on a 3-item scale ranging from 'too slow' (1) to 'too fast' (3).

## Results

*Perceived Duration* (H1, H2, and H3): In accord with previous research (e.g., Jones and Peppiatt, 1996) and consistent with results in the ad music tempo study (Chapter 4), results revealed how perceived duration estimates exceeded actual duration estimates in the slow-tempo music, fast-tempo music, and no-music treatments. 3 (condition) x 2 (high crowd density versus low crowd density) ANCOVA results using actual waiting time as a covariate revealed a significant main effect of condition upon mean perceived duration ( $F(2,265) = 7.88$ ;  $p < 0.001$ ). There was no significant main effect of crowd density upon perceived duration ( $F(1,265) = 0.14$ ; n.s.) and no significant interactive effect between crowd density and the three conditions ( $F(2,265) = 1.54$ ; n.s.). Pairwise comparisons showed that the difference in perceived duration between the slow-tempo ( $M = 14.94$  minutes,  $SE = 1.19$ ) and fast-tempo ( $M = 18.45$  minutes,  $SE = 1.23$ ) treatments was significant ( $p < 0.05$ ), thus supporting H1. Furthermore, the difference in perceived duration between the slow-tempo and no-music ( $M = 21.20$  minutes,  $SE = 1.19$ ) treatments was significant ( $p < 0.001$ ), while the difference in perceived duration between the fast-tempo and no-music treatments was non-significant.

Unlike the results from the ad music tempo study that did not reveal a significant impact of musical presence upon mean temporal perception, ANCOVA results controlling for variations in actual waiting time revealed a significant impact of musical presence upon mean perceived duration estimates ( $F(1,269) = 13.10$ ;  $p < 0.001$ ). Musical presence (both music treatments combined) produced a significantly shorter mean estimate ( $M = 16.74$  minutes,

$\underline{SE} = 0.76$ ) compared to the no-music condition ( $\underline{M} = 21.46$  minutes,  $\underline{SE} = 1.05$ ), thus supporting H2. Partial correlation results controlling for variations in actual waiting time revealed a significant correlation coefficient between perceived duration and musical liking ( $r(168) = 0.23, p < 0.005$ ). Since higher scores for musical liking were significantly linked to shorter perceived wait durations, H3 is supported. While mean perceived duration was significantly greater with fast-tempo music than slow-tempo music, an independent-samples t-test revealed no significant difference in musical liking ( $t(170) = -0.78, n.s.$ ) between slow-tempo ( $\underline{M} = 3.56, \underline{SD} = 1.29$ ) and fast-tempo music ( $\underline{M} = 3.72, \underline{SD} = 1.29$ ).

*Affective Response* (H4, H4a, H5, and H6): 3 (condition) x 2 (high crowd density versus low crowd density) MANCOVA results using actual waiting time as a covariate indicated a significant difference between the three conditions ( $\underline{F}(2,270) = 2.82; p < 0.05$ ) on measures of satisfaction, relaxation, and positive disconfirmation of wait duration expectations. There was no significant main effect of crowd density upon affective response ( $\underline{F}(1,270) = 1.34; n.s.$ ) and there was no interactive effect ( $\underline{F}(2,270) = 2.05; n.s.$ ). Pairwise comparisons showed significantly enhanced satisfaction levels ( $p < 0.01$ ) with slow-tempo music ( $\underline{M} = 3.71, \underline{SE} = 0.12$ ) compared to fast-tempo music ( $\underline{M} = 3.26, \underline{SE} = 0.13$ ), significantly enhanced relaxation levels ( $p < 0.05$ ) with slow-tempo music ( $\underline{M} = 2.55, \underline{SE} = 0.11$ ) compared to fast-tempo music ( $\underline{M} = 2.88, \underline{SE} = 0.11$ ), and significantly enhanced positive disconfirmation of expectations of wait duration ( $p < 0.001$ ) with slow-tempo music ( $\underline{M} = 3.58, \underline{SE} = 0.13$ ) compared to fast-tempo music ( $\underline{M} = 2.93, \underline{SE} = 0.14$ ), thus supporting H4.

Analysis of the individual components comprising affective response revealed a consistent pattern (see Table 8.1). With low crowd density, satisfaction levels, relaxation levels, and positive disconfirmation of wait expectations were highest in the slow-tempo treatment, lower in



the fast-tempo treatment, and lowest in the no-music treatment. With high crowd density, satisfaction levels, relaxation levels, and positive disconfirmation of wait expectations were highest in the no-music treatment, lower in the slow-tempo treatment, and lowest in the fast-tempo treatment. Table 8.1 shows how all of the three components of positive affective response were highest under congruous (low) arousal conditions of slow-tempo music and low crowd density, thus supporting H4a.

**Table 8.1. Condition, crowd density, and affective response**

LOW CROWD DENSITY	Mean (and SD) SLOW TEMPO	Mean (and SD) FAST TEMPO	Mean (and SD) NO MUSIC
Satisfaction	4.19 (1.19)	3.88 (1.08)	3.39 (1.35)
Relaxation *	3.81 (1.00)	3.46 (0.97)	3.28 (1.08)
Expectations	4.17 (1.14)	3.39 (1.29)	3.13 (1.39)
HIGH CROWD DENSITY	Mean (and SD) SLOW TEMPO	Mean (and SD) FAST TEMPO	Mean (and SD) NO MUSIC
Satisfaction	2.53 (1.13)	1.96 (1.00)	2.92 (0.97)
Relaxation *	2.86 (0.72)	2.54 (0.74)	3.08 (0.83)
Expectations	2.36 (0.93)	1.86 (1.15)	2.83 (1.47)

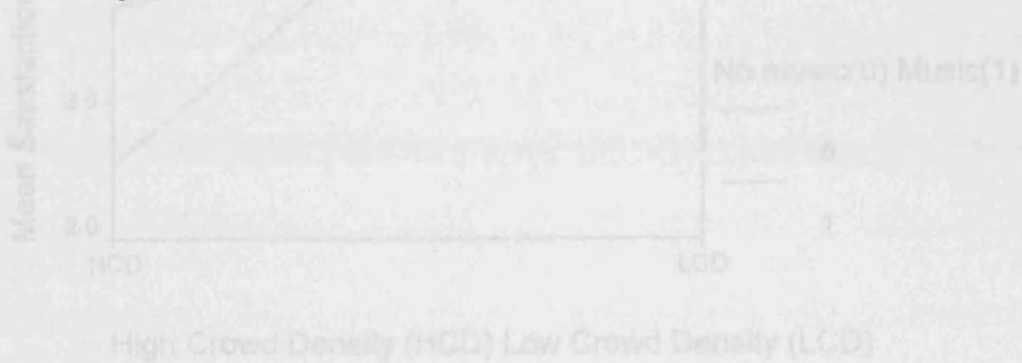
\* For the purpose of visual clarity, relaxation scores have been adjusted to take into account reverse coding

A 2 (musical presence versus absence) x 2 (high crowd density versus low crowd density) MANCOVA using actual waiting time as a covariate showed no significant main effect of crowd density ( $F(1,266) = 2.07$ ; n.s.) or musical presence ( $F(1,266) = 0.43$ ; n.s.) upon affective response. However, there was a significant interactive effect between crowd density and musical presence ( $F(1,266) = 3.05$ ;  $p < 0.05$ ) with means (see Table 8.2) suggesting that the presence of music enhanced levels of positive affective response with low crowd density, but diminished levels of positive affective response with high crowd density. As crowd density increased, levels of positive affective response to the music treatments decreased (see Figures 8.1, 8.2, and 8.3). Since positive affective response was enhanced by musical presence only under conditions of low crowd density, H5 is only partially supported.

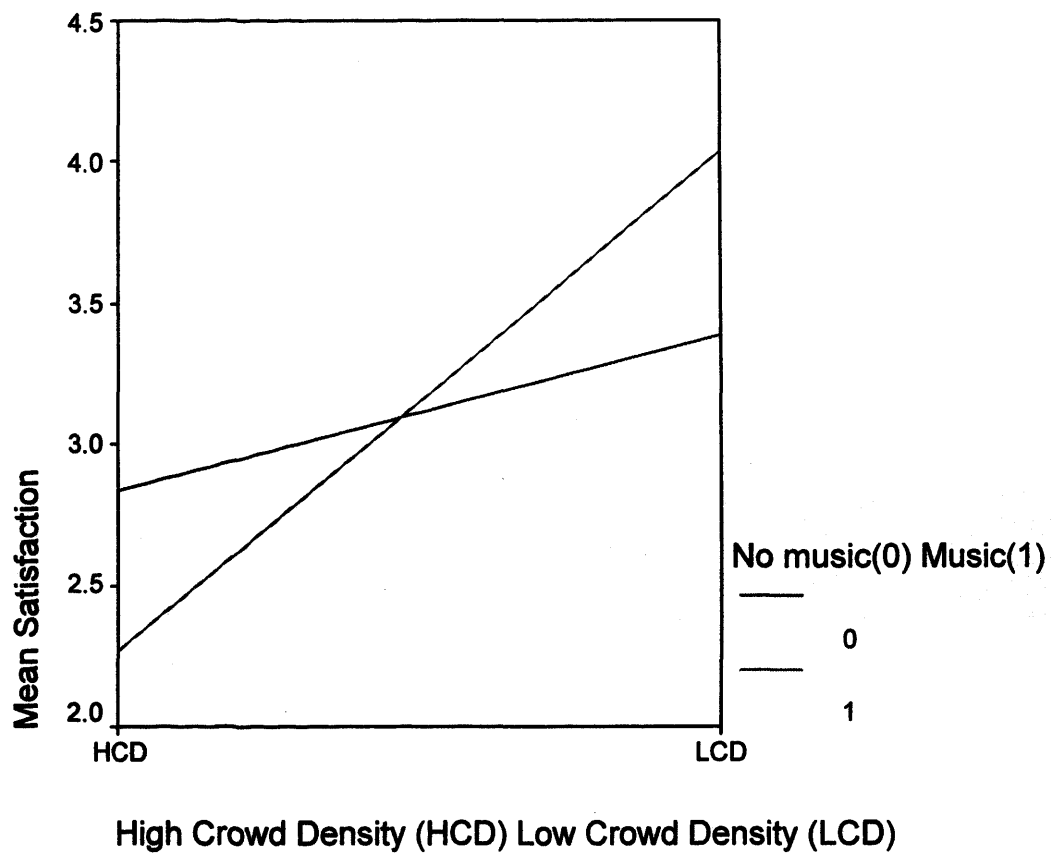
**Table 8.2. Musical presence, crowd density, and affective response**

LOW CROWD DENSITY	Mean (and SD) MUSIC PRESENT	Mean (and SD) MUSIC ABSENT
Satisfaction	4.04 (1.14)	3.39 (1.35)
Relaxation *	3.64 (1.00)	3.28 (1.08)
Expectations	3.79 (1.27)	3.13 (1.39)
HIGH CROWD DENSITY	Mean (and SD) MUSIC PRESENT	Mean (and SD) MUSIC ABSENT
Satisfaction	2.28 (1.11)	2.92 (0.97)
Relaxation *	2.72 (0.75)	3.08 (0.83)
Expectations	2.14 (1.05)	2.83 (1.47)

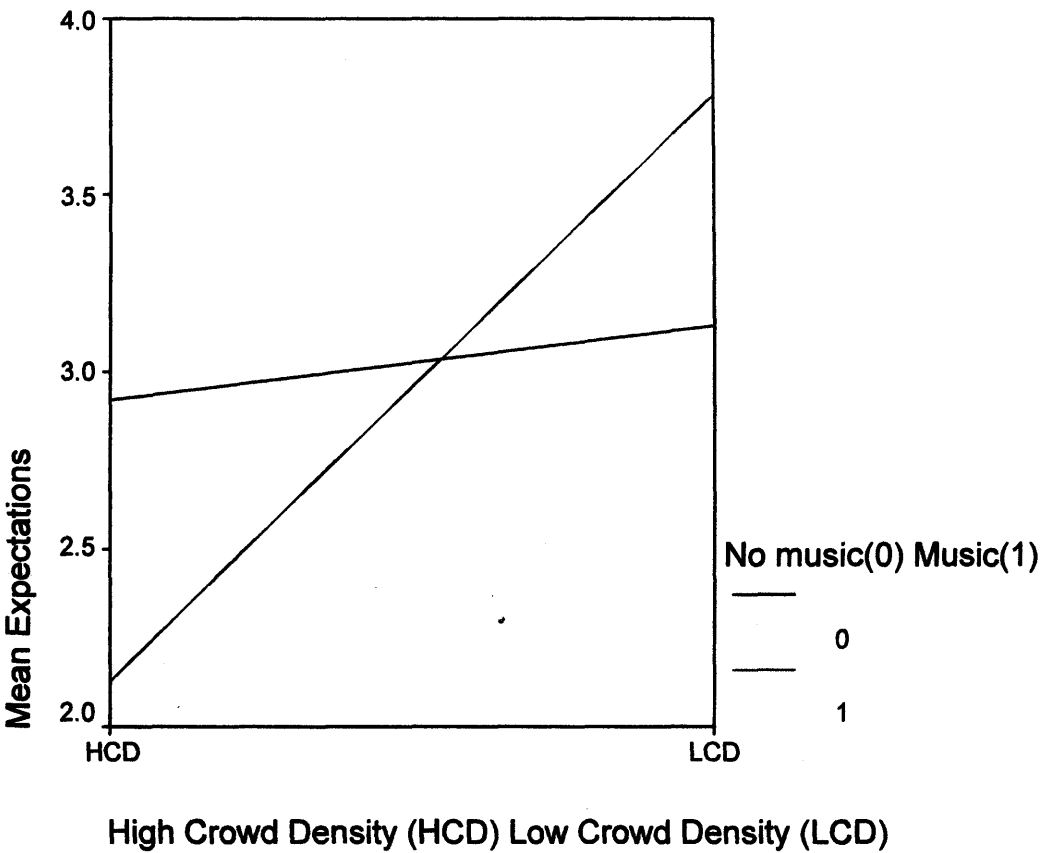
\* For the purpose of visual clarity, relaxation scores have been adjusted to take into account reverse coding



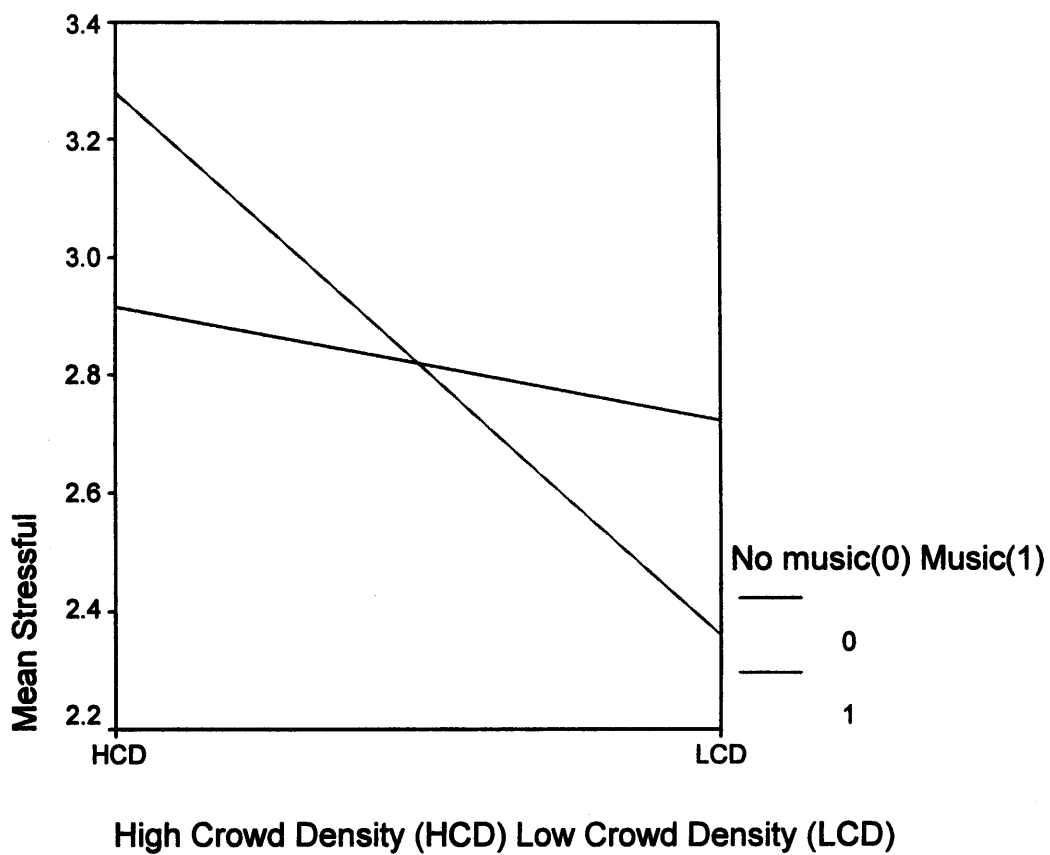
**Figure 8.1. The influence of musical presence upon satisfaction levels in high and low crowd density treatments**



**Figure 8.2. The influence of musical presence upon positive disconfirmation of wait expectations in high and low crowd density treatments**



**Figure 8.3. The influence of musical presence upon stress levels in high and low crowd density treatments**



Partial correlation results controlling for variations in actual waiting time revealed a significant correlation coefficient between satisfaction and musical liking ( $r(169) = -0.16, p < 0.05$ ), positive disconfirmation of expectations and musical liking ( $r(169) = -0.18, p < 0.05$ ), and relaxation and musical liking ( $r(168) = 0.38, p < 0.001$ ), thus supporting H6. A 2 (slow-versus fast-tempo) x 2 (high crowd density versus low crowd density) ANCOVA using actual waiting time as a covariate showed no significant main effect of musical tempo ( $F(1,167) = 0.03$ ; n.s.) or crowd density ( $F(1,167) = 0.01$ ; n.s.) upon musical liking. However, there was a significant interactive effect between musical tempo and crowd density ( $F(1,167) = 10.56$ ;  $p < 0.005$ ) suggesting that slow-tempo music ( $M = 3.32, SE = 0.21$ ) was more liked than fast-tempo music ( $M = 3.97, SD = 0.22$ ) under conditions of low crowd density, while fast-tempo music ( $M = 3.32, SE = 0.32$ ) was more liked than slow-tempo music ( $M = 3.91, SD = 0.31$ ) under conditions of high crowd density. ANCOVA results using actual waiting time as a covariate showed no significant main effect of musical tempo ( $F(1,156) = 3.31$ ; n.s.) or crowd density ( $F(1,156) = 1.01$ ; n.s.) upon perceptions of musical appropriateness, and there was no interactive effect between musical tempo and crowd density ( $F(1,156) = 1.77$ ; n.s.).

## Discussion

This study showed that perceived wait duration was related positively to the tempo of background music, thus supporting the prediction of the storage-size model of perceived duration. It also identified how musical presence significantly reduced mean perceived duration estimates (thus supporting the prediction of the cognitive timer model of perceived duration). Although these findings are generally consistent with previous research, further studies are required to establish possible reasons why the additional aural processing associated with the presence of music elicits different perceptions of temporal duration



compared to the processing of faster tempo music. It is possible that different models of temporal perception may be applicable in different contexts or depending upon the category of data that is being processed.

In contrast with the current study, musical presence did not significantly impact upon temporal perception in the ad music tempo study (Chapter 4 of this thesis). Since perceived duration was greatest in the no-music treatment, this also contrasts with the ad music tempo study in which the no-music treatment produced the least amount of temporal overestimation. There may be a variety of contextual explanations for this discrepancy. Music may simply require a longer period of time than the duration of an ad to enable it to significantly influence temporal perception. Another explanation may be the focused attention upon the ads in the ad music tempo study meaning that the music was actively listened to by participants. In contrast, the music heard in the current study involved more passive exposure during the waiting experience. Future research needs to explore further the distinction between active and passive exposure to music in terms of its cognitive and affective implications.

While various studies have suggested that perceived duration is a positive function of musical liking (e.g., Hui, Dube, and Chebat, 1997; Kellaris and Kent, 1991; Kellaris and Kent, 1992; Kellaris and Mantel, 1994; Yalch and Spangenberg, 2000), results from this study identified perceived duration as a significant, negative function of musical liking, thus confirming the findings of Kellaris and Altsech (1992) and supporting the prediction of the cognitive timer model of perceived duration.

Positive affective response was a negative function of background musical tempo as slow-

tempo music produced more positive affective responses than fast-tempo music in terms of satisfaction, relaxation, and positive disconfirmation of expectations of wait duration. While it is possible that slow-tempo music evoked more tranquil responses than fast-tempo music, future research in a variety of waiting environments is required in order to assess the influence of contextual factors. Neither musical presence nor crowd density impacted directly upon affective response. However, music appeared to enhance positive affective response with low crowd density, while diminishing it with high crowd density. This suggests that there may be a crowding threshold beyond which music is transformed from a positive to a counterproductively negative element in waiting contexts.

With claustrophobically high crowd density, musical presence elicited higher dissatisfaction and stress levels, as well as perceptions that the wait was longer than expected. Since there was no main effect of crowd density upon affective response, results suggest that background silence is preferable to background music for lengthy waits involving large crowds, perhaps because the presence of music suggests to customers that the organisation is complacently deploying inadequate staffing and resource levels to cater for the large number of waiting customers. However, in such high crowd density scenarios, it may well be possible that music could induce more positive affective responses if consumers are made aware that the organisation is responding flexibly to the peaks and troughs of demand. This could involve visible deployment of increased staff numbers at high demand periods and provision of information regarding likely waiting times.

Satisfaction with the wait, relaxation levels, and positive disconfirmation of wait expectations were highest under congruous (low) arousal conditions of slow-tempo music and low crowd density. This intuitive result does not confirm the findings of Eroglu, Machleit, and Chebat

(2005) who reported that mismatched stimuli induced more positive evaluations than matched stimuli. In their study, shoppers' positive affective responses were highest under conditions of fast-tempo music/low crowd density and slow-tempo music/high crowd density. Furthermore, the findings of Mattila and Wirtz (2001) are not confirmed since they reported how satisfaction levels were enhanced through arousal congruity (either both low or both high). Although the findings from Chapter 8 show how positive affective response was highest under congruous (low) arousal conditions of slow-tempo music and low crowd density, they also show how the lowest scores for positive affective response were in the congruous (high) arousal conditions of fast-tempo music and high crowd density (see Table 8.1). This suggests that musical tempo stimuli demonstrating congruous (low/high) arousal with crowd density levels may compound the (positive/negative) valence of affective responses in waiting contexts.

Chapter 8 results showed how positive affective response was significantly enhanced by musical liking. Although there was no significant main effect of crowd density or musical tempo upon musical liking, there was a significant interactive effect between crowd density and musical tempo. This indicated that slow-tempo music was more liked than fast-tempo music under conditions of low crowd density, while fast-tempo music was more liked than slow-tempo music under conditions of high crowd density. The commercial implications of this result suggest that organisational managers should consider altering the tempo of their background music according to the number of people waiting. Since there were no significant main effects of musical tempo or crowd density (and no interactive effects) upon perceptions of musical appropriateness (congruity), this would appear to suggest that perceived (in)congruity of musical tempo did not impact upon cognitive and affective responses.

Previous research (Rafaeli, Barron, and Haber, 2002) has suggested that waiting in a single-queue structure produces higher arousal, predictability levels, and perceptions of justice compared to waiting in a multiple-queue structure. As the present study used a single-queue structure exclusively, it would be interesting to replicate this study in the context of a multiple-queue structure. Furthermore, since recent research (Eroglu, Machleit, and Chebat, 2005) has shown that slow-tempo music in a shopping environment enhanced approach behaviour, social interaction, browsing, and purchase behaviour, future research could assess the impact of musical tempo variation in similar commercial environments when consumers are waiting in line to be served. In addition, future research in waiting environments could examine the impact of musical tempo variation using different musical genres.

## **CHAPTER 9: GENERAL DISCUSSION AND CONCLUSIONS**

Findings from this thesis have implications for the wider body of theoretical knowledge within the parent discipline of psychology. From a practitioner perspective, this thesis has specific practical relevance for advertising agencies and their client organisations seeking to optimise their use of musical stimuli in advertising campaigns. The findings are also relevant for retail and service organisation managers currently using or considering the introduction of background music.

The research reported in Chapter 4 found significantly higher levels of ad content recall with slow-tempo music compared to fast-tempo music. One explanation may be attributed to the storage-size model of temporal perception. Since faster musical tempi increase the density of auditory data by exposing participants to more bars of music during a set time period, fast-tempo music inevitably increases processing load requirements, thus reducing the availability of resources to process other ad content. However, since the music in the fast-tempo treatment (170 BPM) was unusually faster than that found in most ads (Kellaris and Rice, 1993), an alternative theoretical explanation suggests that it was the extreme incongruity of the fast-tempo treatment that drew cognitive resources from the processing of ad content. Fruitless participant attempts to resolve the purpose of the musical tempo incongruity may have occupied cognitive resources normally deployed to verbal content processing. Such a conclusion would be consistent with the findings of previous studies that have revealed how increased musical congruity enhances ad content recall (e.g., Stewart and Punj, 1998).

In order to build upon the findings from Chapter 4 of this thesis, Chapter 5 involved a study designed specifically to assess the impact of musical congruity using musical stimuli that

differed in terms of their congruity with the ad message. Results revealed that increased congruity of background music timbre significantly enhanced ad content recall. The more incongruous timbres distracted participants from processing (and subsequently recalling) ad content, perhaps because their cognitive resources were deployed elsewhere in vain attempts to resolve the incongruity, thus reducing the level of resources available to process message content. These results were consistent with the findings of previous studies revealing how increased congruity between an ad and variables including musical score enhance verbal recall (e.g., North et al, 2004). Unlike the experiment in Chapter 4, any significant impact upon ad content recall in Chapter 5 could not be directly attributed to the storage-size model of temporal perception since different timbres (unlike faster tempi) do not increase processing load requirements by exposing participants to more bars of music. Results also showed that increased congruity between background music timbre and ad message significantly enhanced elicitation of desired (positive) affective responses to the ad. Significantly happier, more calming, and more relaxing responses were produced with the congruous timbre treatment. More negative affective responses were produced by genres that had been unanimously reported as inappropriate (incongruous) in the pre-test.

In Chapter 6, results revealed no significant impact of musical genre congruity upon ad content recall, thus apparently conflicting with the findings of previous studies (e.g., Stewart and Punj, 1998) as well as with the findings from Chapters 4 and 5 of the thesis. Experiment 1 results also indicated that mean recall scores in the congruous dance and incongruous classical music treatments were significantly higher than the mean recall score in the no-music treatment, thus appearing to conflict with the findings from Chapter 4 of this thesis that reported how the presence of music significantly reduced ad content recall. However, context is critical in determining whether music is congruous or incongruous. In Chapter 6, it was the unusual and

unexpected absence of music that could be regarded as incongruous in the first genre experiment as there was no ad narrator and no other audio elements in the television ad. In contrast, the presence of music distracted attention from the other audio element (the ad narrator) in the Chapter 4 experiment, thus impeding cognitive processing and diminishing ad content recall.

Results from Experiment 1 and Experiment 2 were consistent in showing that the classical music treatment created an image for the university that was significantly less modern, exciting, and trendy than the no-music and dance treatments. Results from Experiment 2 also showed that the no-music treatment produced a significantly more sophisticated perceived image of the advertised university compared to the dance music treatment, but a significantly less sophisticated image compared to the classical music treatment. Results showed that the classical music treatment produced expectations that university fees would be significantly higher when compared to the no-music and dance music treatments, and indicated that classical music enhances (rather than dance music inhibits) perceptions of value. This confirms the conclusions of previous research (e.g., Yalch and Spangenberg, 1990) indicating that classical music was the most appropriate genre for managers wishing to convey a highly prestigious image and subsequently justify high prices. Participants were significantly more likely to apply to the university after exposure to the dance music treatment when compared to the classical music treatment, and results indicated that dance music enhances (rather than classical music inhibits) likelihood of application.

In Chapter 7, an incongruous (older) ad narrator significantly reduced perceived attractiveness of the advertised university, likelihood of applying to the university, and mean recall of ad content. The older ad narrator may have been perceived to lack relevance for student participants, since such lack of relevance has been revealed by Heckler and Childers

(1992) to inhibit formation of associative linkages that are important for successful ad content retrieval. However, the university was perceived to be significantly more attractive to mature students with the older ad narrator.

Results from Chapter 8 showed that perceived wait duration was a positive function of background musical tempo, thus supporting the prediction of the storage-size model of temporal perception. Note that the findings reported in Chapter 4 also identified the storage-size model as one possible explanation for the negative impact of fast-tempo music upon ad content recall). In contrast however, the presence of music during queue registration produced a significantly shorter mean perceived duration estimate compared to the no-music condition (thus supporting the prediction of the cognitive timer model of temporal perception). While the ad music tempo study in Chapter 4 reported that the presence of music did not significantly impact upon temporal perception, this may have been simply because the duration of an ad is not long enough to provide the scope for music to significantly impact upon temporal perception. Alternatively, the lack of a significant finding in Chapter 4 may be attributed to the actively focused attention upon the ad in an artificial environment that filtered out the effects of the music. This contrasts with the significant findings in Chapter 8 involving passive exposure to music in a more naturalistic environment.

Perceived wait duration was a significant, negative function of musical liking, thus supporting the prediction of the cognitive timer model of temporal perception and the findings of Kellaris and Altsech (1992). Slow-tempo music (compared to fast-tempo music) significantly enhanced affective response in terms of satisfaction, relaxation, and positive expectations of wait duration expectations. Although there were no main effects of either musical presence or crowd density upon affective response, there was a significant interaction between musical



presence and crowd density. This interaction showed that musical presence significantly enhanced positive affective response with low crowd density, but significantly reduced positive affective response with high crowd density.

### **Contribution of the thesis from a service/retail environment perspective**

The contribution of the thesis to the empirical body of knowledge from a service environment perspective is set out in Table 9.1. As a result of the findings in Chapter 8, a modified version of Table 2.1 (originally presented in the literature review Chapter 2) is shown below, highlighting the original contributions in bold typeface.

**Table 9.1 The modified musicscape**

<b>Musical Variables</b>	<b>Outcomes</b>	<b>Studies</b>
<b>GENRE</b>	More positive evaluation of the environment with congruous genres	Grewal et al (2003) Spangenberg, Grohmann, & Sprott (2005) Baker, Grewal, & Parasuraman (1994)
	Increased spending with congruous genres	Wilson (2003) North, Hargreaves, & McKendrick (1999a) North & Hargreaves (1998) North, Shilcock, & Hargreaves (2003) Baker, Levy, & Grewal (1992) Areni & Kim (1993)
<b>TEMPO</b>	More positive evaluation of the environment with congruous tempi	Eroglu, Machleit, & Chebat (2005)** <b>Thesis Chapter 8</b>
	Shorter perceived waits and enhanced affective response to waits with slower tempi	Oakes (2003b) Tansik & Routhieaux (1999) <b>Thesis Chapter 8</b>
	Increased spending with congruous tempi	Mattila & Wirtz (2001)
	Increased spending and slower consumption with slower tempi	Milliman (1982*; 1986) Caldwell & Hibbert (2002)
<b>VOLUME</b>	Longer perceived stay duration when musical volume was incongruous with shopper age	Smith & Curnow (1966*) Yalch & Spangenberg (1990)
	Increased spending with congruous volume levels	Smith & Curnow (1966*) Yalch & Spangenberg (1990; 1993) Lammers (2003)
<b>LIKING</b>	More positive evaluation of the environment with liked music (valence congruity)	Hui, Dube, & Chebat (1997) Dube & Morin (2001) Morin, Dube, & Chebat (2007) North, Hargreaves, & McKendrick (2000) North and Hargreaves (1996a) Sweeney & Wyber (2002) <b>Thesis Chapter 8</b>
	Liked music increased perceived wait durations	Hui, Dube, & Chebat (1997)**
	Liked music decreased perceived wait durations	<b>Thesis Chapter 8</b>
	Increased spending with liked music	Caldwell & Hibbert (2002)

\* Replication studies produced non-significant results

\*\* The findings of the thesis conflict with these findings

Table 9.1 shows which findings from Chapter 8 of this thesis support the findings of previous studies. For example, the significant, positive impact of musical tempo upon perceived duration estimates supports the findings of Oakes (2003b). Results showing the positive impact of slow-tempo music upon affective responses to the wait are also consistent with the findings of Tansik and Routhieaux (1999). Furthermore, Chapter 8 supports the findings of previous studies (e.g., Hui, Dube, and Chebat, 1997) that showed that positive evaluation of retail and service environments is enhanced by increased musical liking. In this context, valence congruity arises because liked music supports managerial intentions to elicit positive environmental evaluations.

However, some findings from the thesis conflict with findings from previous studies. For example, previous service environment research (Hui, Dube, and Chebat, 1997) reported that perceived duration was related positively to musical liking, but results from Chapter 8 support the prediction of the cognitive timer model by showing that perceived duration was related negatively to musical liking. This result could suggest that liked music triggers increased cognitive processing that diverts attention from an internal cognitive timer, thus resulting in shorter estimates of perceived duration. These conflicting findings could perhaps be attributable to the different contexts because Chapter 8 involved an authentic waiting situation (student registration) while Hui, Dube, and Chebat (1997) used a video simulation of a bank. Participants' responses to liked music may differ in a focused, artificial environment compared to a passive, naturalistic environment. Further research needs to examine the relationship between liked music and perceived duration in a variety of authentic and simulated service environment contexts. Although musical liking has been included as an independent variable in Tables 2.1 and 9.1, it is acknowledged that musical liking is not a structural characteristic of music. Indeed, it may actually be a function of numerous factors

including aspects of the music, the listener, and the listening situation (North and Hargreaves, 2005).

Furthermore, Eroglu, Machleit, and Chebat (2005) showed that moderately incongruous stimuli (fast-tempo music/low crowd density and slow-tempo music/high crowd density) induced more positive evaluations of the shopping experience and more positive affective responses than extreme congruity or extreme incongruity. In contrast, Chapter 8 of this thesis reports that congruous (low) arousal conditions of slow-tempo music and low crowd density enhanced positive affective responses and evaluations of the waiting environment.

One possible explanation for this discrepancy may be the different musical genres used in each study (relatively obscure jazz compositions versus familiar adult contemporary favourites) since designation of tempo as slow or fast is likely to differ between musical genres. Indeed, there were different parameters of slow- and fast-tempo music in each study. In Chapter 8, slow-tempo versions were within a tempo band of 104-129 BPM ( $\underline{M} = 114.2$ ), while fast-tempo versions were within a tempo band of 130-179 BPM ( $\underline{M} = 145.4$ ). The tempo parameters in Chapter 8 were carefully chosen in collaboration with a music major graduate in order to retain the musical integrity of each jazz composition. In the Eroglu, Machleit, and Chebat (2005) study, a 'Muzak expert' was used to classify slow-tempo music as 60 BPM and fast-tempo music as 96 BPM. The latter study also used different pieces of music, while Chapter 8 used the same pieces of music at different tempi in order to ensure that responses were attributable exclusively to tempo variation. This suggests that future research needs to identify the degree of incongruity associated with musical (e.g., tempo) and other stimuli in order to be able to categorise them unambiguously as examples of either moderate or extreme incongruity.

The positive impact of congruously matched stimuli in Chapter 8 reflects the findings of Chapters 4-7 of this thesis that report the positive impact of increased congruity in an advertising context. Chapter 8 also showed that musical presence produced a significantly smaller mean temporal perception estimate compared to the no-music condition. However, since the results from Chapter 4 of this thesis did not show a significant impact of musical presence upon mean temporal perception in an advertising context, musical presence has not been included in Table 9.1 as a musical stimulus that leads to specific outcomes.

### **Contribution of the thesis from an advertising perspective**

The contribution of the thesis to the empirical body of knowledge from an advertising perspective is set out in Table 9.2. As a result of the findings in Chapters 4, 5, and 6, a modified version of Table 3.1 (originally presented in the literature review Chapter 3) is shown below, highlighting the original contributions in bold typeface. The findings from Chapter 7 of this thesis are not highlighted in Table 9.2 as they do not use musical stimuli.

**Table 9.2 Updated Empirical Findings Highlighting the Impact of Music upon Responses to Advertising**

<b>Dependent Variables</b>	<b>Outcomes</b>	<b>Studies</b>
<b>PURCHASE INTENT</b>	Music composed specifically to be appropriate with an ad increased purchase intent (score congruity)	North, Hargreaves, MacKenzie, & Law (2004)
	Increased purchase intent arose with high congruity between the mood induced by the music ('sad') and the greeting card for ill friend (mood congruity)	Alpert, Alpert, & Maltz (2005)
	Greater genre congruity increased the likelihood of application to study at the advertised university.	<b>Thesis Chapter 6</b>
<b>BRAND ATTITUDE</b>	Sung version of ad produced a positive, linear trend in brand evaluation over repeated exposures	Anand & Sternthal (1990)
	Music associated with an unpleasant experience lowered brand evaluation through transfer of affect	Blair & Shimp (1992)
	Musical disliking diminished brand attitude via transfer of affect	Simpkins & Smith (1974)
	Musical liking enhanced brand attitude via transfer of affect	Mitchell (1988)
	Musical liking enhanced brand attitude via transfer of affect when ad involvement was low	Park & Young (1986) Bozman, Mueling, & Pettit-O'Malley (1994)
	High congruity between ad song lyrics and message enhanced brand attitude with low and high ad involvement (semantic congruity)	MacInnis & Park (1991)
	High congruity between musical genre and ad enhanced brand attitude (genre congruity)	Hung (2000; 2001)
	Attributes associated with the musical genre were transmitted to the advertised brand	<b>Thesis Chapter 6</b>

<b>VISUAL RECALL</b>	High congruity between musical genre and product attributes enhanced recall of visual imagery from the ad (genre congruity)	Stewart, Farmer, & Stannard (1990) Gorn, Goldberg, Chattopadhyay, & Litvack (1991) Stewart & Punj (1998)
	Visual ad content recall lower in the incongruous absence of music	<b>Thesis Chapter 6</b>
<b>VERBAL RECALL</b>	Music composed specifically to be appropriate with an ad increased recall levels (score congruity)	Tom (1990) Yalch (1991) North, Hargreaves, MacKenzie, & Law (2004)
	High music-message congruity (matching evocation of images elicited by the music and the product) enhanced brand name and message recall with attention-gaining music (image congruity)	Kellaris, Cox, & Cox (1993)
	Music fading back in facilitated recall by indicating that the verbal material spoken over unexpected silence was being highlighted due to its importance	Olsen (1995)
	Participants resolved the incongruity of absent lyrics by singing along, thus enhancing subsequent ad message recall (resolved incongruity)	Roehm (2001)
	Recall of radio ad content was enhanced by increased musical tempo congruity	<b>Thesis Chapter 4</b>
	Recall of radio ad content was enhanced by increased musical timbre congruity.	<b>Thesis Chapter 5</b>
<b>AFFECTIVE RESPONSE</b>	Music composed specifically to be appropriate with an ad enhanced affective response to the ad (score congruity)	North, Hargreaves, MacKenzie, & Law (2004)
	Increased musical timbre congruity enhanced desired affective ad responses	<b>Thesis Chapter 5</b>

Table 9.2 highlights the contribution provided by Chapter 6 of this thesis, namely that musical genre congruity significantly enhanced likelihood of application to the advertised university. While score congruity (North et al, 2004) and mood congruity (Alpert, Alpert, and Maltz, 2005) have been revealed to enhance purchase intent, Chapter 6 makes an original contribution by revealing the positive impact of genre congruity upon purchase intent. While Hung (2000; 2001) reported that high congruity between musical genre and ad enhanced brand attitude, Chapter 6 underlines how genre congruity enhances the process of transmission of attributes associated with the music to the advertised brand. Table 9.2 identifies a further contribution of Chapter 6 in revealing how visual ad content recall was lower in the incongruous absence of music. Although musical genre incongruity did not have a deleterious effect upon visual or verbal ad content recall as demonstrated by previous studies (e.g., Stewart and Punj, 1998), this may be because the incongruity of the classical music genre in Chapter 6 was based upon unexpectedness rather than lack of relevance. Further research is needed to examine the impact of genre congruity upon recall including questions that measure the levels of expectancy and relevancy.

Table 9.2 highlights the contribution regarding verbal ad content recall provided by Chapters 4 and 5 of this thesis. Although several studies have previously identified how various forms of musical congruity enhance verbal ad content recall (e.g., North et al, 2004), none had established the relationship between tempo/timbre congruity and recall. Consistent with the findings of North et al (2004) showing that music composed specifically to be appropriate with an ad enhanced affective response to the ad, Table 9.2 also identifies an additional contribution of Chapter 5 of this thesis by highlighting a significant relationship between musical timbre congruity and positive affective response. Results from Chapters 4 and 5 may suggest that advertisers should ensure that musical tempo does not fall short of or exceed



expected parameters (tempo congruity), as well as ensuring that the musical instruments used are the most appropriate for the advertised product and message (timbre congruity).

### **Theoretical implications**

Sloboda and Juslin (2004) argued that sources of emotion in music may be intrinsic in the sense that they are caused by structural characteristics of the music, and claimed that intrinsic structural characteristics inevitably confirm or disrupt musical expectations. However, sources of emotion may also be extrinsic because their reference point is outside the music. Extrinsic sources may be iconic and associative. Iconic relationships result from a resemblance between an aspect of musical structure and an external event. For example, Sloboda and Juslin (2004) suggested that fast-tempo music has an iconic relationship with high energy events and excitement. Interestingly, Chapter 8 in this thesis showed that fast-tempo music produced more negative affective responses within the incongruous context of a relatively low energy and unexciting waiting environment.

Associative sources of emotion exist where there are relationships between the music and other non-musical factors. A piece of music may trigger memories of events in earlier life that become inextricably associated with the music. Such memories may also be associated with pieces of music that could be regarded as exemplars of a particular genre. For example, in Chapters 6-8 of this thesis, it is possible that the genres used (e.g., classical, jazz, and dance music) may have a range of positive and negative idiosyncratic associations with the life histories of various participants. Indeed, emotional responses to music may reflect a combination of intrinsic and extrinsic emotion. Of course, there is no definitive resolution to the debate regarding whether responses to musical communication are inherent or totally

learned through experience. In short, although this thesis focuses upon musical influences that are due to the structural characteristics of music, it acknowledges the need for future research in commercial contexts that attempt to discriminate between the impact of structural characteristics and learned associations.

While previous literature reviews examining the impact of music in advertising and service/retail environments (e.g., Bruner, 1990; Oakes, 2000) have not focussed upon the influence of musical congruity, Chapters 2-8 of this thesis underline its importance. Consequently, although the thesis did not attempt to test a particular definition, some attempt to define the concept of congruity is crucial for interpretation of the findings of the empirical studies in the thesis. Defining-attribute theories acknowledge that things form themselves into categories because they have certain attributes in common. In identifying relevancy and expectancy (Heckler and Childers, 1992) as defining-attributes of congruity, such theories suggest that both attributes would be necessary for a stimulus to be categorised as congruous. For example, in Chapter 3, defining-attribute theory would assume that all subordinate concepts (e.g., genre congruity, score congruity, etc.) include both of the defining attributes of the superordinate concept of congruity. However, it is unclear whether such theories would also suggest that both attributes would need to be absent in order to categorise a stimulus as incongruous. This is an important consideration for the thesis since Chapter 6 suggested that classical music could be contextually unexpected yet still relevant.

Consistent with findings from Experiment 1 (regarding the non-significant impact of musical genre congruity upon visual ad content recall), Experiment 2 in Chapter 6 reported no significant impact of musical genre congruity upon verbal ad content recall. However, since results from Chapters 4 and 5 of this thesis suggested that increased congruity of musical

tempo and timbre significantly enhances ad content recall, more thorough analysis of the concept of congruity is required. Regarding Chapters 4 and 5, it is likely that participants will have had little exposure to ads for products at the unusually fast and incongruous tempo of 170 BPM, and it is also likely that they will not have had prior exposure to ads for products using the solitary (incongruous) church organ or steel drum timbres. Consequently, these incongruous tempo and timbre stimuli may be regarded as neither expected nor relevant.

In contrast, the incongruous genre treatment in Chapter 6 (classical music) is a genre that has been used extensively by advertisers seeking to communicate an up-market image for their product. Participant familiarity with the up-market advertising associations of classical music is reflected in the more sophisticated perceived image of the university reported in the classical music treatment. Dance music may be regarded as the most congruous genre in this context because it is the genre that would be most expected in ads for universities due to the regularity of its use. However, although classical music is likely to have been unexpected, it may have been perceived to be purposeful and relevant in terms of encouraging participants to make an up-market link between the music and the university. The television and radio ads used in Chapter 6 were typical of ads for universities in the sense that they sought to convey the apparently disparate benefits of hedonism and academic achievement. For example, the radio ad identified various youthful leisure distractions, but still retained a focus upon teaching and research quality. It could be argued that dance music is more congruous with the former, while classical music is more congruous with the latter benefit. If cognitive processing facilitates linkages through memory to rationalize the relevance of the unexpected classical music genre, cognitive resources would not then be diverted from ad processing to an unsuccessful and distracting search for meaning to resolve the incongruity of the musical stimulus, thus explaining the non-significant differences in ad content recall findings between

dance and classical music. Future attempts to replicate the research described in Chapter 6 would require careful measurement of the potential relevance of classical music in university advertising.

Defining-attribute theories propose that all members of a category are equally important. They suggest that there are clear-cut boundaries between categories, and that membership of a category is absolute rather than a matter of degree. However, in the context of music, it is possible that congruity may actually be better measured on a continuous rather than nominal scale. For example, a church organ timbre (Chapter 5) may occupy a 'grey area' (where category boundaries are fuzzy or unclear) that could be termed a zone of moderate incongruity, while a steel drum timbre may occupy a zone of extreme incongruity. Such a congruity continuum is more in keeping with prototype theories which argue that category boundaries are defined less clearly. They propose a typicality gradient with category membership based upon the similarity of an object's attributes to a category prototype (Eysenck and Keane, 2000) that may be represented by characteristic attributes or the best example of the concept.

If 170 BPM music (Chapter 4) and a steel drum timbre (Chapter 5) may be argued to occupy a zone of extreme incongruity, Chapter 6 may provide more evidence supporting the existence of a congruity continuum since a television ad containing no audio elements whatsoever may also have been perceived as extreme incongruity. While a more incongruous stimulus may diminish recall more than a less incongruous stimulus, McQuarrie and Mick (1999) also proposed a hypothetical continuum of artful deviation (ad stimulus incongruity) suggesting that enhanced semantic processing and subsequent recall arise when consumers are able to make a meaningful reconciliation of the deliberate violation of ad stimulus

expectations. For example, the classical music used in Chapter 6 may have been unexpected, but the up-market associations of the genre allowed meaningful semantic reconciliation of the deviation from expectations. Although participants indicated that the dance music treatment was more appropriate to the ad message, they may not have regarded the classical music stimulus as inappropriate since they may have rapidly inferred a purpose for its presence, thus negating the likelihood of classical music providing a distraction that impeded content recall.

Srull (1981) also reported enhanced recall of items that were incongruous with prior expectancy compared to those that were congruous with expectancy, and these in turn were better recalled than irrelevant items. He suggested that the incoherence of irrelevant items means that they are not richly integrated into the cognitive network and develop few (if any) associations. While the encoding of a congruous item will not normally entail the formation of associative paths, incongruous items are hypothesized to have more associative paths attached to them than congruous items. This is because incongruous items are more difficult to comprehend, and are retained longer in working memory while additional information is retrieved in an attempt to more fully comprehend the meaning of the incongruity. In the context of research into music and ad content recall, Srull's definition of incongruous items may be termed artful (moderate) incongruity, while his definition of irrelevant items may be termed artless (extreme) incongruity.

Future research examining the impact of musical congruity in advertising and retail/service environment contexts needs to demonstrate awareness of the difference between defining-attribute and prototype theories. It should also consider ways of distinguishing on a continuum between differing levels of congruity (i.e., in terms of degree of relevancy and expectancy). For example, it is possible that a musical stimulus that is high in relevancy but

low in expectancy may elicit different responses from a stimulus that is high in expectancy but low in relevancy.

### **Theoretical arguments supporting the use of musical incongruity to enhance ad content recall**

Empirical evidence from the studies highlighted in Tables 3.1 and 9.2 appears to suggest that increased music/ad congruity enhances communications effectiveness in terms of purchase intent, brand attitude, ad content recall, and affective response. Indeed, theoretical psychological evidence can be provided to support these findings, particularly regarding recall. For example, memory has been represented as networks of nodes linking elements of thought through associative pathways along which a congruous stimulus can facilitate memory network linkages and enhance recall (Furnham, Bergland, and Gunter, 2002). This suggests that recall would not be enhanced through an incongruous stimulus as it would not activate related constructs along network linkages. When incongruity is perceived in an advertising context, consumers are likely to assume there is a deliberately underlying communicative purpose for its presence. However, when cognitive processing attempts to make linkages through memory in order to rationalize the purpose of the incongruity, the fruitless search for meaning through a labyrinth of networks ultimately only distracts attention from the ad message.

Findings from studies using non-musical stimuli also provide a theoretical counterargument supporting the use of incongruity in ads. Various studies (e.g., Miniard et al, 1991) have reported how information that is incongruous with prior expectations leads to more effortful and elaborate processing that increases the number of associative memory pathways. In identifying relevancy and expectancy as distinct components of congruity, Heckler and Childers (1992) reported how elaborative processing efforts were highest with unexpected

and relevant information. They suggested that an incongruous ad stimulus is more effective in penetrating the perceptual screen of an audience to attract attention to an ad, and proposed that an unexpected and relevant incongruous stimulus enhances identification of the primary theme and message of an ad. The relevance of the material allows the formation of associative linkages that enhance the probability of successful ad content retrieval. In this context, relevant and unexpected (partially incongruous) stimuli are more effective than irrelevant and unexpected (incongruous), and relevant and expected (congruous) stimuli. This would suggest that the consistent pattern of results observable in Tables 3.1 and 9.2 may be due to the use of incongruous musical stimuli in many of the studies that are both irrelevant and unexpected.

In accord with research (Heckler and Childers, 1992) reporting the benefits of using incongruous ad stimuli containing unexpected and relevant information, McQuarrie and Mick (1999) identified the importance of verbal and visual incongruity resolution. They revealed how the deliberate crafting of incongruity can be used to engage and entertain consumers, and proposed a hypothetical continuum of artful deviation (ad stimulus incongruity) suggesting that consumer resolution of such incongruity enhances ad interest levels. For example, the subtly deliberate incongruity of verbal or visual metaphor has frequently been used to enhance communication objectives and reinforce the advertising proposition. Both verbal and visual incongruity have been reported to elicit enhanced semantic processing (McQuarrie and Mick, 1996) and recall (Houston, Childers, and Heckler, 1987) as listeners seek meaningful reconciliation of the deliberate violation of expectations they have encountered.

In categorising many of the incongruous musical stimuli highlighted in this research as examples of unexpected and irrelevant incongruity, they fall short of the artful deviation characteristic of such verbal and visual incongruity because they do not set out to elicit interpretations capable of reinforcing the advertising proposition. Rather than using deliberately artful deviation to locate the musical stimuli within a zone of interpretive ambiguity capable of nurturing metaphorical elaboration, deviation from musical expectations is often polarized and devoid of implicit resonance for the ad message. In support of this argument, the two recall studies that allowed musical incongruity resolution (Olsen, 1995; Roehm, 2001) did produce enhanced recall levels. While a congruous musical stimulus is likely to be integrated with other communicative elements of the ad, this underlines the effectiveness of using artfully incongruous music that demonstrates coherent integration with the ad message.

Although the findings reported in this thesis would seem to suggest that congruity is always preferable to incongruity, other studies and theories suggest that such a conclusion would be too simplistic. It is likely that the present findings indicate merely that congruity may often be a good strategy, but that others should not be automatically ruled out. Consequently, future empirical research is needed to evaluate the relatively neglected potential of selective use of creative and purposeful musical incongruity in advertising.

### **Future directions for research**

Future research in this field may go off in a large number of different directions. First, in addition to supporting the spoken word, music in television and cinema advertising typically emphasizes the visual images on screen. Since consumers are accustomed to the cinematic



convention of using music to complement visual expression, audiovisual advertising that does not synchronize music and movement may flout consumer expectations. Marshall and Cohen (1988) reported enhanced visual attention when film music shared temporal accent patterns with the moving images on screen. Consequently, future advertising research could assess the impact of manipulating the congruity of choreography between music and visual movement. Second, although ad music is brief in duration, advertisers need to be aware of the principles of musical communication that are fundamental to compositions of any duration. Since Olsen (1995) has demonstrated the recall facilitation effectiveness of the dramatic transition from music to silence, future research could explore the impact of dramatically varying the structural characteristics of musical stimuli within an ad (e.g., tempo and key) in order to elicit desired affective and cognitive responses.

Third, Kellaris, Cox, and Cox (1993) reported how the level of attention-gain of the music interacted with image congruity to impact upon recall. While further research is required to assess the extent to which attention-gain may interact with other variants of musical congruity, it underlines the need to be aware of potentially interacting variables. Although the different forms of music/ad congruity highlighted in Chapter 3 are presented as discrete items depending upon the focus of the individual studies from which they are drawn, it should be acknowledged that the categories are not mutually exclusive. For example, use of jazz within an ad may be capable of eliciting responses that demonstrate simultaneously several of the various combinations of congruity identified in Chapter 3 (e.g., genre, mood, and image congruity). Indeed, future research could consider the interactive effects that arise when ad music responses demonstrate a mixture of positive (congruous) and negative (incongruous) combinations.

Fourth, many hotels and restaurants use live musicians in order to entertain customers, respond to their musical requests, and enhance perceptions that the service environment is up-market. Likewise, some supermarkets have occasionally used DJs, thus enabling customer requests for specific tracks (Herrington and Capella, 1996). Although Wheeler (1985) found no difference in participant mood when exposed to live or pre-recorded music, further research could examine the extent to which customers would be prepared to pay more in a retail/service environment that encourages interaction between live musician and customer. It could also examine the potentially moderating influence of musical genre upon perceptions of quality of merchandise and service (e.g., contrasting the impact of a live classical/jazz musician on a grand piano with pre-recorded pop music).

Fifth, it is likely that the influence of specific musical stimuli will vary in different environmental contexts. The purpose of the visit and the customer's prior mood may also influence responses to the music either positively or negatively. Consequently, future research could examine the extent to which background music may offset customers' prior negative mood states (e.g., anxiety and frustration). Sixth, while consumers frequently prefer familiar music, they may also be attracted to unfamiliar compositions that are representative of an organisation's cultural background (e.g., restaurants playing ethnic music clearly associated with their cultural origins). Future research could usefully examine the extent to which the ethnic congruity between a restaurant and its background music enhances perceptions of food quality (e.g., implying that it uses authentic, ethnic ingredients). Research could also assess the impact of such congruity upon customers' monetary valuation of overall service quality.

Seventh, although Chapter 5 addresses the impact of musical timbre congruity in an advertising context, future research needs to assess its impact in retail and service environments, since discrete socio-economic segments may well respond in different ways to the timbres of specific instruments (e.g., cello and saxophone). Future empirical studies in various environments could thus use digital technology to simulate the timbres of different instruments using otherwise identical musical compositions.

Eighth, It is problematic for consumers to process all of the sensory stimuli that they are simultaneously exposed to within a retail or service environment. Previous research (Morin, Dube, and Chebat, 2007) has acknowledged Gestalt theory in suggesting that responses to an environment depend upon the integration of multi-sensory information, proposing that consumers respond to diverse environmental stimuli by combining them in order to arrive at a coherent and unified overall perspective. Consumer response to music within retail and service environments may therefore be influenced by other environmental variables (e.g., scent, decor, lighting, furnishings). Superimposition of a congruity perspective suggests that the interactive (in)congruity between different musical variables (e.g., tempo and genre) and between different physical environment variables (e.g., music and scent) may significantly influence cognitive and affective responses. Future research could examine the interactive effects of aural, visual, olfactory, and tactile variables since it is possible that the validity of some of the empirical findings from previous studies may be in doubt where single variable studies have glossed over potentially confounding interactive effects.

Ninth, Epstein (2004) argued that involuntary recall is much more vivid than voluntary recall, suggesting that it is more like re-experiencing an event as it can recapture perceptual information and emotional experiences associated with the remembered event. In contrast,

voluntary memory is merely a snapshot that has been abstracted from its original context and filed away for easy access. Future research needs to take into account the extent to which musical stimuli can trigger involuntary recall. Finally, since the experiments in this thesis used exclusively student samples, it is obviously desirable to replicate the studies using participant samples with more diverse age ranges and educational backgrounds. Overall, this thesis has attempted to draw together and make sense of the disparate and frequently conflicting studies addressing the impact of music in advertising and service environment contexts. It has endeavoured to make an empirical contribution to this literature and to set out an agenda for future research.

## APPENDIX 4.1 – QUESTIONNAIRE (CHAPTER 4)

Now that you have listened to this radio advertisement, I would be grateful if you could answer the following questions:

**1. How interesting did you find the ad you have just heard?**

(Please tick one category only)

- (a) Very interesting
- (b) Fairly interesting
- (c) Fairly boring
- (d) Very boring
- (e) I was indifferent to the ad

**2. Which one of the following products was being highlighted?**

(Please tick one category only)

- (a) Ultrasecure System 2000 range of doors
- (b) Ultrasecure System 3000 range of doors
- (c) Ultrasecure System 2000 range of windows
- (d) Ultrasecure System 3000 range of windows
- (e) Don't know

**3. Which of the following offers was not made by the advertiser?**

(Please tick one category only)

- (a) Interest free credit
- (b) Free delivery
- (c) Will beat all other quotes
- (d) Buy now, pay next summer
- (e) Don't know

**4. How long did the ad you have just heard seem to last? Try to be as precise as possible to the nearest second, even if you are not certain. Using the table below, please put a circle around the number which indicates how many seconds you thought the ad lasted:**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180

## APPENDIX 5.1 - SCORE

The screenshot displays the Cubasis VSI software interface. At the top, the title bar reads 'C:\My Documents\dreamteam2\No all - Cubasis VSI - [Score - Track 1, 0005.01.000, 0045 01 334]'. Below this is a menu bar with options: File, Edit, Parts, Functions, Options, Audio, Windows, and Help. A toolbar contains various musical notation symbols. The main area shows a musical score for 'Track 1' on a piano roll. The score is divided into measures, with measure numbers 5 through 16 visible. The notation includes notes, rests, and a fermata over measure 9. The bottom of the window has a status bar with a checkered pattern.

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